UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
1235 MISSION STREET
SAN FRANCISCO, CA 94103

01 AUG 1990

Mr. Stephen Chao
Department of the Navy
Western Division Naval Facilities
Engineering Command
900 Commodore Way, Building 101
San Bruno, CA 94066-0720

Dear Mr. Chao:

Please find enclosed the Environmental Protection Agency's (EPA) comments to the Draft Action Memorandum for Site 12, Fire Fighting Training Area and Site 14 Fuel Storage Area. Although the documents are entitled Draft Action Memorandum (AM), EPA evaluated the submittals as a combined Engineering Evaluation/Cost Analysis (EE/CA) and AM to support a removal action.

The primary objective for Naval Air Station Moffett Field (NASMF) removal action is source control to support an areawide groundwater remediation effort. At a minimum, the EE/CA-AM for sites 12 & 14 should commit to additional field work to identify any plume that may exist and sufficient characterization of the hydrogeology to undertake groundwater source control. Full characterization and final disposition of the sites will be addressed in the remedial investigation and feasibility study (RI/FS) that will culminate in a Record of Decision (ROD).

If you have any questions please contact me at (415) 744-1996.

Sincerely,

Lewis Mitani

Lewis Mitani
Remedial Project Manager

enclosure

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Comments to Site 12 Fire Fighting Training Area
Draft Action Memorandum

General Comments

1. Appendix A

An explanation why only three VOC compounds (2-Butanone, Acetone, and Methylene Chloride) are presented in Appendix A. Are these the only VOC compounds analyzed in previous investigations? All existing data for site 12 reviewed for the preparation of this document should be presented in Appendix A or as Tables in the text.

Also, Appendix A contains an ARAR column. This column should include MCLs, were available, for the compounds listed in each table.

2. Existing Data

The report states that existing data on site 12 was used to determine contaminants of concern and the recommended removal action for site 12. However this data does not characterize the vertical or lateral extent of contamination, nor does it characterize the most likely areas of contamination. No sampling has been performed in the burn pit, soil samples around the pit were collected at shallow depths of five feet, and no surface soil samples were collected.

This data is insufficient to adequately determine contaminants of concern. The selected removal action, "No Action", is an inappropriate alternative due to the gaps in existing site 12 data.

It is recommended that the data being generated from the removal action field investigation at site 12, be used to determine contaminants of concern as well as the preferred removal action. The text in this report should be changed to reflect the above.

3. Dioxin

The removal action field investigation at site 12 should include Dioxin analysis for soil samples.

Specific Comments

1. Page 1, Paragraph 2, Sentence 1.

The text should indicate that this report is a Draft Action Memorandum.

2. Page 5, Paragraph 3.

This paragraph should define source control and describe the purpose for performing such an activity at site 12.

3. Page 6, Paragraph 3, Last Sentence.

The location of the subsurface feedline and its integrity should be determined during the field investigation for this removal action. A statement should address this determination in Section 2.6.1 of this report.

4. Page 6, Paragraph 5, Sentence 2.

The catch basin should be identified on Figure 3

5. Page 10, Paragraph 3, Sentence 3.

The drainage depression and area of runoff should be shown on Figure 3.

6. Page 11, Paragraph 2, Sentence 1.

The depth to, and thickness of, the various aquifers and confining layers, if known, should be described in this paragraph.

7. Page 13, Paragraph 1, Sentence 1.

Transect lines should be shown on a separate figure, which should follow Page 13.

8. Page 13, Paragraph 1, Sentence 3.

This paragraph or a table should state VOC ambient concentrations for soil gas at site 12. Also, on page 13, second paragraph, last sentence, the text indicates that the head data is from March 1987, while the figure reports March 1989.

9. Page 13, Paragraph 3.

According to Appendix A, 2-Butanone was detected above reportable detection limits and the compound was also found in the trip blanks in borings SB12-6 and SB12-7. This sentence should be added to paragraph 3.

10. Page 13, Paragraph 3, Sentence 5.

The sentence "These compounds were not detected in samples collected at 3 or 5 feet bgl" should continue with "from SB12-09 above detection limits."

