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ALAMEDA POINT
SSIC NO. 5090.3

Department of Toxic Substances Control



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700 Heinz Avenue, Suite 200
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Arnold Schwarzenegger
Governor

April 8, 2005

Mr. Thomas L. Macchiarella
Southwest Division Naval Facilities Engineering Command
Attn: Code 06CA.TM
1220 Pacific Highway
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DRAFT FEASIBILITY REPORT, OU-1, IR SITES 6, 7, 8, and 16, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced feasibility report dated December 1, 2004. Our comments including those prepared by the Geological Services Unit (GSU) and the Engineering Services Unit (ESU) are enclosed. The electronic copies of these comments were transmitted to the Navy on March 18, 2005 and April 6, 2005, respectively. Should you have any questions, please contact me at 510-540-3767 or mliao@dtsc.ca.gov.

Sincerely,

Marcia Liao
Remedial Project Manager
Office of Military Facilities

Enclosure

Mr. Thomas Macchiarella

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cc:

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MEMORANDUM

TO: Marcia Liao, Project Manager
Office of Military Facilities
700 Heinz Avenue, Suite 200
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FROM: Michelle Dalrymple, R.G. *Michelle Dalrymple*
Engineering Geologist
Geologic Services Unit

REVIEWED

BY: Stewart W. Black, R.G.
Senior Engineering Geologist
Geologic Services Unit

DATE: March 18, 2005

SUBJECT: REVIEW OF THE DRAFT OU-1 FEASIBILITY STUDY REPORT FOR
OPERABLE UNIT 1, SITES 6, 7, 8, AND 16, ALAMEDA POINT,
ALAMEDA, CA, DATED DECEMBER 1, 2004

ACTIVITY REQUESTED

Per your request the Northern California Geological Services Unit (GSU) has reviewed the *Draft Feasibility Study Report for Operable Unit 1, Sites 6, 7, 8, and 16, Alameda Point, Alameda, California* dated December 1, 2004. The draft Feasibility Study (FS) was prepared by Tetra Tech EM Inc. (Tetra Tech) for the U.S. Department of the Navy (Navy), Naval Facilities Engineering Command, Southwest Division. The GSU has reviewed the document with respect to the geologic and hydrogeologic interpretations. Activities performed for this review included reading the document, reviewing the file for background issues, and reviewing the feasibility study approach.

PROJECT SUMMARY

The draft FS was based on the results of the Remedial Investigation (RI) report for Sites 6, 7, 8, and 16. These sites are part of the Light Industrial Operable Unit (OU) referred to as OU-1. The RI report included site characterization results, human-health and ecological risk assessments, fate and transport discussions, and conclusions and

recommendations for each site. The regulatory agencies provided numerous comments to the draft RI document. These comments and the Navy's response to comments are included as Appendix J of the Final RI document dated November 18, 2004.

As documented in the Final RI report and comments on the Draft RI Report, several data gaps were identified in OU-1 by the Base Closure Team (BCT). Data gaps are areas of incomplete characterization and include site features such as oil-water separators, storm drains and sanitary sewers, as well as media of concern (soil and groundwater). Because the data gaps represent incomplete site characterization, the regulatory agencies agree that the risk assessments performed for the sites most likely underestimate the actual risks. The GSU has been informed that the BCT has agreed to move forward with the FS because remediation at each site is warranted.

GSU has also been informed that the regulatory agencies have requested and the Navy has agreed that the data gaps be carried through the FS and Remedial Design phases and be fully characterized as part of the remedial design. The site characterization approach taken during the remedial design will be as rigorous as that which would be used for an RI. New risk assessments will also be performed for each site after implementation of the selected remedial alternatives that will include the new site data.

The purpose of the FS report is to present the results of the FS process that was performed for Sites 6, 7, 8, and 16. The FS approach was to be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as described in the National Oil and Hazardous Substances Contingency Plan (NCP), Code of Federal Regulations (CFR) (Title 40 CFR Part 300).

The purpose of the FS is to develop and evaluate a range of remedial alternatives that (1) eliminate or reduce human health exposure in soil and groundwater; (2) minimize effects of contaminants on the environment; and (3) are feasible, implementable, and cost effective. The FS process used to develop and evaluate remedial alternatives consisted of the following steps:

- Develop remedial action objectives (RAOs);
- Develop general response actions for each medium to address the RAOs;
- Identify the volume of each affected medium of concern;
- Identify and screen technologies for each general response action to eliminate technologies that are either impracticable or not cost effective;
- Identify and screen process options for each technology;

- Assemble retained process options into alternatives and screen the alternatives; and
- Conduct a detailed analysis of the remaining alternatives using the requirements specified in the NCP.

