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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

FEB 6 1992

4WD-RCRA/FF

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Laurie A. Boucher, P.E.
Remedial Project Manager
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1822
Norfolk, Virginia 23511-6287

RE: MCB Camp Lejeune NPL Site
Camp Lejeune, North Carolina

Dear Ms. Boucher:

EPA received the draft RI/FS project plans for sites 6, 48 and 69 of the subject facility on December 16, 1991. These documents have been peer reviewed and the comments are enclosed. The Health and Safety Plan was not reviewed.

Significant issues to be addressed include:

The use of a "phased" approach is unacceptable. Phasing results in lengthy, expensive projects.

The Region IV SOP must be utilized when planning or performing field work. The contractor's SOP will not be reviewed or approved. The RI/FS project plans must conform with the Region IV SOP or a request for a variance must be submitted by the Navy. The SOPs included with the FSAP must be deleted and the appropriate procedures incorporated into the text of the FSAP.

The risk assessment must fully evaluate environmental threats, as well as, threats to human health.

If you have any questions concerning these matters, please call me at (404) 347-3016.

Sincerely,

Michelle M. Glenn

Michelle M. Glenn
Senior Project Manager

Enclosure

cc: Jack Butler, NCDEHNR
George Radford, MCB Camp Lejeune

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DRAFT RI/FS PROJECT PLANS
SITES 6, 48 AND 69
MARINE CORPS BASE
CAMP LEJEUNE, NC
December 1991

GENERAL COMMENTS - RI/FS WORK PLAN

1. The Draft RI/FS Work Plan omits any discussion of several significant site features. A general discussion of climatology, site topography, area demographics and local geology must be included. The first reference to the depth to the water table is not provided until page 5-5 (almost at the end of the work plan). Aquifer characteristics should be discussed in conjunction with both the past sampling activities and the proposed RI/FS activities. The direction of ground water flow should be included on all maps and figures depicting past or proposed well locations. Surface water flow directions must also be included.

   A description of the regional geology and hydrogeology as well as the local geology and hydrogeology for each site should be included in the document.

   A map showing the location of Camp Lejeune in the State of North Carolina must be included. A map showing the entire Base would also be helpful.

2. The proposed "phased approach" is inappropriate with the exception of Site 69. EPA understands and concurs with the cautious approach to this complex site. EPA further requests Site 69 be removed from this work plan in consideration of the considerable difficulty in reaching a Record of Decision (ROD) at this site.

   EPA further recommends a removal be undertaken at Site 6. The removal could be addressed in a separate work plan, thus eliminating a considerable potential for release from the drums and other identified debris at the site. This would allow the RI/FS to focus on the contaminated environmental media and possibly consolidate potential Interim and Final Remedial Actions with Site 48.

   The removal may be accomplished under the Navy's Removal authority or by way of an Interim Action ROD.

3. The majority of the figures in the document do not have map scales. These figures should be revised to include map scales with units.

4. More than one round of water level measurements should be collected at each site. Ideally water level measurements should be collected during the wet and dry seasons. Monitoring wells that penetrate the confined Castle Hayne aquifer should be measured during a complete tidal cycle to determine the maximum water level fluctuation in the aquifer due to tidal effects.

5. A table should be included that lists the monitoring wells at each site. The table should include total depth of well, elevation of land surface, elevation of top of casing, and water level elevation.

6. The identification of "Potential Contaminants of Concern" is premature. Contaminants of concern can not be adequately determined until full scan samples have been collected at each site and been subjected to a DQO level 4 analyses.

7. The list of sampling parameters for each site is inadequate. At least 10% of samples collected in each media must be analyzed at DQO level IV quality for full scan (TCL/TAL) to be utilized in the Baseline Risk Assessment.

8. The discussion of Data Quality Objectives is limited at best. While this should be discussed more thoroughly in the FSAP, some discussion as to the quality of data to be collected and the intended use of the data must be included.

9. The subsurface investigations proposed in the Work Plan are incomplete. Every effort must be made to collect enough characterization data to proceed directly from the work plan stage to the RI/FS report and, ultimately, the ROD.

10. Treatibility studies should be initiated as early as possible in the RI/FS process. Treatibility studies are ideally completed prior to preparation of the FS Report to allow the results to be incorporated without delay to the Project.