11. Page 13, Paragraph 3, Sentence 6

Sentence 6 is not supported by data, due to the absence of samples from inside the pit, the relatively shallow depth of samples collected to date, the lack of surface soil data, and the uncertainty of contamination around the tank and feedline. This sentence needs to address these data gaps. The vertical and lateral extent of contamination at site 12 remains unknown.

12. Page 15, Figure 5.

The figure should show the data on which the contours were based.

13. Page 16, Paragraph 2.

A separate table or figure showing soil sample concentration above background soil values for metals should be included in this section. Also, were surface soil samples collected? Evaluation of soil values from site 12 would be easier if background soil concentrations were established for NAS Moffett. It is suggested that collection of background soil samples and surface soil samples be collected and analyzed under the field investigation for the removal action at site 12.

14. Page 16, Paragraph 2, Sentence 6.

The high concentration of metals found in SB12-2 and SB12-12 may not be artifacts of sampling or analysis but localized hot spots.

15. Page 16, Paragraph 2, Sentence 7.

Due to the unknown vertical and lateral extent of potential contamination at site 12 (i.e. no analytical data on the pit, the shallow depth of soil sampling, and no analytical data for surface soil) soil samples collected in the removal action field investigation should be sampled for all metals not just copper and zinc. The text needs to be revised.

16. Page 16, Paragraph 2, Sentence 1.

Although PCBs and Tetraethyl lead were not detected in samples collected, these compounds were not consistently analyzed at 1, 3, and 5 feet for each boring presented in Appendix A.

17. Page 16, Paragraph 2, Sentence 2.

What is the significance of 1 mg/Kg ?

In addition, BNAs and tentatively identified compounds were detected at estimated values below the 1-foot level in all borings shown in Appendix A. This sentence should be revised.

18. Page 16, Paragraph 4, Sentence 6.

The sump should be located on figures 8 and 9.

19. Figure 8 and 9.

The basis for establishing the extent of contamination should be discussed in more detail in the text. How does MW12-3(A) "define" the limit of contamination, since it contains significant levels of TPH.

20. Page 21, Paragraph 1.

Even though blank contamination existed this sentence should state that methylene chloride concentrations were detected above quantification limits listed in Appendix A.

A statement regarding analytical results of metals should be added to this paragraph.

In addition, a statement is needed clarifying the presence of unknown BNAs in all three wells, not just the upgradient wells.

21. Page 21, Paragraph 2, Last Sentence.

This sentence is vague and should be changed to state that BNAs, specifically methylene chloride were detected in the groundwater at concentrations above the quantification limits.

22. Page 21, Paragraph 3, Sentence 1.

This statement is not supported by any data presented in the document. Due to the presence of TPH at elevated levels in the soil there is a potential to impact groundwater. Performance of a vadose flux model on the site would assist in determining the potential migration of contaminants. This would provide a qualitative assessment of the potential environmental impact. This sentence should be revised. The method for determining the average concentration (800 mg/Kg) of the soil, and the data points used to compute that average, should be discussed.

23. Page 21, Paragraph 3, Sentence 2.

Methylene chloride was detected above its detection limit in the groundwater at site 12. Although this compound may be a laboratory contaminant, that does not mean that no compounds were detected in the groundwater. This sentence should be rewritten to reflect the above.

24. Page 22, Paragraph 1, Sentence 1.

The report cites no data, such as data generated from a potential receptor survey or flux modeling, which would provide a qualitative assessment of the exposure potential of site 12. The sentence needs to be rephrased to state the potential exposure from site 12 contaminants is unknown due to lack of exposure data (i.e. surface soil concentrations).

25. Page 22, Paragraph 1, Sentence 2.

Airborne exposure pathways may be important if contaminants exist in the surface soil. No surface soil data is presented in the report. If no surface soil data is available then it is unknown whether the air is an exposure pathway at site 12. This sentence should be revised.

26. Page 22, Paragraph 2, Sentence 2.

See above comments 22, 24, and 25.

