



Terry Tamminen  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

Edwin F. Lowry, Director  
700 Heinz Avenue, Suite 200  
Berkeley, California 94710-2721



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ALAMEDA POINT  
SSIC NO. 5090.3

December 5, 2003

Ms. Glenna Clark  
Department of Navy  
Southwest Division  
Naval Facilities Engineering Command  
1230 Columbia Street, Suite 1100  
San Diego, CA 92101

### **DRAFT FOCUSED GROUNDWATER FEASIBILITY STUDY REPORT, OPERABLE UNIT 6, SITE 26, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

Dear Ms. Clark:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document dated September 4, 2003. Our comments are attached. Should you have any questions, please contact me at 510-540-3767.

Sincerely,

Marcia Liao, Ph.D., CHMM  
Remedial Project Manager  
Office of Military Facilities

Enclosure

Ms. Glenna Clark  
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cc: Thomas Macchiarella, SWDiv  
Greg Lorton, SWDiv  
Anna Marie Cook, EPA  
Judy Huang, RWQCB  
Elizabeth Johnson, City of Alameda  
Peter Russel, Northgate Environmental  
Jean Sweeney, RAB Co-Chair  
Lea Loizos, Arc Ecology

**DTSC COMMENTS**  
**DRAFT FOCUSED GROUNDWATER FEASIBILITY REPORT**  
**SITE 26**  
**ALAMEDA POINT, ALAMEDA, CALIFORNIA**

**Part I: Comments from Office of Military Facilities (OMF)**

*Scope of Work*

1. Although Section 1 of this Feasibility Study (FS) report indicates that the area southwest of Building 23 is also impacted, references are made throughout the report that this feasibility study concerns the remedial alternatives for “groundwater at IR Site 26” (e.g. ES-1, pages 1-1, 1-2, 2-7 and 3-1). Such references are not exactly correct and may be confusing to readers less familiar with the site.

For clarity and completeness, please state clearly that although this FS focuses on the plume southeast of Building 20, there are other contaminant plumes exist at Site 26 (e.g. plumes at CAA-6 and Building 23) that are subject to petroleum cleanup. Please avoid using general reference of “groundwater at IR Site 26” when discussing remedial alternatives in this report. Also, please indicate clearly that sewer segments south of Buildings 23 are subject to the radiological cleanup program and are therefore not part of this FS.

2. Please note that DTSC does not consider the Navy’s response to DTSC comments on the draft final RI adequate. Of particular concern is the identification of potential areas of concern (AOCs). DTSC withholds concurrence on the scope of this FS at this time.

*General Response Objective and Potential Receptors/Exposures Pathways*

3. It is our understanding that IR Site 26 is zoned for mixed use which means future residential development is possible. Given that the groundwater is shallow (2 to 6 ft below ground surface) and the chemicals of concerns (COCs) are volatile organic compounds (VOCs), it is important that preventing volatilization of VOCs into the indoor air is being considered as one of the general response objectives (Section 3, page 3-1). In addition, the potential receptors/exposure pathways (Section 3.2) should include the indoor air exposure pathway.

*Applicable or Relevant and Appropriate Requirements (ARARs)*

4. Maximum Contaminant levels (MCLs) are potential ARARs because the groundwater at IR Site 26 is still considered Class II aquifer under Federal standards.

5. Please consult the City of Alameda regarding the historical value of buildings on site and make sure potential ARARs related to cultural resources are addressed.

#### *Remedial Action Objectives*

6. Remedial action objectives (RAOs) should specify an acceptable contaminant level for each exposure route. They are quantitative (not qualitative as Section 3.4 suggests) and are usually established in the FS phase to allow meaningful cost analysis and final remedy selection. DTSC disagrees that establishing RAOs is iterative in nature which can be done over the time during the cleanup process.

#### *Monitored Natural Attenuation*

7. With the evidences available to date, DTSC cannot conclude that the contaminant plume at Building 20 is a good candidate for monitored natural attenuation (MNA). Please refer to Parts II and III of DTSC comments for further details.

#### *Land Use Control*

8. Implementing land use control (LUC) by prohibiting groundwater extraction is not expected to prevent vapor intrusion into the indoor air. Given the shallow VOC groundwater plume, if Site 26 remains zoned for mixed use, the LUC measure as proposed is not considered an effective remedy.

#### *Sewer System*

9. The 2001 sewer study recommends that two sewer segments near Building 20 be repaired to prevent infiltration of contaminated groundwater. Please clarify if this repair will be conducted as part of the final remedy.

#### *Ecological Risk*

10. Please revise/expand Section 2.5 to include discussion of ecological risk pertinent to the groundwater plume.

### **Part II: Comments from Geological Services Unit (GSU)**

Please refer to the attached December 4, 2003 memo prepared by Mr. Michael Kenning.

### **Part III: Comments from Engineering Services Unit (ESU)**

Please refer to the attached November 3, 2003 memo prepared by Mr. Mark Bersheid.