11. In light of the 15 month requirement for Federal Facilities to begin Remedial action after ROD signature, EPA strongly recommends all physical data required for Remedial Design be collected during the RI field work stage.

12. All federal and state ARARs must be considered in the development of the Work Plan. Ambient Water Quality Criteria must be considered in addition to North Carolina Water Quality Criteria. For the benefit of the reader, a table listing the values associated with all potential ARARs should be included.

13. The "Preliminary Risk Evaluation" and the proposed RI/FS field work fail to adequately address threat to the environment. Environmental threats must be evaluated at all sites.

14. The use of PVC wells is discouraged in the presence of organic compound contamination. The EPA SOP recommends use of stainless steel wells. Deviation from this policy requires a justification be provided to, and accepted by, the Agency.

15. The TCL and TAL comprise a "full scan".

16. The report is missing "A-L" from the list of acronyms.

SPECIFIC COMMENTS - RI/FS WORK PLAN

1. Page 2-3, Figure 2-2 - Please include the direction of groundwater flow and surface water flow.

2. Page 2-4, Section 2.1.3.2 - What is meant by shallow monitoring wells? What is the depth to the water table? How deep is the aquifer? Are other aquifers affected? What is the depth of the wells? What depth are the well screens? This applies to all discussion of past sampling at these sites.

3. Page 2-4, Section 2.1.3.2 - According to page 2-1, "Groundwater flows across the site [Lot 201] in a northeast to southwest direction". Figure 2-2, pg 2-3 shows that only one well, 6GW7, is truly downgradient. The other four wells are all located on the upgradient side of Lot 201. Therefore, it is not surprising that so few constituents were detected in the ground water monitoring wells. This should be clarified in the text.

4. Page 2-5, Section 2.1.3.2 - The "TCL" consists of organic compounds and Pest./PCBs. The Target Analyte List (TAL) is the full scan for inorganic compounds/elements.

   The North Carolina Water Quality Standards are referenced here. Why is there no reference to Federal Standards?

5. Page 2-5,Section 2.1.3.3 - Why were no surface water/sediment samples collected from the intermittent drainage area south of Lot 201 ?

6. Page 2-5, Section 2.1.3.4 - What is the explanation for the upstream sediment sample having higher concentrations than the downstream sample?

7. Page 2-5, Section 2.2 - Is groundwater flow also in a northeast to southwest direction for Lot 203 ? If this is the case, then according to the well locations given on Figure 2-3 pg 2-6, wells 6GW1 and 6GW2 would have an extremely minimal chance of detecting any contamination emanating from this site since both are upgradient of Lot 203. Well 6GW3 would have a marginal chance of detecting some contaminants. Please provide clarification in the text.

8. Page 2-6, Figure 2-3 - Please include the direction of ground water and surface water flow.

9. Page 2-8 - Considering the large variety of materials noted at Lot 203 (See Index to Figure 2-3, pg 2 of 2), it is not clear why the soil samples were only analyzed for isomers of DDD, DDE and DDT. Metals, volatile and extractable organic compounds, etc. should have also been included for analysis.

10. Page 2-9, Section 2.2.3.4 - According to the last paragraph on this page "Two common laboratory solvents (acetone and methylene chloride) were the only VOCs detected in the samples". Acetone and methylene chloride were also detected in blanks for samples collected from the shallow aquifer in the Hadnot Point Industrial Area. What procedures will be implemented to correct this QA/QC problem?

11. Page 2-10, Section 2.2.3.4 - What is the explanation for the upstream sediment sample having higher concentrations than the downstream sample for the 1991 sampling investigation?

12. Page 2-10, Section 2.3.1 - Will piezometers/monitoring wells be installed at Site 48 to determine groundwater flow direction, etc.?

13. Page 2-10, Section 2.3.3.1 - Considering that Building 804 is a former photography lab, were any of the samples analyzed for silver?

14. Page 2-11, Figure 2-4 - Once the groundwater flow direction is established for Site 48, it may be necessary to sample in a more downgradient direction of the assumed disposal area. It may turn out that the marshy area northeast of Building 804 would have only a marginal chance of showing contaminant migration if it is upgradient of the area of concern. Contaminants may be moving in a more easterly direction toward the New River and/or the bay.