GENERAL COMMENTS

1. Several data gaps have been identified in OU-1 based on the results of the RI. The BCT has agreed to address data gaps at each of the sites as part of the FS and remedial design phases. Several data gaps are noted and discussed in the FS document. Additional data gaps have been identified in this memorandum by GSU. These additional data gaps have been identified based on GSU's review of the RI. However, as indicated in DTSC's comments presented in Attachment 2 of Appendix K of the Final RI Report, all data gaps cannot be fully identified without additional *evaluation* of the data collected during the RI.

It may be demonstrated through rigorous analysis and presentation of the RI data that additional data gaps do not exist. The GSU appreciates the sample location maps by chemical group that were included in the Final RI Report. However, in order to demonstrate the presence or absence of additional data gaps, please consider preparing soil maps for each site which present detected concentrations that are greater than residential Preliminary Remediation Goals (PRGs) for the 0 to 2 foot, 2.5 to 8 foot, and greater than 8 foot depth intervals. Please indicate those sample locations where detection limits exceeded the residential PRGs. Please also prepare similar maps for groundwater data.

Because the data obtained from the additional site characterization activities (data gap sampling) may significantly affect remedial design considerations, the Executive Summary (ES) and Section 1.0 (Introduction) of the FS report should include a discussion/presentation of data gaps. It is important to lay this information out early in the document to ensure that all concerns regarding data gaps are addressed. It should be stated that the site characterization approach taken during the remedial design will be as rigorous as that which would be used for an RI, and that human health and ecological risk assessments will be performed which will include the new site data.

Please identify in narrative and tabular format the data gaps that were determined for each site based on the Final RI and state the agreement among the BCT that complete characterization of these data gaps will be addressed in the Remedial Design Workplan. Please be advised that all data gaps may not have been identified until rigorous analysis and presentation of the RI data as suggested above is completed.

2. There does not appear to be good hydraulic control at any of the sites. Groundwater flow directions and velocities presented on the various site-specific maps within the document are not consistent from figure to figure (see figures 3-2 through 3-6 and 5-2 through 5-7) and do not represent site-specific groundwater data. The Basewide Groundwater Monitoring Reports for Sites 6, 7, 8, and 16 present interpretations of site-specific flow directions and gradients that differ from those presented in this FS.

Please use site-specific water level data on figures, and provide the source and date of water level data used for groundwater flow directions and velocities. Ensure that data presented for flow directions and velocities are consistent from figure to figure.

3. There has been no demonstrated connection between soil sources and volatile organic compounds (VOCs) in groundwater at Sites 6, 8, and 16. It is the opinion of the GSU that soil sources at these sites represent data gaps. Please provide more information to establish how and where VOCs were introduced to groundwater at each of these sites. Sanitary and storm sewers should be considered as potential historical sources and as preferred pathways for contaminant migration.
4. It is the opinion of the GSU that the FS should specify the proposed scope of additional data gap investigations including sampling locations, methods, and rationale. Without this information, the reviewers cannot concur that all concerns regarding data gaps have been/will be addressed. Information should include number and locations of proposed borings and wells, as well as purpose of each sampling location and proposed analytical suite. Additional details regarding methods and procedures can be provided in the Remedial Design Workplan.

Please include in the respective FS Evaluation sections for each site (Sections 5, 6, 7, and 8) a summary of proposed soil and groundwater sampling to be undertaken to address each of the data gaps identified. Include proposed locations and depths of borings and monitoring wells, as well as the rationale for each sampling location.

5. The terms COC, COPC, and risk drivers are all used in this document but are not defined. It seems that "COC" and "risk drivers" are sometimes used interchangeably. This inconsistent use of terminology is confusing to the reviewer. For example, in Section 3.2.3 (Risk Management Decisions for Site 6) it is stated that no COCs were identified for soil, but in Section 5.1.1 (Chemicals of Concern at Site 6) it is stated that nine COCs were identified for soil (see Specific Comment #35).

Please define the terms COPC, COC, and risk drivers and use them consistently throughout the FS document.

6. The embedded tables in Sections 3.2.3, 3.3.3, 3.4.3, and 3.5.3 entitled *Chemicals Exceeding Screening Levels at Sites 6, 7, 8, and 16*, respectively, are confusing. It appears that only a subset of the chemicals exceeding screening levels are included on these tables (see Specific Comment # 35). Decisions to "not identify chemicals as COCs" based on risk being "within the risk management range" needs to be supported with site data. Where data gaps exist, chemicals detected above screening levels should not be excluded as COCs due to the likely underestimation of risk.

