



DEPARTMENT OF THE NAVY  
SOUTHWEST DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132-5190

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ALAMEDA POINT  
SSIC NO. 5090.3.A

5090  
Ser 06CA.RW/1009  
December 12, 2000

Mr. Phillip Ramsey  
U. S. EPA, Region IX  
75 Hawthorne Street  
San Francisco, California 94105-3901

Re: DRAFT FINAL OPERABLE UNIT 3 REMEDIAL INVESTIGATION REPORT  
ADDENDUM, VOLUME I, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Ramsey:

This letter transmits the above-referenced document for your review and comment. Comments received from regulatory agencies and the public have been addressed and incorporated in this document, or will be addressed in Volume II of the Remedial Investigation Report Addendum (RI Report Addendum), as discussed below. A tabulated summary of Navy responses to the comments is attached to this letter.

As summarized in a December 6, 2000, e-mail from Navy to the members of the BCT, the RI Report Addendum will be completed in three volumes. Volume I presents the results of data gap sampling completed at the 1943 to 1956 waste disposal area (Site 1). Volume II will present the revised radiological human health risk assessment and radiological closure report. The cumulative risk at the site, resulting from chemical and radiological waste, will also be presented in Volume II. Volume III will present the results of the Site 1 geotechnical characterization and UXO screening. If additional UXO removal at Site 1 is performed, Volume III will also document the removal process.

The three volumes that will comprise the RI Addendum are being developed as the necessary characterization and removal activities are completed. Volume I is being presented in compliance with the BCT-negotiated FFA schedules. Volume II will be submitted at a date to be determined, with the radiological removals agreed to at meetings held November 15 and 28, 2000, completed before submittal. Volume III will be submitted, in draft form by September 1, 2001.

Please feel free to contact me at (619) 532-0952 if you have any questions.

Sincerely,

RICHARD C. WEISSENBORN, P.E.  
Remedial Project Manager

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**RESPONSE TO COMMENTS ON THE ALAMEDA POINT DRAFT REMEDIAL INVESTIGATION/FEASIBILITY STUDY ADDENDUM  
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
<b>Phillip Ramsey, Remedial Project Manager, EPA comments on the Alameda Point Draft OU-3 RI/FS Addendum, dated August 3, 2000</b>		
<b>GENERAL COMMENTS</b>		
1	The Draft OU-3 RI Addendum documents the results of a data gap sampling investigation (primarily a groundwater and volatile organic compound (VOC)/methane soil gas assessment) and concludes that the landfill gas survey conducted as part of the investigation did not identify all areas at OU-3 that may have significant methane concentrations, and that an additional landfill gas investigation is necessary for remedial design. U.S. EPA generally agrees with the Navy's approach of completing an assessment of methane as a remedial design consideration.	No response required
2	It is not clear why a Human Health Risk Assessment (HHRA) for ambient air was performed as part of the investigation. There is no discussion of a HHRA in the work plan, and there is no discussion of the HHRA in OU-3 RI Addendum – Section 1.2, Purpose. Additionally, it is not clear how the OU-3 RI Addendum HHRA interfaces with the Risk Assessment presented in the August 1999 RI Report. The OU-3 RI Addendum should be revised to clarify why the HHRA for ambient air was performed, and whether the HHRA for ambient air is intended to supplement or replace the evaluation presented in the August 1999 RI Report.	Comprehensive risk assessment methodologies and results will be addressed in Volume II of the Operable Unit (OU)-3 Remedial Investigation (RI) Report.
3	In response to a cyanide (groundwater) data gap, the Navy sampled monitoring well M025A and report non-detected levels in groundwater. The Alameda Naval Air Station Restoration Advisory Board has indicated in writing to the Navy that at least one other well, M001-E, also has a historic detection of cyanide. Consistent with the original data gap sampling objectives in support of the RI, U.S. EPA believes the Navy must have recent sampling data for those wells with historic cyanide detections. If monitoring well M001-E had a similar sampling and detection history as well M025A, then the well should be sampled.	Cyanide was detected in samples collected from existing monitoring wells in 1991 and 1992. However, evaluation of the ecological risk associated with historic detection of cyanide was performed in the OU-3RI Report. This assessment indicated that cyanide concentrations detected in groundwater did not pose an unacceptable risk to aquatic receptors. COPCs were screened out if one of the following conditions applied to compounds detected during site investigation and characterization: (1) considered to be essential nutrients, (2) frequency of detection was less than 5 percent, (3) the concentration was lower than the background (for inorganics only) concentration, or (4) the maximum detected concentration was less than the EPA AWQC for saltwater aquatic life protection (4-day average continuous concentrations). In addition, detected constituents in groundwater were compared to ERVs in a sequential fashion. The EPC was compared to the ERV. If the value was less than the ERV, the compound was dropped. If the value was greater than the ERV, the value was divided by 10 and compared to the ERV to account for dilution from groundwater to surface water, as recommended by NOAA. If the EPC divided by 10 was greater than or equal to the ERV, the compound was retained as a COPC. M001-A was therefore not sampled based on two detections above the ERV. Therefore, no additional characterization using step-out samples to evaluate the area around M001-E is required. Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.
<b>SPECIFIC COMMENTS</b>		
1	Section 1.0, Introduction: If available please cite U.S. EPA and DTSC work plan/QAPP approvals (note that due to short work plan review time, agencies may have only provided verbal approvals).	The Draft and Draft Final Field Sampling Plan and Quality Assurance Project Plan for Data Gap Sampling at OU-3, Alameda Point, went through regulatory agency review. Comments were not received regarding the Draft Final documents, thereby implying approval.