Terry Tamminen  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

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Arnold Schwarzenegger  
Governor

### MEMORANDUM

**TO:** Marcia Liao, Ph.D. CHMM  
Hazardous Substances Engineer  
Office of Military Facilities

**FROM:** Michael Kenning, RG  
Engineering Geologist  
Geologic Services Unit

**REVIEWED BY:**

**DATE:** December 3, 2003

**SUBJECT:** Site 26 Feasibility Study, Alameda Point

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6.3, Alternative 2 – MNA/LUCS. One of the assumptions stated under the description of alternative (Section 6.3.1), is that contaminant migration is primarily horizontal and that the underlying BSU aquitard would prevent vertical migration of contaminants to deeper water bearing zones. This is an assumption that has not to GSU's knowledge been verified by collection of water samples from deeper zones. As stated before, the effectiveness of the Bay Sediment Unit (Bay Mud) is unknown at this site. The quantity of contaminants released into the subsurface from broken pipelines, seepage from the wash-down area, and other releases within Site 26 is unknown. Also unknown is the thickness of the Bay Sediment within Site 26 and the occurrence and pervasiveness of sand stringers, shells, worm burrows, and plant roots. GSU recommends at least one well be constructed and screened in the Merritt sand (second water bearing zone) at Building 20.

The Navy proposes quarterly sampling in the six new monitoring wells for one year, then annually for the next 68 years. GSU recommends quarterly sampling for at least one year (preferably two), then semi-annual sampling for the next five years. GSU hesitates to recommend annual sampling at this time. The appropriateness of annual

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at [www.dtsc.ca.gov](http://www.dtsc.ca.gov).*

sampling for selected wells could be evaluated after 5 years of semi-annual sampling. Additional monitoring wells may be necessary to track the plume(s), and some wells may no longer be needed. In such cases the unnecessary wells should be properly abandoned. However, in general, MNA requires more monitoring wells sampled for more constituents of concern (including MNA parameters) than other remedial measures.

#### Appendix D, Groundwater Calculations and Modeling

A sequential, first-order, coupled reactive transport model called BIOCHLOR was used in support of Alternative 2 (MNA/LUC) and Alternative 4 (ISCO source area treatment followed by MNA/LUC). GSU believes that the use of this model is premature for the following reasons:

1. As stated in the flow chart in Figure 3 of the BIOCHLOR user's manual, one must analyze the available site data along the core of the plume to determine if biodegradation is occurring. GSU believes that there is insufficient data to answer this question. If sufficient data are not available, then, according to the flow chart, more screening data need to be collected.
2. Plume dimensions near Building 20 are based on grab groundwater samples. There are no permanent wells in this area, and the lateral extent of VOC contamination is unknown as there are no groundwater data from within the footprint of the building. Therefore the plume width used for the model input (100 ft) is an assumption not backed up with actual data. Permanent monitoring wells are needed not only to define the plume(s), but also to obtain site-specific groundwater elevation data that can be used to generate accurate groundwater flow directions and gradients. Also site-specific data on natural attenuation parameters can be used instead of relying on data from monitoring wells near Building 23, which is about 1,000 feet south of Building 20. GSU believes these data are needed prior to using this computer model.
3. The model assumes that contaminants were first released 30 years ago when the washrack (Building 582) was constructed. However Building 20 is considerably older and the area surrounding Building 582 was used to wash aircraft before 1975, the year Building 582 was constructed. It is probable that releases of contaminants have occurred earlier than 1975. The initial concentrations of PCE (0.03 mg/l) and TCE (3.5 mg/l) used in the model input were derived by calibrating the model to obtain results obtained from grab groundwater samples in December, 2002. Therefore, if the age of initial release is incorrect, then the initial concentrations are also incorrect, and any conclusions based on the model would be of little value and may lead to mistakes being made on future use of the site.



# Department of Toxic Substances Control



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## MEMORANDUM

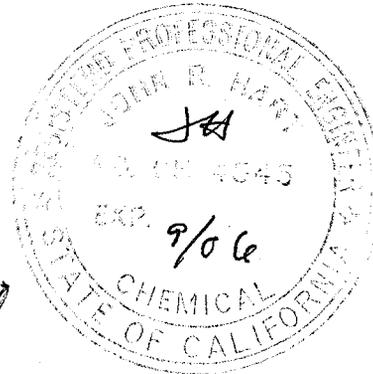
To: Marcia Liao  
Project Manager  
Office of Military Facilities  
Berkeley Office

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

From: Mark Berscheid *Mark Berscheid*  
Hazardous Substances Engineer  
Engineering Services Unit

Date: November 3, 2003

Subject: DRAFT FOCUSED GROUNDWATER FEASIBILITY STUDY REPORT,  
INSTALLATION RESTORATION PROGRAM, SITE 26, ALAMEDA  
POINT, ALAMEDA, CALIFORNIA



This letter addresses conclusions and recommendations related to my review of the Draft Focused Groundwater Feasibility Study Report (Report), Installation Restoration Program, Site 26, Alameda Point, Alameda California. The Report, dated September, 2003, has been prepared for the Department of the Navy (DON), Southwest Division, Naval Facilities Engineering Command, Environmental Division, by Bechtel Environmental, Inc., San Diego, California.