Please revise the embedded tables in the above referenced sections. Please consider adding all constituents that exceeded screening levels based on the results of the RI, their respective risk contribution, and cumulative risk and hazard values by media. It is the opinion of the GSU that chemicals should not be excluded as COCs if data gaps exist.

7. In Sections 3.2.2.1, 3.3.2.1, 3.4.2.1, and 3.5.2.1, it is stated for each of the sites that the either recreational, commercial/industrial, and/or construction worker scenarios are considered the most likely exposure scenarios. The GSU questions the source of this information. The Reuse Plan Map presented in the report entitled *Determination of the Beneficial Uses of Groundwater* (Tetra Tech EM, Inc. July 2000) indicates that the planned future use at Sites 6, 8, and 16 is "mixed-use" which may include residential, recreational, industrial, office space, civic space, research and development space, or open space. Site 7 is designated as "housing." Groundwater at Site 16 has been designated as a potential drinking water source.

Please clarify the basis for the determination of "most likely exposure scenarios." In addition, because each of the sites has residential or potential residential future uses, the risks determined for the residential scenario should be used as the basis for making risk management decisions and establishing remedial action goals.

8. Please explain in the ES and in Sections 5.0, 6.0, 7.0, and 8.0 that the no action alternative is being evaluated as a requirement of the NCP to provide a baseline for comparison. It is not considered to be an alternative that meets the RAOs.

SPECIFIC COMMENTS

1. Executive Summary. The first sentence in the second full paragraph of the ES states that the RI report for Sites 6, 7, 8, and 16 recommended further evaluation to address potential human health risks from soil contamination at Sites 7 and 8, and groundwater contamination at Sites 6 and 16. This statement is not consistent with the Final RI Report recommendation that states that soil and

groundwater at each of the sites are recommended for further evaluation in an FS. Please correct.

In addition, the Tetra Tech RI Report reference (Tetra Tech 2004) used in this paragraph and throughout the FS document should be referring to the Final RI dated November 18, 2004 and not the Draft RI dated February 13, 2004. Please correct this reference.

2. Executive Summary. Please consider adding a table to the ES listing the RAOs, General Response Actions, and Remedial Alternatives that were developed for each media at each site.
3. Section 1.1 – Purpose and Objectives. Please state that it is the opinion of the regulatory agencies that the risks for each site have been consistently underestimated due to data gaps. However, it was agreed that the FS would proceed because it has been determined that remedial action is warranted at each of the sites. It should be noted that the results of additional characterization at each site may increase estimates of soil and groundwater volumes for remediation which may impact time frames for completion and cost.
4. Section 2.3.1 – Site 6 Geology. It is stated that the Bay Sediment Unit (BSU) occurs from approximately 9 to 15.5 feet below the ground surface (bgs) and is thought to be consistent throughout the site. What is the thickness of the BSU across the site, and what data were used to determine that the BSU is consistent throughout Site 6?
5. Section 2.3.3 – Site 8 Geology. It is stated that the BSU occurs from approximately 11 to 15.5 feet bgs and also that it was found discontinuously throughout the site at depths from 9.5 to 13 feet bgs. Please clarify the data interpretations regarding the presence and depth of the BSU at Site 8. What is the thickness of the BSU across the site, and what data were used to determine that the BSU is discontinuous?

The last sentence in the same section states that the clay horizon (BSU?) contains 15 to 80 percent fines and fine sand. If this geologic unit contains only 15 percent fines and/or up to 80 percent fine sand, then it would not be defined as a clay. Please clarify or remove this statement.

6. Section 2.4.2.1 – Site 6 Hydrogeology. It is stated that there is an “east-west groundwater divide north of Site 6.” However, in looking at the site-specific data it appears that this “divide” may actually occur on the northern portion of Site 6. Water level elevations from M06-06 in the central portion of Site 6 have been consistently higher than those from M06-05 which is located on the north central perimeter of the site. If water levels in M06-06 are representative, the site-

specific hydraulic gradient is steeper than that reported, and groundwater flow velocities are higher.

Please use site-specific water level data on figures, and provide the source and date of water level data used for groundwater flow directions and velocities. Ensure that data presented for flow directions and velocities are consistent from figure to figure (see General Comment # 2).

7. Section 3.0 – Remedial Investigation Summary and Recommendations. In the first paragraph, the reference to Section 3.6 (site-specific risk management decisions) should be removed and replaced with the appropriate references. Section 3.6 does not exist.
8. Section 3.2.1 – Nature and Extent Results, Soil (Site 6). The statement that chemicals appear to have been released to soil in the following three areas: (1) near OWS-041 and the solvent dip tank associated with WD-041A, (2) between WD-040 and Building 41, and (3) near the probable location of avionics laboratories, is not substantiated with soil analytical data. Soil samples collected from these areas were mostly non-detect for VOCs, with only a few exceptions. Evidence for these potential source areas are more likely historical land use and groundwater data. However, groundwater plume definition at Site 6 is incomplete and groundwater flow directions, gradients, and velocities are not well established in the RI (see Specific Comment # 6).