27. Page 22, Paragraph 2, Last Sentence.

How will a "no further action" alternative expedite the remediation of the area wide VOC groundwater plume.

28. Page 22, Paragraph 4, Sentence 1.

Sentence 1 contains assumptions on exposure and extent of contaminants which are based on existing data that do not sufficiently characterize site 12. For example, soil and groundwater of the pit at site 12 have never been sampled, this is the most likely area for soil and groundwater contamination. Sentence 1 needs to be revised.

29. Page 22, Paragraph 4, Last Sentence.

This sentence is confusing. This Draft AM is addressing source control (i.e. removal actions). The no action alternative is normally used for comparative purposes only in removal alternative assessments. It is unclear why an assessment is being performed if no action is warranted. This sentence needs further clarification.

Data from the ongoing field investigation may indicate removal actions are warranted. This paragraph should be revised.

30. Page 23, Paragraph 2, Sentence 5.

During this field effort will surface soil samples be collected and analyzed?

31. Page 25, Paragraph 2, Sentence 3.

Will the deepest sample collected be a 11 feet or at the upper portion of the silty clay layer (10 feet). Clarification is needed.

32. Page 25, Paragraph 1, Last Sentence.

Soils samples should be analyzed for VOCs, BNAs, metals, TPH, PCBs, and dioxin. This sentence should include dioxin analysis.

33. Page 28, Paragraph 3.

This report should not address contaminants of concern for the entire NAS Moffett Field. This paragraph should be deleted.

34. Page 29, Paragraph 1, 2, and 3.

See above comment 33.

35. Page 29, Section 3.4.1.

It seems inappropriate to identify contaminants of concern prior to adequate site characterization. Especially, since no soil samples have been collected from the burn pit. Analysis of these samples may detect additional contaminants, for example dioxin.

Based on existing data TPH is the only compound, which has been sufficiently characterized to perform a technology assessment. The presence and extent of the remaining compounds detected at site 12 (BNAs, VOCs, and metals) need further characterization prior to determining if they are contaminants of concern. Also, background levels for naturally occurring compounds have not been established.

If these compounds are found at levels above chemical specific ARARs or at levels which will adversely effect human health and the environment, they will need to be addressed in this action memorandum.

Contaminants of concern should be identified after data from the removal action field investigation is complete.

The section and the text on pages 30, 31, 32, 33, and the first two paragraphs of page 34 should be rewritten with text similar to the above paragraphs.

36. Page 36, Last Paragraph.

The TPH soil standards, based on the recommendations of the South Bay Toxics Cleanup Division, are not ARARs, they are TBCs (To Be Considered). A TBC is a non-promulgated advisory or guidance issued by the Federal or State government that are not legally binding and do not have the status of an ARAR.

In some instances TBCs are considered with ARARs as part of a site risk assessment and may be used in determining the necessary level of clean up for protection of human health and the environment.

The text in this paragraph and Table 2 should be changed to reflect the TBC designation for the guidelines of TPH in soil.

37. Page 38, Paragraph 4, Sentence 1.

To meet the primary objective of this removal action the tank and sump at site 12 should be removed. This activity is not addressed in Section 4.1 or Section 6. In addition, the ongoing field investigation does not address the removal of these items. This paragraph should be revised.

38. Page 39, Paragraph 1.

This paragraph should be rewritten to reflect the following:

TPH is the only compound whose presence and extent of contamination is sufficiently characterized to allow for an evaluation of a removal action technology.

Other compounds detected at site 12 need further investigation. Data generated for these compound from the removal action field investigation at site 12 will be evaluated to determine if these compounds are contaminants of concern and incorporated in to this draft action memorandum.

39. Page 39, Paragraph 1, Last Two Sentences.

The text on page 25 states that soil and groundwater samples from the on-going field investigation will be analyzed for VOCs, BNAs, metals, TPH, and PCBs, this needs to be stated in this paragraph. The AM will have to be revised if any of the compounds are found at elevated levels. Also add the dioxin analyte to the above list.