15. Page 2-12, Section 2.3.3.4, 2nd paragraph - Were the sediment samples surficial? Please include the depth interval sampled.

16. Page 2-13, Section 2.3.3.5 - Will fish/shellfish sampling be attempted other than in January to determine if any contaminants have migrated from the site? Have any samples been collected from along the shore or the channel to determine if contaminants have migrated to these silty materials?

17. Page 2-14, Figure 2-5 - Direction of ground water flow?

18. Page 2-16, Section 2.4.3.1 - Why were no soil samples collected from Site 69 ?

19. Page 2-18, Section 2.4.3.5 - Why was this sampling conducted in January? Please provide the rationale. Were the fish tissue samples also analyzed for mercury?

20. Page 3-1, Section 3.1.1 - The statement "In general, groundwater and surface water appear to be free of contamination" may be inaccurate. The locations of the monitoring wells for Lots 201 and 203 are not acceptable for determining ground water contamination from these two areas. Only three rounds of samples have been collected from these wells: November 1986, January 1987 and January 1991. For Lot 201, two surface water samples (one upstream and one downstream) have been collected since November 1986. Only four surface water samples (two upstream and two downstream) have been collected from Wallace Creek since 1986 for Lot 203.

21. Page 3-1, Section 3.1.2 - "It appears that this risk evaluation may apply only to Lot 203, not Lot 201, since the contaminants that were detected at Lot 201 were pesticides in soils, not VOCs in groundwater and surface water". To date, not enough site-specific data has been collected to verify that no ground water or surface water

contamination has occurred at Site 201. Pages 2-5 and 2-8 clearly state that many of the inorganic compound concentrations in wells at Lots 201 and 203 exceed the North Carolina Water Quality Standards. Also, it is never explained why for the sediment samples, the upstream concentration were higher than the downstream concentration for Lots 201 and 203.

22. Page 3-2, Section 3.1.4.1 - Federal Ambient Water Quality Criteria also apply.

23. Page 3-3, Section 3.1.4.1 - It is not clear why the concentration of compounds detected in the groundwater at Lot 201 were compared with the North Carolina surface water standards. Most well sample analyses are compared to the National Primary Drinking Water Regulations.

24. Page 3-3, Section 3.1.5.1 - Low temperature thermal treatment and vacuum extraction are also viable alternatives.

25. Page 3-4, Table 3-1 - Qualified data should be included with the appropriate footnote. The method detection limits alluded to here as "ND" should have been given.

26. Page 3-6, Table 3-2 - Federal standards should be included. Qualified data with the appropriate footnote should be included.

27. Page 3-7, Section 3.1.5.2 - The adequacy of the monitoring wells could not be assessed because there were no well schematics with construction details, driller's logs, etc. included for review. Therefore, it is still questionable as to whether the wells at Lots 201 and 203 are valid monitoring wells that can provide representative ground water samples, especially considering their locations.

28. Page 3-7, Section 3.1.5.3 - As before, for Lot 201, two surface water samples (one upstream and one downstream) have been collected since November 1986. Only four surface water samples (two upstream and two downstream) have been collected from Wallace Creek since 1986 for Lot 203. This is a very minimal amount of data collected over the past five years to determine that the surface water has not been affected by site activities. Also, the sample collection/handling procedures were not included for review.

29. Page 3-8, Section 3.1.6.1 - "Assess health risks" must include threats to human health and the environment.

30. Page 3-13, Section 3.2.1.19 - The tire piles should be removed and properly disposed of elsewhere.

31. Page 3-14, Section 3.2.2 - Other contaminants must be considered.

32. Page 3-15, Section 3.2.4.1 - Federal standards must also be considered.

33. Page 3-18, Section 3.2.5.4 - The last sentence is misleading. Please remove it.

34. Page 3-18, Section 3.2.6 - The discussion of "Data Limitations" should also include references to the quality of the data and the methodology used to collect the samples. Failure to use appropriate methods and data collected and analyzed at less than DQO 4 should not be used for Risk Assessment purposes.

35. Page 3-27, Section 3.4.5.3, 2nd paragraph - If contamination can be documented outside of a potential source area, samples may not be necessary directly within the source. In fact, in certain instances a more prudent approach (for health and safety considerations or to prevent further contamination) is to remain outside of the source when characterizing the plume.