Please clarify what the determination of three principal source areas is based on. Because soil sources were not found at Site 6, it is the opinion of the GSU that the source of VOCs in groundwater is a data gap that should be addressed with additional investigation and discussed in this FS.

9. Section 3.2.1 – Nature and Extent Results, Soil (Site 6). The statement that no VOCs were detected in soil samples collected from depths greater than 10 feet bgs is incorrect. Based on data contained in Appendix D of the Final RI Report, the highest concentration for all VOCs detected in soil was from soil boring B06-21 at a depth of 13.5 to 14.5 feet bgs. Please correct this information.
10. Section 3.2.1 – Nature and Extent Results, Soil (Site 6). In the last full paragraph of this section it is stated that OWS-40A and OWS-40B represent data gaps and will be addressed as part of Site 6 in this FS. Please consider adding a reference to the subsequent section in the FS report that provides information on how OWS-040A and OWS-040B are being addressed (See Specific Comment # 34).

11. Section 3.2.1 – Nature and Extent Results, Groundwater (Site 6). In the last paragraph of this section it is stated that VOCs in groundwater at Site 6 appear to be confined to the upper FWBZ. This statement is not founded with sufficient data. The BCT has agreed that additional plume delineation in both the horizontal and vertical directions needs to be performed at Site 6. **Please omit this statement.**

In the same paragraph it is stated that all VOC concentrations are decreasing from historical maximums and there appears to be no continuing source of VOCs at Site 6. While concentrations of VOCs in monitoring wells may appear to have declined, the GSU does not believe that these trends are significant. Fluctuations observed are within expected fluctuations due to sampling and analytical variability. Trends observed are generally not order of magnitude changes. They may merely mean that the plume is shifting. In addition, monitoring wells at Site 6 have not been placed in areas of highest concentration (i.e. near the approximate location of the portable avionics laboratory).

The statement that groundwater plumes are not migrating off-site is also not supported by the current data and monitoring well network. As discussed previously, it has been agreed by the BCT that the VOC plume at Site 6 has not been fully characterized (horizontally or vertically). Additional monitoring wells are needed.

Please add a discussion of data gaps in groundwater. Include OWS-040A and OWS-040B, as these oil water separators will likely require both soil and groundwater investigations. Please also refer the reader to the subsequent section of the FS that addresses groundwater data gaps at Site 6.

12. Section 3.2.2.1 – Human Health Risk Assessment Results, Soil (Site 6). The first sentence of this section states that the recreational, commercial/industrial, and construction worker scenarios are considered the most likely exposure scenarios. The GSU questions the source of this information (see General Comment # 7). Please clarify the basis for determination of “most likely exposure scenarios.”
13. Section 3.2.3 – Risk Management Decisions (Site 6). Please state in the introductory paragraph that Site 6 is designated as “mixed use” and therefore, that the risks determined for the residential scenario will be the basis for making risk management decisions (see General Comment # 7).
14. Section 3.2.3 – Risk Management Decisions, Groundwater (Site 6). It is stated in the second full paragraph on Page 3-13 that groundwater was recommended for further evaluation in this FS to address the risk from TCE in groundwater to the commercial/industrial worker through the vapor intrusion pathway. However, risk

management decisions for Site 6 should be based on potential residential exposure to vapors in indoor air (see General Comment # 7). Please revise this discussion to reflect risk management decisions based on the residential exposure scenario.

15. Section 3.3.1 – Nature and Extent Results, Soil (Site 7). It is stated that aluminum and copper were detected above ambient levels across the site but that these metals are not associated with historical Navy activities. What is the explanation for their presence at elevated levels and how is it determined that they are not related to Navy activities?

It is also stated that PAH concentrations in Site 7 soil are generally low. Please explain what "generally low" means.

16. Section 3.3.1 – Nature and Extent Results, Soil (Site 7). It is stated that the vertical and horizontal boundaries of arsenic, lead, and cadmium in the soil debris area have not been fully defined. It is the opinion of the GSU that the extent of elevated levels of arsenic, copper, and lead outside the soil debris area has also not been fully defined. Please state that the extent of elevated levels of these metals in the soil represents a data gap that is addressed in this FS, and refer the reader to the subsequent section where it is addressed.