40. Page 40, 1st Bullet, Sentence 2.

No data showing non detects for benzene in soil is provided in appendix A. All data used to evaluate site 12 should be included in appendix A.

41. Page 41, Paragraph 3, Sentence 2.

This report is for site 12 not site 14.

42. Page 47, Paragraph 6, Sentence 3 and 4.

The text on page 25 state that samples collected during this investigation will be analyzed for metals, VOCs, and BNAs. Analysis should also include dioxin. The text needs to state if the on-going field investigation indicates elevated levels of any of the above compounds exist at site 12 alternatives will have to be screened and the AM will have to be revised.

Also the sentences refer to ARARs which is incorrect, these are TBCs. The text needs to be revised.

43. Page 48, Paragraph 1, Sentence 3.

Existing data on the presence and extent of contaminants at site 12 is insufficient to make such an assumption. This sentence should be removed.

44. Page 48, Paragraph 3, Sentence 3.

There is no soil ARAR of 100 mg/Kg for TPH, this is a TBC. The text needs to be changed.

45. Page 68, Section 8.

The text on pages 68, 70, and paragraphs 1 and 2 on page 71 can be deleted and replaced with a reference. All this text has been presented in Section 2.

46. Page 71, Paragraph 3, Sentences 1 and 2.

Exposure potential to site 12 may be minimal because it is a restricted area; however, this is an assumption because of the following:

1. No surface soil data is available for site 12. This information would determine exposure potential of the site.

2. No baseline risk assessment data is available to provide a qualitative assessment of the exposure potential.

Both the above items are required for an adequate qualitative exposure assessment for site 12. The text on page 71 should be revised to reflect the uncertainty of potential exposure at site 12.

47. Page 71, Paragraph 4.

Agree with the statements in this paragraph. In addition existing data on site 12 is insufficient to use as a basis for selecting a removal action. The paragraph should include this last statement.

48. Page 73, Paragraph 3.

The report states that TPH remaining in the soil has little potential for environmental or public health impacts. This is an assumption based on existing data which do not adequately

characterize contamination in the soil or groundwater at site 12. The paragraph needs to be revised. The report also states that the volume of contaminated soil is conservatively estimated at 685 cubic yards. There is no data to indicate where the limits of contamination are, so it is unknown if this estimate is conservative. The text should be revised.

49. Page 74, Paragraph 1, Last Sentence.

The selection of this removal action is inappropriate due to the gaps in data of site 12. In addition, the report fails to clearly state how the no action alternative meets the removal action objectives described on page 26. See also general comment 2.

Comments to Site 14 Fuel Storage Area
Draft Action Memorandum

General Comments

1. Heavy Metals

The report does not address the elevated levels of Arsenic, Chromium, and Zinc in the soil at site 14 (see Table 5-2 IT Quarterly Report by IT Corp, March 1989). Since no background soil levels have been established for the Moffett NAS Site it is unknown if these levels are background or due to anthropocentric sources.

2. Regional Plume

The "regional MEW plume" and its relationship to site 14 should be clearly described.

3. VOC Contaminated Groundwater

The report should explain why the VOC contaminated groundwater in the A wells and B1 wells, located within the vicinity of site 14 aquifer are not being addressed by this removal action.

4. No Need for Remedial Action

The report states that once the removal action is performed at site 14 no further remedial measures will be necessary. Does this mean that soil contamination will be remediated? The report should clarify this point. At the very least, the site will have to be revisited in the risk assessment portion of the remedial investigation report through the Record of Decision (ROD).

5. Site Characterization

Throughout the report reference is made that additional site characterization of site 14 is required prior to the initiation of this removal action. It is unclear if this activity will be performed under this removal action or some other remedial response. The report should clarify this point.

6. EE/CA Guidance

If EPA EE/CA guidance is strictly followed the initial screening criteria consists of the following:

Public Health and the Environment

Timeliness
Feasibility
Acceptability

Screening criteria for the final evaluation of removal alternatives consists of the following:

Technical Feasibility
Reasonable Cost
Institutional Considerations
Environmental Impacts.