36. Page 3-28, Section 3.4.5.4 - It may be "feasible or possible" to control standing water at the site by drainage or runoff control. Please rewrite this section to avoid broad generalizations which may foster misinterpretation.

37. Page 3-29, Section 3.4.6.4 - Please remove the last part of the last sentence.

38. Page 4-2, Table 4-1 - Samples for full scan analyses must be collected. The environmental threats must be fully evaluated. Eliminate phasing.

    The vertical extent of contamination must be delineated. A full discussion of the area geology will clarify if these objectives are comprehensive enough.

39. Page 4-5, Table 4-2 - The drums should be addressed immediately, either through a removal or an Interim Action ROD.

40. Page 5-1, Section 5.3 - To the extent possible, a complete investigation should be planned at this time. Elimination of the phased approach as presented will result in substantial cost and time savings.

41. Page 5-2, 3rd paragraph - An addendum to the Work Plan and the SAP would be necessary. Both would be subject to review and approval by the parties to the FFA.

42. Page 5-2, Section 5.3.1 - Field work to support a full environmental/ecological assessment will be necessary.

43. Page 5-3, 3rd paragraph - A full TCL/TAL scan will be required. This applies to subsequent discussions as well.

44. Page 5-5, 1st paragraph - The RI/FS Work Plan proposes that soil samples will be collected during Phase II. Soil samples should be collected surrounding Lot 201 during the RI/FS field investigation. These samples should be collected at 5 foot intervals (or less) to the top of the water table.

    2nd paragraph - What is the rationale for the four-foot depth for the subsurface soils samples?

45. Page 5-5, Section 5.3.1.3 - Based on 1991 water quality data, wells 6GW6, 6GW7, and 6GW8 contain levels of lead and chromium that are above MCL standards. Additional wells should be installed east of well 6GW6, south of well 6GW7, and southwest of well 6GW7 to determine the lateral extent of the ground-water contaminant plume.

    No plan is provided for delineating the vertical extent of ground-water contamination at Storage Lot 201. Future ground-water sampling should be proposed to fully delineate the extent of vertical contaminant migration.

46. Page 5-6, Section 5.3.1.2 - Collecting one round of groundwater samples and one round of water level measurements will not take into account seasonal variations, man-made influences, tidal effects, etc. on the ground water.

    Page 5-7, Section 5.3.1.5 - This section states that surface water samples will be collected along Bear Head Creek. Figure 5-1 indicates that sediment samples will be collected along the creek, but does not indicate that surface water samples will be collected here as well. It is assumed that surface water and sediment samples will be collected at locations where sediment samples are indicated. This should be clarified on the figure.

Basing the additional sediment sampling on the results of the off-site soil samples is not recommended. Factors that would affect the movement, attenuation, etc. of constituents in soil can vary from those factors affecting constituents in sediments.

47. Page 5-8, Section 5.3.1.6 - The list of analytical parameters for the aquatic studies should be expanded to include more than just pesticides and heavy metals.

48. Page 5-9, Section 5.3.2.3 - It is proposed that the results from the soil-gas survey conducted during Phase I will be used to determine optimal soil sampling and monitoring well locations for Phase II. This will help in selecting the best sampling locations in a timely manner.

    Please note the limitations of using field screening data.

49. Page 5-11 - An index for each of the numbered figures should be provided for figure 5-2.

    It was never stated what the groundwater flow direction is for Lot 203. The flow direction for Lot 201 which is adjacent to Lot 203 is northeast to southwest. If flow for Site 203 is similar to that of 201, then the proposed well locations would be only marginally capable of intercepting contaminant plumes emanating from this site.

50. Page 5-12, Section 5.3.2.5, <u>Metal Solvent Area</u> - A full TCL scan should be performed including Pest./PCBs.

51. Page 5-12, Section 5.3.2.5, <u>Aboveground Storage Tank</u> - Full scan samples will be necessary.

52. Page 5-13 - As before, in order to collect as much useful information as possible during the field sampling, the list of analytical parameters should be expanded.