**RESPONSE TO COMMENTS ON THE ALAMEDA POINT DRAFT REMEDIATION INVESTIGATION/FEASIBILITY STUDY ADDENDUM  
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
2	Section 1.1, Site Background and Appendix A, Aerial Photograph: Text makes reference to aerial photographs (1949 and 1957) with Appendix A being the 1949 photograph showing most of the operable unit. For completeness, U.S. EPA requests that the Navy include both photographs and any photographic interpretations available from the photos. U.S. EPA would be particularly interested if any details regarding waste disposal practices were noted. For example, casual review of the attached photograph indicates staining that may be wastes, on the roadways on the west (bay) side of the two northern cells. In site documents the Navy has mentioned trenches were used for waste disposal, therefore, based upon Navy photographic interpretation, please indicate what photograph(s) reveal.	Appendix A presents both aerial photographs referred to in OU-3 RI Addendum Volume I. No identification of trenches used for disposal was apparent upon review. No additional interpretation is available, because any conclusions from interpretation of the photographs would be speculation. Extensive investigations have been performed at OU-3, which provide current information regarding extent of contamination.
3	Section 1.1: On page 1-4, please change the first sentence to read, "Under U.S. EPA Guidelines for Groundwater Classification (EPA, 1988), the aquifer at OU-3 is currently designated Class II (groundwater which is a current or potential source of drinking water and a water that has other beneficial uses), but is not intended for future use as a drinking water source in this area."	The text has been modified, as requested. The Determination of The Beneficial Uses of Groundwater at Alameda Point Report was also referenced in the report.
4	Section 1.2.2, Groundwater: In response to cyanide data gaps, the Navy sampled monitoring well M025A and report non-detected levels in groundwater. The Alameda Naval Air Station Restoration Advisory Board's June 2, 2000, OU-3 RI Addendum comments indicated that at least one other well, M001-E, also had a historic detection of cyanide. Consistent with this original data gap sampling objective, U.S. EPA believes the Navy must have recent sampling data for those wells with historic cyanide detections before it can complete the FS.	See general comment 3 response.
5	Table 1-1, Data Quality Objectives: While collection of VOC soil gas data were part of an assessment of landfill gas generation, the VOC soil gas sampling activity also provided an indirect assessment of potential VOC groundwater contamination within the landfill. Therefore, for Data Gap Number 2, Groundwater Extent of Contamination, please add "soil gas data" to the third column "Identify the Inputs to the Decision."	Table 1-1 has been modified, as requested.
6	Figure 1-3, OU-3 Groundwater Sampling Locations. Please expand content of figure to include soil gas sampling locations (also distinguish those soil gas sampling locations also measured for flux chamber gas).	Figure 1-3 has been modified, as requested.
7	Figure 2-3, OU-3 Groundwater Historic Concentration of COCs at Monitoring Well M028-A. To make this figure more informative, please modify to clearly indicate the month/year samples were collected and provide the contaminant concentration or provide an accompanying table that provides month/year of sampling date and contaminant concentrations (both of which are difficult to interpret from the figure). Also, the figure needs a line connecting the December 1999 30,000 µg/l 1,2-dichloroethylene detection.	A revised Figure 2-3 has been presented in the document. The figure now includes the date of sample collection and concentrations detected in a data table included in the figure.
8	Figure 2-3. U.S. EPA notes that well M028A went from 10,000 µg/l in September 1991 down to less than 20 µg/l during the next sampling period. Has the Navy noted this unusual fluctuation and have a possible explanation.	This change could be due to dilution from groundwater recharge or it could be indicative of a vadose zone source. Groundwater levels during the sampling periods will be further examined. Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.
9	Section 2.1.1, Groundwater Shoreline Sampling: The first paragraph in this section makes an initial reference to ecological reference values (ERVs) without defining or explaining them. Please revise the text to include an explanation of ERVs.	The text has been modified, as requested.