The document should be revised to follow guidance or an explanation should be added.

7. New Aquifer Designation

Under the new Aquifer designation does this removal action at site 14 intend to address both the A1 and A2 aquifers or just the A1 aquifer. This item needs to be clarified.

Specific Comments

1. Page 5, Top Paragraph, Last Sentence.

This paragraph should briefly describe each phase of the ongoing RI/FS being performed by IT Corporation.

2. Page 5, Paragraph 3.

This paragraph should state the purpose of the source control activities.

3. Figure 3.

Boring B3 should be shown as a monitoring well. Boring GB-28 is not discussed in the text. Direction of groundwater flow should be indicated on Figure 3. In addition, MEW monitoring wells 72(A) and 76(A) should be located on Figure 3.

4. Table 1 and 2.

Table 1 and 2 are confusing. What do the "0"'s mean, are they non detects or detections below instrument detection limits. What do the slashes mean? Table 1 and 2 needs a legend explaining the symbols.

In addition detection limits for constituents of concern and analytical methods need to be reported. Finally, Table 1 and 2 should report other compounds in the groundwater and soil at site 14 which have potentially elevated concentrations. Table 1 and 2 need to be revised.

5. Page 13, Paragraph 4.

The number of samples collected from the ERM borings as indicated in Appendix A do not correspond with the analyses listed in Appendix C. The report should be revised to clearly indicate which intervals were sampled and analyzed.

6. Page 14, Paragraph 3.

The text states that samples were analyzed for BTEX, VOCs and TPH. The tables in Appendix C do not show VOC analyses. Also metals are shown in Appendix C but not discussed in the text. The text and tables should be revised to show all data collected.

7. Page 14, Paragraph 5, last sentence.

The text states that maximum concentrations of BTEX were found in the 15-25 feet interval. The text and tables should show how many samples were collected below 25 feet.

8. Page 16, Paragraph 4, Sentence 4.

This sentence should be rephrased to say that " TPH contamination is primarily confined to the A aquifer". Table 2 shows that monitoring well W14-1(B1) contained TPH at 3,900 ppb and monitoring well W14-2(A) contained TPH at 3,800 ppb. Although these values may have been switched as reported in the table, the values suggest that TPH compounds may have migrated into the B aquifer.

9. Page 16, Paragraph 5, Sentence 4.

Benzene concentrations found in W14-2(A) also exceed maximum contaminant levels (MCLs). Tables showing MCLs and DHS quality criteria for the constituents of concern should be reported in section 2.

10. Page 16, last paragraph.

The first sentence is confusing. VOCs (BTEX) are reported in the A aquifer as described in the paragraph preceding this one. This discrepancy should be corrected. A table showing the results of VOC analyses should be included in the appendices.

11. Page 18, Top Paragraph, Last Sentence.

VOCs were detected in the A aquifer at concentrations above MCLs. The February 1990 Moffett Quarterly report shows 160 ppb of 1,2 Dichloroethane (DCA) in monitoring well W14-02(A). the MCL for DCA is 5 ppb.

12. Page 18, Paragraph 4, Sentence 5.

The "other potential contaminant release sources" for site 14 should be described in this paragraph.

13. Table 3.

The use of TOC is not clear. Does TOC mean Top of Curbing, Top of casing, or both? This discrepancy should be corrected.

14. Pages 18 and 22, Section 2.4.1.

The discussion of soil contamination is incomplete and the conclusions are unsupported by data. The text states that most TPH and BTEX concentrations were detected in the 15-25 ft interval and that vertical contamination may not extend deeper than 25 feet. Only one sample was collected below 25 feet and it contained 340 ppm of TPH. The depth of contamination has not been defined. The text also compares a sample collected at a depth of 17 feet in B8 with a sample collected at 18 feet in B1 and concludes that contamination levels are decreasing significantly with distance from the tanks. The document should contain cross sections showing the areas of subsurface soil contamination related to the tanks. The lateral extent has not been defined.

15. Page 22, Paragraph 4, Sentence 2.

If shallow boring data is available it should be reported, including the interval sampled, in Appendix D.