53. Page 5-14, Section 5.3.2.7 - The use of PVC for well casing/screening may be inappropriate for those sites with organic constituents that can affect PVC. Also, a 10-foot screen in a 15-foot well could result in a large dilution factor.

    Soil samples should be collected to the water table as new wells are installed. The samples should be collected at intervals of no more than five feet.

    More information has been provided in this section regarding the geology at the site, however, it is still incomplete.

54. Page 5-15, Section 5.3.2.8 - As for Lot 201, collecting one round of groundwater samples and one round of water level measurements will not take into account seasonal variations, man-made influences, tidal effects, etc. on the ground water.

55. Page 5-17, Section 5.3.2.11 - Environmental impacts must also be assessed.

56. Page 5-18, Section 5.3.2.12 - What analyses, if any, will be performed on the aquatic populations?

57. Page 5-19, Section 5.3.3.2 - Why will no organic compound analyses be performed on the samples for Site 48 ?

58. Page 5-20, Figure 5-3 - How will the well shown here determine ground water flow direction for this site? If flow is toward the New River/bay, even with all the proposed well locations, they would only be marginally capable of intercepting a contaminant plume.

59. Page 5-21, Section 5.3.3.2 - Composite samples are inadvisable. The information supports a positive "hit," but can not be used to confirm a "clean" area.

60. Page 5-21, Section 5.3.3.3 - A 10-foot screen in a fifteen-foot well could result in a large dilution factor.

61. Page 5-22, Section 5.3.3.4 - These wells will be necessary. One well is inadequate to determine if contamination has occurred and will provide very little useable information as to water table elevation.

    Full TCL/TAL analyses will be necessary.

62. Page 5-22, Section 5.3.3.5 - No phasing! Background samples and some number of the characterization samples must be analyzed for a full scan (TCL/TAL).

63. Page 5-22, Section 5.3.3.6 - Combine Phases I and II.

64. Page 5-23, Section 5.3.3.7- Surface water samples should be collected at each location where a sediment sample is collected.

65. Page 5-24, Section 5.3.4 - The discussion here is awkward. Please rephrase.

66. Page 5-25, Section 5.3.4.2 - The text regarding the analytical methods to be used for the CSM degradation products must be submitted to the EPA Region IV ESD Laboratory Evaluation and Quality Assurance Section for review prior to implementation.

    Based on 1991 ground-water samples, monitoring wells 69GW3, 69GW5, and 69GW8 contain lead at levels above MCLs. EPA recommends that in addition to resampling the existing wells for TCL/TAL group of contaminants, new monitoring wells should be installed in the surficial aquifer to delineate the lateral extent of the contaminant plume. The additional monitoring wells should be installed northwest of 69GW8, northeast of 69GW5, and southeast of 69GW3. The deep wells proposed for Phase II should be installed in a cluster with shallow wells during this RI/FS field investigation so that the vertical hydraulic gradients and the extent of confinement between zones may be determined. If possible, these wells should be installed near 69GW3, 69GW5, and 69GW8.

67. Page 5-28, Section 5.3.4.4 - Potential threats to the environment must also be explored.

68. Page 5-30, Section 5.3.4.4 - Will the sediment samples also be analyzed for the CSM degradation products?

69. Page 5-30, Section 5.3.4.5 - Potential threats to the environment must also be explored.

70. Page 5-31, Section 5.4, 3rd paragraph - Risks to human health <u>and</u> the environment must be assessed in every instance.

71. Page 5-32, Section 5.4 - Data should be catalogued in accordance with the data locational policy provided the Navy by EPA.

72. Page 5-32, Section 5.6 - This section is the Baseline Risk Assessment. It is prepared only once and is considered qualitative and quantitative. The Baseline Risk Assessment can be begun for each media when the analytical results of all samples collected in that media are returned from the laboratory. This assessment encompasses both threats to human health and the environment.

73. Page 5-33, Section 5.7 - EPA strongly recommends treatibility studies be conducted as early in the RI stage as possible.

74. Page 5-33, Section 5.8 - Why are two reports suggested for Site 6? Lots 201 and 203 should be combined into one Baseline Risk Assessment and one RI/FS Report. Ultimately, these two areas will be addressed under one ROD.

75. Page 5-34, Section 5.10, "Modifying Criteria" - "State Acceptance" should be changed to state either "Support Agency(ies) Acceptance" or "State and EPA Acceptance."