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ALAMEDA POINT, ALAMEDA, CALIFORNIA

REF	COMMENT	RESPONSE
10	<p>Section 2.1.3, Groundwater Verification Sampling: On page 2-12 the Navy needs to provide a justification or rationale to support statements that groundwater extraction and ex situ treatment (Remedial Alternative or RA 8) and in situ air sparging (RA 10) would be affected by inorganic chemistry parameters. For an impermeable vertical barrier (RA5), the Navy indicates that inorganic chemistry parameters would not prohibit consideration of the barrier due to corrosion. The justification should include a discussion of the concentrations of inorganic parameters that would affect the operation of these RAs and a demonstration that the concentrations of inorganic parameters detected in OU-3 groundwater are below those concentrations.</p>	<p>Evaluation of how groundwater chemistry may affect remedial alternatives will be presented in the Revised Draft Feasibility Study (FS) Report.</p>
11	<p>Section 2.2.1, Landfill Gas Survey: The last paragraph on page 2-14 and the first paragraph on page 2-16 state that analytical results for methane did not compare well between the field and fixed laboratory, and a comparison of VOC results between field and fixed laboratory analyses did not provide evidence of precision due to an abbreviated list of target analytes for field analyses and due to high detection limits in the laboratory. The second paragraph on page 2-16 states that the quality of the field results was questionable and that an additional landfill gas investigation will be necessary for efficient design of a landfill containment and venting system. However, it appears that the sample collection and sample analytical protocols that were followed were consistent with the FSP. Please clarify why the sample collection and sample analytical protocols proposed in the FSP and performed during the investigation were not adequate to achieve one of the investigation's objective, i.e., determine methane and VOC concentrations present in soil gas and evaluate proposed containment venting options.</p>	<p>The text of the OU-3 RI Addendum has been modified to include an expanded explanation of lack of reproducibility between field analyses and verification samples. Inconsistent collection method, sample volume, and sample container used for samples submitted to field and fixed laboratory appears to be the cause of non-reproducible data. A long-term landfill gas monitoring system will be installed and monitoring will be performed before and after installation of the remedial system.</p>
12	<p>Section 2.2.1.1, Methane: While U.S. EPA disagrees with the statement "[c]haracterization of landfill gas is required at landfill sites to assess the presence of methane in concentrations above the lower explosive limit (LEL)(5.5% v/v) and below the upper explosive limit (UEL)(14% v/v) (emphasis added), we understand that the Navy has investigated and will continue to assess methane generation for remedial design consideration. Therefore, the Navy may want to change this text to better reflect its approach. Further, U.S. EPA submits the following comment regarding methane assessment:</p> <p>A. Per RCRA CFR 258.23(a) the methane standard is a maximum of 5% at facility boundary (landfill limit) and 1.25% (25% LEL) in facility structure (buildings, pipings).</p>	<p>The text has been modified, as requested. In addition, the Code of Federal Regulations has been referenced, accordingly.</p>
13	<p>Section 2.2.2, Flux Chamber and Figure 1-2, Physical Features: The referenced figure does not illustrate the soil gas sampling locations as indicated in text. As indicated above, a modified Figure 1-3 or separate figure is needed to illustrate soil gas sampling locations and collection types (i.e., flux chamber – summa canisters/fixed lab, soil gas syringe/mobile lab, soil gas summa canister/fixed lab).</p>	<p>Figure 1-3 has been modified, as requested.</p>
14	<p>Section 2.2.2.2, VOCs: If U.S. EPA were to establish a concentration or level of concern which could be an ecological cleanup number, the value of 5,470 ug/l or 5.4 mg/l would be acceptable. Since all detections are well below this value, there is no need to set a cleanup level.</p>	<p>This discussion has been removed from the document text.</p>
15	<p>Figure 2-6, OU-3 Surface Flux VOCs: The figure title indicates that VOC surface flux data are being presented; however, the legend indicates that the data units are mass per volume. Flux data implies an element of time, which is not indicated in this explanation of the units.</p>	<p>Figure 2-6 has been modified, as requested.</p>