17. Section 3.3.1 – Nature and Extent Results, Soil (Site 7). In the last full paragraph of this section it is stated that OWS-459 represents a data gap and will be addressed in this FS. Please consider adding a reference to the subsequent section in the FS report that provides information of how OWS-459 is addressed (see Specific Comment # 37).

18. Section 3.3.1 – Nature and Extent Results, Groundwater (Site 7). The second paragraph on page 3-15 is a discussion of the risk assessment and seems out of place. Please either remove this paragraph or move it to *Section 3.3.2 - Risk Assessment Results*.

In addition, the first sentence of the third paragraph on page 3-15 is meaningless. Please revise.

19. Section 3.3.1 – Nature and Extent Results, Groundwater (Site 7). The GSU disagrees that the extent of PAHs in groundwater at Site 7 has been defined. The Final RI Report states that PAHs were detected above the screening level in groundwater throughout Site 7. The extent of PAHs in groundwater is a data gap and should be addressed in this FS. In addition, the GSU disagrees that there are sufficient data to eliminate arsenic as a site-related groundwater contaminant. Arsenic is a COC for the soil debris area and a potential COC for soil outside the soil debris area.

Please add a discussion of data gaps in groundwater. Include OWS-459 as this oil water separator will likely require both soil and groundwater investigations. Please also refer the reader to the subsequent section of the FS report that addresses groundwater data gaps at Site 7.

20. Section 3.3.2.1 – Human Health Risk Assessment Results, Soil (Site 7). The first sentence of this section (on page 3-16) states that the commercial/industrial and the construction worker scenarios are considered the most likely exposure scenarios. The GSU questions the source of this information (see General Comment # 7). Please clarify the basis for determination of “most likely exposure scenarios.”
21. Section 3.3.3 – Risk Management Decisions (Site 7). Please state in the introductory paragraph that Site 7 is designated as residential housing and therefore, that the risks determined for the residential scenario will be the basis for making risk management decisions. (see General Comment # 6).
22. Section 3.3.3 – Risk Management Decisions (Site 7). The following comments pertain to the embedded table entitled “*Chemicals Exceeding Screening Levels at Site 7*” on pages 3-18 and 3-19:
 - The GSU disagrees that arsenic in soil outside the soil debris area can be eliminated as a COC due to lack of thorough characterization. In addition, the GSU believes that copper and lead should be included as COCs for soil outside the soil debris area due to lack of thorough characterization. The GSU recommends additional soil sampling for arsenic, copper, and lead at Site 7 be included as a data gap.
 - Please include the risk assessment results for benzene. They appear to have been inadvertently left off of the table.
 - The table indicates that the residential cancer risk due to arsenic in the soil debris area is 6E-05. The Final RI for OU-1 indicates that the carcinogenic risk from arsenic in soil is 9E-05. There appear to be other discrepancies in this table between the two documents. (For example, the groundwater HI for arsenic and thallium). Please revise the table to reflect the correct information.
 - Please provide a footnote to the table or some other means to indicate why lead is accepted as a COPC for the soil debris area and groundwater.
 - The GSU disagrees that there are sufficient data to eliminate arsenic as a site-related groundwater contaminant. The incremental cancer risk due to arsenic in groundwater is 2E-03 and the incremental noncancer risk is 8. Arsenic

is a COC for the soil debris area and a potential COC for soil outside the soil debris area. Arsenic should be retained as a COC for Site 7 groundwater in the FS.

- The GSU disagrees that PAHs should not be accepted as COCs for Site 7 groundwater. See Specific Comment # 19.
 - The GSU agrees that thallium concentrations in groundwater have been decreased during recent monitoring rounds. However, it should be noted that thallium will continue to be monitored through the Basewide Groundwater Monitoring Program to determine whether this trend continues.
23. Section 3.3.3 – Risk Management Decisions, Site 7 Soil. The GSU disagrees with the recommendation of no further action for soil at Site 7 (page 3-21). The extent of elevated levels of arsenic, copper, and lead outside the soil debris area has not been defined and represents a data gap. It is recommended that this FS include data gap sampling for metals in areas where elevated arsenic, copper and arsenic were found in soil outside the soil debris area.
24. Section 3.3.3 – Risk Management Decisions, Site 7 Groundwater. The GSU disagrees with the recommendation of no further action for groundwater at Site 7. At a minimum, continued monitoring for PAHs and metals should be performed to determine whether concentrations are increasing or decreasing over time, and whether these contaminants may be migrating off-site. In the second paragraph on page 3-21, it is hypothesized that PAHs will desolubilize from the groundwater once the TPH removal action is complete. This hypothesis needs to be supported with actual site data.
25. Section 3.4.1 – Nature and Extent Results, Soil (Site 8). In the last full paragraph of this section it is stated that OWS-114 represents a data gap and will be addressed as part of Site 8 in this FS. Please consider adding a reference to the subsequent section in the FS report that provides information on how OWS-114 is addressed (see Specific Comment #39).
26. Section 3.4.1 – Nature and Extent, Groundwater (Site 8). The GSU does not agree that benzene concentrations in groundwater are decreasing from historical maximums. The most recent sample collected from east perimeter monitoring well M08-06 (November 1998) had the highest result for benzene (58.3 µg/l) indicating that concentrations in this well may be increasing. In addition, the sample collected from north perimeter monitoring well M08-03 in June 2004 indicated that the benzene concentration in this well is also increasing. Fluctuations observed in benzene concentrations are within expected fluctuations due to sampling and analytical variability. They may also represent changes due