76. Page 5-35, Section 5.11 - Site 6 should be one report.

77. Page 5-35, Section 5.12 - These documents should be prepared by the lead agency, <u>not</u> a contractor.

78. Page 7-1, Section 7.0 - A field schedule must be provided to EPA and the State no later than fourteen (14) days prior to initiation of field work (FFA, Section XVII, Paragraph B).

    In addition, this schedule must be kept current at all times to allow for State and/or EPA oversight and collection of split samples.

DRAFT RI/FS PROJECT PLANS
SITES 6, 48 AND 69
MARINE CORPS BASE
CAMP LEJEUNE, NC
December 1991

Draft Field Sampling and Analysis Plan
EPA Comments
February 1992

DRAFT RI/FS PROJECT PLANS
SITES 6, 48 AND 69
MARINE CORPS BASE
CAMP LEJEUNE, NC
December 1991

GENERAL COMMENTS - FIELD SAMPLING AND ANALYSIS PLAN

1. The Standard Operating Procedures provided in the document are not specific enough to determine if the proposed procedure at a site will provide data of sufficient quality for decision making. The format of the report requires the reader to search for the referenced material and then does not distinguish the procedure to be used. This is unacceptable. This document must be prepared in such a way that the reader is able to identify specifically how each sample will be collected. Inadequate information is provided on general sample collection practices. In addition, the Region IV Environmental Compliance Branch Standard Operating Procedures (Region IV SOP, April 1991) is the overriding document when discussing field procedures. All sample collection and analysis procedures must be conducted in accordance with this Region IV SOP.

2. Much of the information given in Section 3.0 "Field Investigations" of the Sampling and Analysis Plan (SAP) is the same information given in Section 5.0 of the Remedial Investigation/Feasibility Study (RI/FS) Work Plan. Please see those comments for Section 5.0.

SPECIFIC COMMENTS

1. Page 1-1, Section 1.1 - Please change "generally acceptable practices" in the second sentence to "the Region IV SOP".

   Also include "extent" with "nature" and "magnitude" and "assess" instead of "estimate".

2. Page 1-1, Section 1.2 - The overriding document for field sampling procedures is the Region IV SOP.

3. Page 2-1, Section 2.1.1 - The information provided on the geology in this area is insufficient.

4. Page 2-3, Figure 2-2 - Direction of groundwater flow should be included.

5. Page 2-4, Section 2.2.1 - The information provided on the site setting is insufficient.

6. Page 2-4, Section 2.2.2 - Information on the current drum removal activity should be included.

7. Page 2-6, Figure 2-3 - Groundwater flow direction should be indicated on the site map.

8. Page 2-10, Section 2.4.1 - The information presented is insufficient.

9. Page 2-11, Figure 2-5 - Groundwater flow direction?

10. Page 2-13, Figure 2-6 - Groundwater flow direction?

11. Page 3-1, Section 3.1 - A phased approach is inappropriate.

    Surface and subsurface soil samples are necessary.

    How will the proposed sample locations adequately define the horizontal and vertical extent of contamination?

    Full characterization is the study objective.

12. Page 3-3, Section 3.1.1.2 - The surface soil collection method described in SOP F102 is not in accordance with the Region IV SOP. The EPA SOP overrides the method in this document. In addition, the methodology for collection of these samples should be included in the text. The public may or may not feel comfortable in attempting to "piecemeal" the investigation from the general information given in an appendix.

13. Page 3-3, Section 3.1.1.2 - Equipment should not be "decontaminated between each sample location". Enough equipment should be provided to accomplish a significant amount of sampling prior to decontaminating equipment.

14. Page 3-3, Section 3.1.1.3 - The EPA Region IV procedures for equipment decontamination must be used.

15. Page 3-3, Section 3.1.1.3 - The sample analysis requirements given in the SAP do not always coincide with the proposed analyses given in the RI/FS Work Plan. For example, the RI/FS states that the 32 surface soil samples will be analyzed for TCL pesticides, whereas the SAP states that the 32 samples will be analyzed for TCL

pesticides and TAL inorganics. Discrepancies of this type are found for other media for this site. Full scan (TCL/TAL) analyses of samples are required for risk assessment purposes.