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16	Section 3.0, Human Health Risk Assessment for Ambient Air: While the Navy states in the OU-3 RI Addendum HHRA that it is intended to augment the HHRA presented in August 1999 RI, there is no explanation regarding how this HHRA augments the RI HHRA. For example risks due to inhalation were already calculated in the RI. If the OU-3 RI Addendum is intended to supersede the inhalation risk calculations presented in the August 1999 RI, this should be clearly stated. Additionally, because the RI HHRA included an evaluation of other exposure pathways (i.e., ingestion and dermal contact), the results of these risk calculations and the sum of the risks from these different pathways should be presented in the RI Addendum HHRA, in order to provide an evaluation of the cumulative risks present at the site.	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.
17	Section 3.0, Human Health Risk Assessment for Ambient Air, p. 3-1: The first paragraph in this section states that the methodology used in the HHRA is consistent with <i>Risk Assessment Guidance for Superfund (RAGS) Volume 1, Human Health Evaluation Manual, Part B</i> (USEPA, 1989). Please revise the OU-3 RI Addendum to use current guidance which is presented in U.S. EPA Region 9 October 1, 1999, Preliminary Remedial Goals in preparation of the HHRA.	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.
18	Section 4.0, Effects of Results on Feasibility Study Remedy Selection: The third bullet on indicates groundwater did not exceed a 5.9 mg/l ecological reference value criteria and "the eastern boundary of the groundwater hot spot was identified." In a general sense, U.S. EPA agrees that the groundwater hot spot was assessed during the data gap sampling. However for completeness, the Navy should recognize that both U.S. EPA and DTSC asked the Navy to utilize some of its contingency groundwater samples to assess the eastern extent of groundwater contamination and the Navy refused this request.	The Navy used decision criteria presented in the OU-3 Data Gap Sampling FSP/QAPP Report to define step-out boundaries.
19	Section 3.1, Box Model, p. 3-2: The first sentence of this section lists the ambient air mixing height as 1.5 meters, while in the IR HHRA, the ambient air mixing height is listed as 200 centimeters (Table C.5.4-9). Please revise the RI/FS addendum to provide a reference for the use of 1.5 meters for the height of the mixing layer (z) employed in the box model (e.g., the height of the breathing zone for a typical adult receptor).	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.
20	Section 3.2, Sitewide Ambient Air, p. 3-5: The last paragraph of section 3.2 indicates that flux chamber sample concentrations for each analyte were compared to ambient air preliminary remediation goals (PRGs), and Table 3-1 indicates that 15 of the 22 analytes detected in soil gas were excluded from further evaluation, because they were below the ambient air PRGs. This approach ignores the concept of cumulative exposure to multiple contaminants. Given that the Hazard Index (HI) for the sitewide evaluation is 0.9, and that this HI was calculated after many of the VOCs were eliminated, the conclusion in Section 3.4.1 that the total hazard for the site is less than 1 may not be appropriate. Please revise the RI addendum to include all detected analytes in all steps of the HHRA.	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.
21	Section 3.4, Human Health Risk Assessment Results, p. 3-8: There are several statements in this section that the risk at OU-3 is overestimated based on the use of residential PRGs for a site that will only have recreational users. Please revise the RI addendum to provide specific information regarding why the exposure assessment for residential use would be conservative for a site that only has recreational users (i.e. how the exposure assumptions for these different receptors vary).	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.