to plume migration. In addition, monitoring wells at Site 8 may not have been placed in areas of highest concentration.

It is the opinion of the GSU that additional monitoring wells need to be installed at Site 8 to address data gaps with respect to benzene and possibly TCE and 1,4-dioxane in groundwater. Please also indicate in this section that OWS-114 represents a data gap and will require both soil and groundwater investigations.

27. Section 3.4.2.1 – Human Health Risk Assessment, Soil (Site 8). The first sentence of this section states that the recreational, commercial/industrial, and construction worker scenarios are considered the most likely exposure scenarios. The GSU questions the source of this information (see General Comment # 7). Please clarify the basis for determination of “most likely exposure scenarios.”
28. Section 3.4.3 – Risk Management Decisions (Site 8). Based on GSU’s review of the RI, the data at Site 8 were not deemed suitable for risk assessment purposes due to elevated detection limits. The GSU recommended additional monitoring wells be installed in the heart of the benzene plume. This concern represents a data gap that should be addressed in this FS. Due to incomplete site characterization, the GSU does not concur with the risk management decision that benzene and TCE are not groundwater COCs. **Please retain benzene and TCE as groundwater COCs.**
29. Section 3.5.1 – Nature and Extent Results, Soil (Site 16). The second paragraph under the *Soil* subsection on page 3-28 discusses groundwater contamination. It is unclear why there is a discussion of groundwater in the subsection on soil. **Please move this discussion to the subsection on groundwater.** Also, in this paragraph, it is stated that “natural processes are slowly degrading the VOCs.” This statement needs to be supported with scientific evidence.

The fourth paragraph under the *Soil* subsection discusses the results of the risk assessment and also seems out of place. **Please move this discussion to the appropriate section.**

There is insufficient discussion of soil contamination in this subsection of the FS report. It is stated that chemicals were released to soil in two principal areas but the chemicals present, extent, and levels are not discussed. It is not possible to evaluate the risk management decisions for soil in Section 3.5.3 without this information. **Please provide a summary of the soil data for Site 16 so that the reviewer can understand the concerns with soil and the basis for risk management decisions.**

30. Section 3.5.1 – Nature and Extent Results, Soil (Site 16). In the last full paragraph of this section it is stated that OWS-608A and OWS-608B represent a data gap and will be addressed in this FS. Please consider providing a reference to the subsequent section in the FS report that provides information on how these oil water separators are addressed (see Specific Comment # 42).
31. Section 3.5.2.1 – Human Health Risk Assessment Results, Soil (Site 16). The first sentence of this section states that the commercial/industrial and the construction worker scenarios are considered the most likely exposure scenarios. The GSU questions the source of this information (see General Comment # 7). Please clarify the basis for the determination of “most likely exposure scenarios.”
32. Section 3.5.3 – Risk Management Decisions (Site 16). Please state in the introductory paragraph that Site 16 is designated as “mixed use” and therefore, that the risks determined for the residential scenario will be the basis for making risk management decisions (see General Comment # 7).
33. Section 4.0 – Feasibility Study Approach. The first paragraph of Section 4.0 is incomplete with respect to data gaps. Please expand this discussion to include a comprehensive list of data gaps identified by the regulatory agencies.
34. Section 5.1 – Remedial Action Objective Development for Soil and Groundwater at Site 6. It is stated that the general response objectives for soil at Site 6 are to determine whether soil adjacent to OWS-040A and OWS-040B contain contaminants at concentrations that exceed their respective residential PRGs, and to prevent human exposure to any such soils. Is it true that residential PRGs will be used for metals and TPH?

Please add that another general response objective for soil is to prevent it from acting as a continuing source of contaminants to groundwater. Also include a discussion of data gaps for groundwater adjacent to OWS-040A and OWS-040B. State that 1,4-dioxane will be added to the list of analytes for the additional soil and groundwater characterization due to the presence of TCE.