EPA SOP requirements for sample preservation prevail.

16. Page 3-4, Section 3.1.1.4 - Field blank samples should be prepared with organic-free water.

17. Page 3-5, Section 3.1.2.2 - SOP F105 does not identify the specific sample collection to be employed at this site. Specific information must be provided.

18. Page 3-5, Section 3.1.2.5 - Full scan (TCL/TAL) analyses of samples will be necessary.

19. Page 3-7, Section 3.1.3.1 - What is the depth to groundwater? A ten foot well screen in a 20 foot well doesn't really provide very useful information. In addition, the Region IV SOP recommends stainless steel as the first choice for well construction material. If the Navy insists on using PVC, the seven-point criteria must be completed and provided to EPA as a separate submittal. Any other variance requests to the Region IV SOP may be submitted with the well construction materials variance request.

20. Page 3-7, Section 3.1.3.2 - The specific methodology to be used should be included here. Some subsurface soil samples should be collected for chemical analyses.

21. Page 3-7, Section 3.1.3.3 - The information provided in this section is insufficient. Specific information as to sampling techniques and other field procedures must be provided in the text.

22. Page 3-7, Section 3.1.3.4 - The samples must be analyzed for full TCL/TAL parameters.

23. Page 3-11, Section 3.2 - Phases I and II should be combined to expedite the field investigation and minimize the costs.

24. Page 3-11, Section 3.2.1 - The procedures to be used must be spelled out. SOP F702 and F704 could not be located. The report generated as a result of the geophysical surveys should be provided to EPA as a secondary document under the Federal Facilities Agreement.

25. Page 3-12, Section 3.2.1.3 - More information must be provided on the specific procedures to be used. Data produced using this field screening technique has very limited uses in the RI/FS.

26. Page 3-12, Section 3.2.2 - More information must be provided on the specific procedures to be used. Additionally, some indication of the additional health and safety requirements for this activity should be provided. Some estimation of the number of samples should be given, as well as an estimation of the number of test pits anticipated.

27. Page 3-14, Section 3.2.3.2 - The sampling procedures to be used must be included here.

28. Page 3-14, Section 3.2.3.3 - Samples of known or suspected concentrated waste should not be preserved. In addition, these samples must be handled and shipped as a hazardous waste. The procedures for implementing these requirements must be included in this section. If possible, samples should be collected and analyzed in support of an immediate removal action, rather than for an RI/FS with disposal to occur much later.

29. Page 3-14, Section 3.2.4 - Consolidate the "phased" approach to provide a complete characterization investigation as a result of this study. Remove the word "preliminarily" in the first sentence.

    The borings to be collected are very localized. More borings should be anticipated to better locate the vertical and horizontal extent of contamination. Exact locations may be adjusted in the field, however, an estimation of the number and location of the additional samples should be provided.

30. Page 3-17, Section 3.2.4.2 - The procedures to be utilized should be included in the text. It is assumed the direction of groundwater flow is toward Wallace Creek. Is this a correct assumption? If so, this information should be included on the Figure 3-2. Is the direction of flow in the intermediate aquifer parallel to the shallow aquifer? More information must be provided to establish the efficacy of the proposed well configuration.

31. Page 3-19, Section 3.2.5.1 - The use of PVC for well casing/screening may be inappropriate for those sites with organic constituents that can affect PVC. Also, a 10-foot screen in a 15-foot well could result in a large dilution factor.

32. Page 3-20, Section 3.2.5.2 - Some subsurface samples should also be collected for chemical analyses. It would be especially helpful to collect samples from the strata between the shallow and intermediate water bearing zones. These samples should be analyzed for chemical composition (and potential contaminants) as well as for physical characteristics.

33. Page 3-20, Section 3.2.5.3 - Please refer to earlier comments concerning degree of detail required.

34. Page 3-21, Section 3.2.5.7 - Will preservative blanks be collected for QA/QC purposes?

35. Pages 3-22 thru 3-25, Sections 3.2.6 and 3.2.7 - Please refer to earlier comments concerning degree of detail and adequacy of referenced SOPs.

36. Page 3-25, Section 3.3 - Please eliminate "phased" approach. If possible, the manufacturer of the chemicals used in the photo lab should be identified. This would result in a more cost-effective list of contaminants for analysis.