16. Page 22, Bottom Paragraph.

Is the "assumed flow rate 1.47 to 2.38 feet per day the "nonincluded flow rate (1.5-2.4 feet per day) shown in the above paragraph? The numbers on the assumed flow rate need to be rounded off.

17. Page 23, Top Paragraph.

Will the additional investigations required to define the vertical and lateral extent of contamination at site 14, be performed under this removal action. If this is the case the report needs to describe the objective, rationale, and approach of the characterization effort. If such activities are not within the scope of this removal action how will the Navy ensure that appropriate characterization will be performed prior to commencement of the removal activities. This item needs further clarification.

18. Page 23, Paragraph 2, Sentence 2.

Please show trendlines indicating that TPH contamination in well W14-1(B1) is not present.

19. Page 23, Section 2.4.3.

The conclusions should be revised to indicate that depth and lateral extent of contamination have not been well defined. See also comment 14.

20. Page 23, Paragraph 5, Sentence 3.

Although TPH contamination in the groundwater at site 14 appears to be primarily confined to the "A" aquifer, there is a potential for contamination in the A aquifer to migrate to the lower aquifers which are potential drinking water sources. This report states that the A and B1 aquifers are hydraulically connected. In addition the data in Table 2 suggest migration may have already taken place, monitoring wells W14-01B(1) contains low levels of TPH. The potential to impact potential drinking water sources, if no action is performed at site 14, should to be added to this paragraph.

21. Page 23, Last Paragraph, Sentence 2.

There are no MCLs for toluene, only an MCL goal of 2000 ppb.

22. Page 24, Paragraph 2, Last Sentence.

The TPH contamination in the B1 aquifer in monitoring well W141(B1) indicates that low levels of TPH compounds may have migrated into the B1 aquifer. Sentence 2 should be rephrased to state that TPH contamination at site 14 is primarily localized in the A aquifer. The data do not suggest that it is totally restricted to the A aquifer. Presence of TPH in W14-01(B1) reveals a removal action is appropriate.

23. Page 25, Last Paragraph, Sentence 3 and 4.

The "regional groundwater contamination plume(s)" should be identified on a figure to show its relationship to site 14.

24. Page 25, Paragraph 1, Sentence 3.

It appears that low levels of TPH have already migrated into the B1 aquifer at monitoring well W14-01(B1), see Table 2.

25. Page 25, Last Paragraph, Last Sentence.

This statement implies that the removal action will sufficiently clean-up site 14 so that "no further remedial action will be needed .....". Therefore the removal action objective is not only source control but also cleanup of site specific contamination (i.e. soil and groundwater). This sentence should be clarified with the removal action objectives. This site will have to addressed in the risk assessment portion of the RI/FS and the final disposition of the site will addressed in a ROD.

26. Page 26, Paragraph 2.

Although site 14 is primarily contaminated with TPH and BTEX there are chlorinated compounds in the A aquifer. In monitoring well 14-02(A) 1,2 Dichloroethane was detected at 110 ppb (March 1989 Quarterly Report, Moffett NAS) and at 160 ppb (February 1990 Quarterly Report, Moffett NAS). The MCL for this compound is 5 ppb. The report does not address how this contamination will be controlled or whether it is part of the regional plume? This item should be clarified.

27. Table 4.

Other VOC compounds detected in the groundwater for site 14 should be included in this table. Also the MCL for benzene is 1 ppb not 5 ppb as reported in the table.

28. Page 30, Bottom Paragraph.

The source control goals at site 14 should emphasize contaminated soils. Contaminated soils are the most likely source for groundwater contamination at site 14. The first sentence of this paragraph should read " The source control goals for the site include controlling and removing contaminants in the groundwater and soil....."

29. Page 32, Paragraph 5, Sentence 1.

These are removal alternatives not remedial ones.

30. Page 33, Paragraph 1 and 2.

Containment technologies which include capping must, under this removal action for site 14 meet ARARs. For a Cap to be considered a containment technology it must meet permeability specifications which have been developed to protect groundwater.