Information on the proposed methods for evaluating these data gaps including approximate numbers, locations, and depths of borings and wells, as well as rationale for each sampling point should be provided in this section (see General Comment # 4).

35. Section 5.1.1 – Chemicals of Concern (Site 6). The term COCs should be defined and used consistently throughout the document. In this section, nine chemicals are identified as COCs for soil at Site 6. However, in Section 3.2.3 – *Risk Management Decisions*, it is stated that no COCs were identified for soil at

Site 6. Further, it is stated in Section 5.1.1 that 2 of the 9 COCs identified for soil (arsenic and PAHs) are not evaluated further in this FS. However, these are the only two COCs that are listed in the table of *Chemicals Exceeding Screening Levels at Site 6* on pages 3-10 and 3-11.

Similarly for groundwater, seven COCs are identified in Section 5.1.1 while four are identified in Section 3.2.3, and six are presented on the table of *Chemicals Exceeding Screening Levels at Site 6* on pages 3-10 and 3-11.

This inconsistent use of terminology and presentation of information is confusing and should be corrected (see General Comments # 5 and 6).

36. Section 5.1.4 – Remediation Goals and Section 5.1.5 Remedial Action Objectives (Site 6). Based on the potential future use designation of Site 6 as potential residential, remediation goals should be based on unrestricted use (see General Comment # 7). It should be noted that a risk assessment will be performed using the additional data obtained from the site as a result of data gap sampling, and based on the results, remediation goals and remedial action objectives may be revised.
37. Section 6.1 – Remedial Action Objectives for Site 7. It is stated that the general response objectives for soil at Site 7 are: 1) to prevent dermal contact and ingestion of the contaminated soil from the soil debris area that contains arsenic, cadmium, and lead at concentrations that pose risk to human health, and 2) to prevent human exposure to soil adjacent to OWS-459 that is found to exceed residential PRG concentrations for VOCs, SVOCs, metals, pesticides, PCBs, and TPH. Is it true that residential PRGs will be used for metals and TPH?

Please add that soil outside the soil debris area will be sampled to determine the extent of arsenic, copper, and lead that was identified as a data gap (see Specific Comment # 16). Include that another general response objective for soil is to prevent it from acting as a continuing source of contaminants to groundwater. Also include a discussion of data gaps for groundwater adjacent to OWS-459.

Information on the proposed methods for evaluating these data gaps including approximate numbers, locations, and depths of borings and wells, as well as rationale for each sampling point should be provided in this section (see General Comment # 4).

38. Section 6.1.1 – Chemicals of Concern (Site 7). It is stated that based on the results of the RI, arsenic, cadmium, and lead are the only COCs in soil at Site 7 (soil debris area only). The GSU disagrees with this statement. Elevated levels of arsenic, copper, and lead were found in soil outside the soil debris area. The

extent of these metals in soil has not been delineated and represents a data gap (see Specific Comment # 16). In addition, it is the opinion of the GSU that arsenic and PAHs in groundwater should be considered COCs at Site 7 (see Specific Comment # 19).

Please add text to inform the reader that elevated levels of metals and PAHs in groundwater at Site 7 will be monitored through the Basewide Groundwater Monitoring Program.

39. Section 7.1 – Remedial Action Objective Development for Site 8. It is stated that the general response objectives for soil at Site 8 are: 1) to prevent dermal contact and ingestion of Aroclor-1254, Aroclor-1260, dieldrin, and lead contaminated-soil that pose risk to human health, and 2) to prevent human exposure to soil adjacent to OWS-411 that is found to contain VOCs, SVOCs, metals, pesticides, PCBs, or TPH at concentrations that exceed their respective PRG concentrations. Is it true that PRGs will be used for metals and TPH?

Based on data gaps identified for benzene, TCE, and 1,4-dioxane in groundwater, please include a discussion of general response objectives for groundwater. Also include a discussion of data gaps for groundwater adjacent to OWS-411.

Information on the proposed methods for evaluating these data gaps including approximate numbers, locations, and depths of borings and wells, as well as rationale for each sampling point should also be provided in this section (see General Comment # 4).