    Will the proposed geophysical investigations identify areas contaminated with liquid mercury?

    EPA would like to have copies of the technical memoranda generated from the geophysical surveys as secondary documents under the FFA.

37. Page 3-28, Section 3.3.2.3 - Some number of the samples to be collected must be analyzed for the full TCL/TAL parameters. This must include a background sample.

38. Page 3-29, Section 3.2.3.2 - The specific procedures to be utilized must be included.

39. Page 3-29, Section 3.2.3.3 - Some number of samples must be analyzed for the full TCL/TAL parameters.

40. Page 3-30, Section 3.3.4 - The "phased" approach must be condensed to complete the RI/FS data collection as a result of implementing these RI/FS project plans.

41. Page 3-30, Section 3.3.4.1 - Mercury is significantly more dense than water. In light of this, additional information is necessary to justify the proposed screen interval.

42. Page 3-31, Section 3.3.4.3 - Samples should be collected for chemical analysis during the well installation activities.

43. Page 3-31, Section 3.3.4.6 - Some number of samples must be collected for full TCL/TAL parameters. In addition, the rationale for collection of samples for "total and dissolved" metals must be provided. Drinking water standards are based on unfiltered samples.

44. Page 3-32, Section 3.3.5 - This sentence is confusing. An ecological assessment will be required as part of the Baseline Risk Assessment. Some ecological sampling must be included in the work plan.

45. Page 3-32, Section 3.3.5.2 - Due to the proclivity of mercury to bioaccumulate, it would appear that the proposed sampling would be inadequate to determine what impacts, if any, mercury has had on the environment in this area.

46. Page 3-34, Section 3.4.1 - EPA requests the technical memoranda providing the results of the geophysical testing be submitted as a secondary document.

47. Page 3-36, Section 3.4.2.2 - The procedures to be used in collecting these samples should be spelled out.

48. Page 3-37, Section 3.4.3 - Please eliminate the reference to a "phased" approach. Are the existing wells adequate to define the potentially affected aquifers? Are there two water bearing units to consider in this area? Please provide more information concerning the existing wells.

49. Page 3-38, Figure 3-5 - What is the direction of groundwater flow?

50. Page 3-39, Section 3.4.3.2 - The rationale for collection of samples for "total and dissolved" metals must be provided. Drinking water standards are based on unfiltered samples.

<u>NOTE</u>: The above comments made for Site 6, Lots 201 and 203 also apply to Sites 48 and 69.

51. Page 4-3, Section 4.3 - Please refer to the EPA Region IV SOP for the applicable "Sample Preservation and Handling" procedures.

52. Page 4-4, Section 4.3 - Preservatives used in the sample should also be provided to the laboratory. This information should also be included on the sample label.

53. Page 4-4, Section 4.4 - EPA recommends the use of vermiculite as a packing material.

54. Page 4-6, Section 4.6.1 - Decontamination of equipment must be conducted in accordance with the Region IV SOP.

55. Page 4-7, Section 4.7 - Changes to the approved project plans must also be approved by all the parties to the FFA.

56. Page 5-1, Section 5.1 - How will the test pit excavation equipment be decontaminated between uses?

57. Page 5-3, Section 5.3 - Will sieve analyses be conducted to determine the correct filter pack, screen slot size for this area? How long will the bentonite seal be allowed to hydrate?

58. Page 5-4, Section 5.6 - Do not filter samples!

59. Page 5-5, Section 5.7 - The decontamination procedure given here for the Teflon slug should be modified to conform with the ECB SOPQAM decontamination procedures given in Appendix B.

60. Page 5-6, Section 5.12 - At the conclusion of any geophysical survey, EPA requests that whatever report is generated be submitted to EPA as a secondary document under the FFA. This would include any recommendations for additional work.

APPENDICES

The appendices provided here are very general and do not provide the reader with a clear idea of the procedures to be implemented for each type of data collection activity. EPA does not intend to review and/or approve Baker's "Standard Operating Procedures" when EPA Region IV has an SOP that is already accepted and in use Region-wide.

The EPA Region IV SOP is to be utilized for all investigations conducted under the Federal Facilities Agreement.

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