Under Federal RCRA requirements, RCRA containment technologies such as caps are required to have a permeability less than or equal to the permeability of natural underlying soil. State of California permeability specifications for top liners is 1 X10-7 cm/sec (Title 23, section 67281).

Although these ARARs are not applicable to the situation at site 14 they maybe relevant and appropriate because they were developed to prevent the infiltration of surface runoff into underlying soils and groundwater. The containment technology at site 14 should meet the same criteria.

In addition, this containment technology does not prevent vertical or lateral migration of contaminants due to fluctuations in the groundwater table. As the hydrographs (figure 4 and 5) show groundwater levels can fluctuate approximately 2 to 3 feet per year.

31. Page 49, Paragraph 3, Sentences 3,4, and 5.

It appears that soil vacuum extraction is being treated as an option and not as a specific removal alternative or part of an alternative. Soil vacuum extraction should be an alternative or incorporated into alternatives 2 and 3. Contaminated soil is the most likely source of site specific groundwater contamination in the A aquifer. Treatment of soil in conjunction with groundwater treatment will control and reduce the toxicity, mobility and volume of contamination at site 14. Also, see comment 30.

32. Page 49, Paragraph 5.

According to EE/CA guidance the final analysis of alternatives consists of the application of the following selection criteria:

Technical Feasibility
Reasonable Cost
Institutional Considerations
Environmental Impacts

Under the reports selection criteria technical feasibility and costs are addressed. What should be reported is an expanded description of institutional considerations and environmental impacts for each alternative. This is briefly described in the initial evaluation (Section 5). However a more detailed description needs to be reported in section 6.

33. Page 51, Paragraph 1, Last Sentence.

Is additional site characterization being performed under this removal action?

34. Page 53, Paragraph 3.

A figure of a completed extraction well should follow this page.

35. Page 53, Paragraph 5.

The on site handling of discharge water should be more clearly defined. If upon analysis, the discharge water is found to contain compounds at hazardous levels, handling of the liquid needs must be in accordance with ARARs (e.g. RCRA generation and storage requirements).

Is there a sump near site 14? If one is used to store discharge water it needs to be designed such that it too meets ARARs.

36. Page 53, Last Paragraph.

Action specific ARARs, such as RCRA generator and transporter requirements, may need to be implemented if discharge water contains compounds at hazardous levels or with hazardous characteristics. Also, see comment 35.

37. Page 54, Top Paragraph.

The "subsequent discharge system" or discharge options for alternatives 2 and 3 need to be more clearly described.

38. Page 56, Bottom Paragraph.

Section 3.4 is the wrong reference for the MCL summary.

39. Page 59, Paragraph 2.

There is no Section 3.4.3.

40. Page 61, Paragraph 2, Last Sentence.

Reinjection into the aquifer can only take place as long as the treated liquid meets federal and state ARARs. This sentence should be stated in this paragraph.

41. Page 63, Paragraph 3, Sentence 2.

The wrong section is referenced

42. Page 63, Section 6.5.

In situ vapor extraction should not be treated as an option but as an alternative or incorporated into alternatives 2 and 3. The rational for this designation is that the source of groundwater contamination is the contaminated soil at site 14. Controlling groundwater contamination which alternatives 2 and 3 may do, does not address the existing source of contamination.

There is no proof cited in the report that the asphalt covering at site 14 meets ARARs for capping technology. Although it may contain surface soil, such containment does not control vertical or lateral migration of contaminants due to groundwater table fluctuations. See also comment 30.

Furthermore how will contaminated soil be addressed if as the report states no further remedial action at site 14 will be required after removal activities are performed.

43. Page 65, Paragraph 3.

See comment 31.

44. Page 65, Section 6.6.

See comment 30.

45. Page 67, Paragraphs 1 and 2.

See comment 30.

46. Table 15, Bottom Half.

See comment 31.

47. Page 70, Paragraph 6, Sentence 3 and 4.

See comment 30 and 31.

48. Page 71, Paragraph 2, sentence 1 and Paragraph 5, sentence 2

See General comment 5.