The Report contains all the essential elements of a Feasibility Study Report necessary to assess the vertical and areal extent of contamination and subsequently register the available treatment technologies that could feasibly address the documented contaminants of concern (COCs) in the saturated zone. The Report screens the treatment technologies in order to recommend the most appropriate remedy defined by a detailed analysis of these treatment alternatives as measured by the criteria documented in the Report.

## **SUMMARY/ RECOMMENDATIONS**

The Engineering Services Unit (ESU) concurs with: 1. The general response actions and related treatment technologies listed in the Report that may address the saturated zone contamination described; 2. The Remedial Action Objectives; 3. The appropriate requirements (i.e., ARARs); 4. The technology screening criteria; and 5. The initial screening of remedial alternatives based on the available site characterization information ascertained thus far.

However, with respect to the detailed analysis of alternatives and the resulting recommended alternative, the ESU has listed the following issues that would appear to affect the analysis section of the Report and require further attention in order to provide a final Report that could be approved by ESU:

A. In order to fully evaluate the complex treatment technologies included in the detailed analysis of alternatives such as monitored natural attenuation (MNA), enhanced MNA, and in situ chemical oxidation (ISCO), against the majority of review criteria in Section 6.1 (i.e., 1. Short and long term effectiveness; 2. Reduction of toxicity, mobility, or volume through treatment; 3. Overall protection of human health and the environment; 4. Implementability), the Report would appear to require: a. The concurrence of the the Department of Toxic Substances Control's Geologic Services Unit (GSU) that the vertical and areal extent of saturated zone contamination has been adequately defined and the plume is stable; b. An inclusion of more refined modeling for MNA remedies; and c. A treatability test for ISCO.

Specifically, the implementation of an MNA remedy has to be based on data supporting the conclusion that the subject plume is stable and not migrating. The type of data supporting this conclusion is not mentioned in the Report and its inclusion will require the review and concurrence of the GSU.

In addition, the modeling activities supporting the analysis of MNA in the Report are based on the use of Biochlor, which is strictly a screening tool for MNA evaluation. This screening tool is appropriate for the initial screening of alternatives. However, to support the choice of MNA as the resultant recommended alternative in the detailed analysis of alternatives, more appropriate analysis is required.

The ESU does not recommend the development of a detailed analysis of alternatives using this screening tool. A review of modeling data used in Appendix D indicates the use of very simplistic lithology data and does not contain any specific geochemistry data that would be required for a detailed analysis of the possible success of natural attenuation as a treatment at this site.

In order to fully assess the presence of natural attenuation at a site, the ESU

recommends the use of the EPA guidance document " Technical Protocol for Evaluation of the Natural Attenuation of Chlorinated Solvents" (EPA/600/R-981-128) and the use of the type of models recommended in this document.

B. With respect to ISCO, as indicated in US EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", certain treatment technologies have been demonstrated sufficiently so that site-specific information collected during site characterization is adequate to evaluate and cost those technologies without conducting treatability testing.

The ESU does not consider the development status of ISCO sufficient to be considered as a developed technology that does not require site-specific treatability testing. The ESU considers ISCO to be an innovative treatment technology that has been implemented full-scale at multiple sites but which has limited data supporting success without the use of treatability testing.

Therefore, the ESU recommends the implementation of site-specific treatability testing to include, at a minimum, lab scale treatability tests to assess the ability of this treatment technology to meet the evaluation criteria noted above and provide the implementation data necessary to adequately provide related cost estimates.

It would appear, based on review of data from other applications of ISCO at Alameda Point, that the implementation of pilot scale testing is most appropriate to provide the level of assurance necessary to support a decision containing ISCO as the recommended alternative.

The ESU references the EPA guidance document referenced above as a guide for the development and implementation of treatability investigations of this nature.

### **SPECIFIC COMMENTS**

1. The ESU concurs with the use of RACER as an appropriate cost estimation methodology. The ESU concurs with the assumptions shown in Appendix E tables and resultant costs based on these assumptions.

However, the cost assumptions for technologies not available on RACER (i.e., ISCO) are based on estimates and would appear to be highly dependent on a necessity for data from treatability tests to assess the performance of these technologies on the soils and COC concentrations at these sites.

2. The time period for the cost estimates of long term treatment technologies such as MNA are closely associated with the development of net present value (NPV) calculations. The ESU is familiar with the use of a published discount rate (e.g.,

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discount rate = Rate of Investment Return - Inflation Rate) in the development of a NPV estimate.

The Report does not specifically provide a discount rate, inflation rate, or return on Investment. The ESU recommends the final report provide a clarification of this issue.

In addition, it would appear that a time period of 70 years is difficult to assess with respect to development of meaningful discount rate. The ESU requests the final Report provide an explanation of the logic used in development of NPV for a time period of this length.

3. ESU's experience with the analysis of alternatives at other sites has indicated that the no action alternative may be a bit misleading from a cost standpoint. It is ESU's assumption that even no action alternatives require a minimal level of monitoring activity and therefore should reflect some cost in the cost analysis section of alternative analysis.

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