40. Section 7.1.1 – Chemicals of Concern (Site 8). It is stated that based on the results of the RI, Aroclor-1254, Aroclor-1260, dieldrin, and lead are the only COCs in soil requiring remedial action at Site 8. No COCs are identified for groundwater. The GSU disagrees that soil COCs are the only COCs at Site 8 due to incomplete characterization of VOC sources and groundwater contamination (see General Comment # 3 and Specific Comment #'s 26 and 28). Please include benzene, TCE and 1,4-dioxane as COCs for Site 8 groundwater.
41. Section 7.1.4 – Remediation Goals and Section and 7.1.5 Remedial Action Objectives (Site 8). Based on the future use designation of Site 8 as potential residential, remediation goals should be based on unrestricted use (see General Comment # 7). It should be noted that a risk assessment will be performed using the additional data obtained from the site as a result of data gap sampling, and based on the results, remediation goals and remedial action objectives may be revised.

42. Section 8.1 – Remedial Action Objective Development for Soil and Groundwater at Site 16. It is stated that the general response objectives for soil at Site 16 are to determine whether soil adjacent to OWS-608A and OWS-608B contain contaminants at concentrations that exceed their respective residential PRGs, and to prevent human exposure to any such soils. **Please add that another general response objective for soil is to prevent it from acting as a continuing source of contaminants to groundwater. Also include a discussion of data gaps for groundwater adjacent to OWS-608A and OWS-608B. Please state that 1,4-dioxane will be added to the list of analytes for the additional soil and groundwater characterization.**

Information on the proposed methods for evaluating these data gaps including approximate numbers, locations, and depths of borings and wells, as well as rationale for each sampling point should be provided in this section (see General Comment # 4).

43. Section 8.1.4 – Remediation Goals and Section 8.1.5 Remedial Action Objectives (Site 16). Based on the future use designation of Site 16 as potential residential and the designation of groundwater at Site 16 as a potential drinking water source, remediation goals should be based on unrestricted use (see General Comment # 7). It should be noted that a risk assessment will be performed using the additional data obtained from the site as a result of data gap sampling, and based on the results, remediation goals and remedial action objectives may be revised.

COMMENTS ON FIGURES

1. Figures 2-3 and 2-4. Please provide the groundwater elevation datum on Figures 2-3 and 2-4. Please note that groundwater flow direction should be perpendicular to potentiometric surface contours and revise as appropriate.
2. Section 3 Figures. Please use site-specific figures and data presentation that is consistent with the figures that have been provided in the Final RI Report.

If you have any questions, please feel free to contact me at (510) 540-3926 or via e-mail at mdalrymp@dtsc.ca.gov.



Department of Toxic Substances Control

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Arnold Schwarzenegger
Governor

MEMORANDUM

To: Marcia Liao
Project Manager
Office of Military Facilities
Berkeley Office

Via: *for* John Hart, P.E. *Wingwan Chang*
Chief, Engineering Services Unit

From: *for* Mark Berscheid *Wingwan Chang*
Hazardous Substances Engineer
Engineering Services Unit

Date: March 21, 2005

Subject: DRAFT FEASIBILITY STUDY REPORT FOR OPERABLE UNIT 1,
SITES 6, 7, 8, AND 16, ALAMEDA POINT, ALAMEDA, CALIFORNIA

This letter addresses conclusions and recommendations related to my review of the Draft Feasibility Study Report (FS) for Operable Unit 1 Sites 6, 7, 8, and 16, Alameda Point, Alameda, California. The FS has been prepared for the Department of the Navy (DON) by Tetra Tech, Inc., San Diego, California.

SUMMARY/ RECOMMENDATIONS

The Engineering Services Unit (ESU) has found that the FS has chosen the most appropriate treatment technologies for evaluation of both soil and groundwater contamination at these sites. However, based on the need for further remedial investigation activities to adequately define the complete areal and vertical extent of soil and groundwater contamination, it would appear that the sets of treatment technologies chosen for evaluation in the FS, specifically those addressing soil contamination, may be incomplete (i.e., Land use control) if additional contamination at greater concentrations is found to be present.

Based on the limited extent of site characterization information for multiple soil and groundwater contamination sources presently available, the ESU recommends the issuance and review of an additional draft FS that can address these remedial investigation deficiencies.

Marcia Liao
March 21, 2005
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Although additional site characterization information may support the addition of soil or groundwater treatment alternatives to the FS evaluation process, the ESU has found that the cost estimates for the soil and groundwater alternatives evaluated by the FS to be fully adequate for the purposes of a detailed analysis of alternatives.

An ESU review of cost estimating details in Appendix C, Remedial Action Alternatives Cost Summary Sheet, has found agreement with the individual cost estimate assumptions and methodology used in development of cost estimates.

The ESU recommends the application of the same type of detail for cost estimation of any additional treatment alternatives to insure the cost information found in Appendix C can be appropriately used for detailed analysis of screened treatment alternatives.

If there are any questions, please contact me at (916) 255-6672.

BRAC OFFICE

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