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22	Section 3.4-3.4.2, p. 3-13: The references to USEPA's "acceptable risk range" on this page represent risk management decisions and should not be included as part of the HHRA. The purpose of the risk assessment is to characterize and quantify risk at the site. The determination of what constitutes an "acceptable" level of risk is part of the risk management process, and should be considered after the application of the nine-criteria analysis specified by the National Contingency Plan. Please revise the HHRA to eliminate these references to USEPA's acceptable risk range.	Volume II of the OU-3 RI Report Addendum (forthcoming) will present RI comprehensive risk assessment results and directly address this comment.
23	Appendix B. Many of the lab sheets indicate groundwater sampling depths of "0.00-0.00" (see for example samples 122-S01-119 and 122-S01-121). Please explain or correct.	Screened intervals for the wells are stated in the report text.
24	Appendix C, Soil Gas Investigation: This appendix discusses the analysis of landfill gas samples in the on-site mobile laboratory, but does not mention verification analyses in a fixed laboratory. In Section 2.2.1 text states that verification samples were analyzed at a fixed laboratory; however, there is no discussion of the sampling methods or sample handling procedures for the fixed laboratory samples, or the analytical procedures used by the fixed laboratory. Given the inconsistency between the results from the mobile laboratory and the fixed laboratory, and that this inconsistency has resulted in the investigation failing to achieve one of its main objectives, a discussion of the procedures for the fixed laboratory sample collection, handling and analytical procedures is necessary to evaluate the reasons for the inconsistencies in the two types of sample results. Please revise the RI Addendum to include a section discussing the procedures used for the collection, handling and analysis of the fixed laboratory samples. This evaluation should help to ensure that future methane assessments will achieve the Data Quality Objectives (DQOs).	The text has been modified to include an expanded explanation of quality control sample collection and results.
<b>Department of Toxic Substances Control, Comments on Draft OU-3 RI/FS Addendum dated April 13, 2000</b>		
<b>GENERAL COMMENTS</b>		
1	DTSC concurs with the method and the data quality objectives developed, using the seven-step process outlined in the "Guidance for the Data Quality Objective Process," to address the five data gaps identified at the site. The Addendum has used this process to collect the appropriate quantity and provide qualified samples necessary to generate the data required to meet DQOs as presented in Table 1-1 of the Addendum.	No response required
2	DTSC generally concurs with the conclusions made in Section 4.0 of the Addendum on the effects the results will have on the feasibility study remedy selection. DTSC concurs with the Addendum and strongly recommends the implementation of an additional landfill gas investigation before final containment design. Specifically, DTSC is concerned about the documentation of vadose zone soil gas levels of 1500 ug/m <sup>3</sup> for vinyl chloride (VC) at SG-S01-B9-03 as reported in Table 2-6 of the Addendum. Although VC was not detected in flux chamber studies at this location, analytical results of VC for this location are orders of magnitude higher than for ethylbenzene and o-xylene which are detected in flux chamber results for this location. This would appear to indicate that VC may migrate vertically and become a risk issue for surface receptors at this site.	A long-term landfill gas monitoring system will be installed and monitoring will be performed before and after installation of the remedial system.

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3	<p>On page 2-4 and 2-5 it is indicated that although naphthalene and phenanthrene were detected above the ecological reference screening value that the risk to ecological receptors in the Bay is unlikely. Part of the logic for this is that elevated concentrations are very limited in areal extent, and levels at which impacts would be expected to occur as a result of naphthalene are an order of magnitude greater than the screening level. It is possible that higher concentrations of these constituents are present immediately upgradient of the location where this shoreline sample was collected if this sample location is downgradient of the source. DTSC recommends that consideration be given to monitoring groundwater at the potential elevated naphthalene and phenanthrene concentration area to ensure that concentrations do not increase either as the result of seasonal fluctuation or the result of higher concentrations flowing with groundwater from a source upgradient.</p>	<p>Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.</p>
4	<p>The text at the top of page 2-8 indicates that COC results are posted on Figure 2-2 for the primary sample locations. It appears on Table 2-3 concentrations of benzene, vinyl chloride, ethylbenzene, toluene, naphthalene, 1,2-dichlorobenzene, methylnaphthalene, and acenaphthene were detected; however, these concentrations are not included on Figure 2-2. These concentrations should be posted on Figure 2-2.</p>	<p>Figure 2-2 presents detected concentrations of COCs identified in the ecological risk assessment in the OU-3 RI Report. Compounds listed in this comment, with the exception of xylene, were not identified as COCs.</p>
5	<p>1,2-DCE was detected in the groundwater samples collected from the upgradient hot spot boring HP-SO1-B11 at concentrations ranging from 16 to 64 ug/L. These concentrations are much less than the 1,2-DCE concentration detected in groundwater from hot spot well MO28A (32,000 ug/L). The presence of 1,2-DCE at HP-SO1-B11 may be the result of diffusion from the hot spot to the upgradient location or it could be the result of a release from a location that is upgradient of HP-SO1-B11.</p> <p>Another observation is that the vinyl chloride concentration may have increased significantly from the last sampling round of MO28A. The latest concentration is 48,000 ug/L. In July 1995 the vinyl chloride concentration was 340 ug/L and the 1,2-DCE was at a concentration of 27 ug/L. Concentrations of 1,2-DCE and vinyl chloride for MO28E during 7/95 were 110,000 and 16,000 ug/L, respectively. It appears that the vinyl concentrations may be increasing as a result of reductive dechlorination of 1,2-DCE to vinyl chloride. According to Table 2-3 there is no ecological reference value for vinyl chloride. This is of potential concern as the vinyl chloride concentrations are very high and could continue to increase as result of reductive dechlorination.</p> <p>Consideration should be given to assessing a source for VOCs to the east of HP-SO1-B11 and implementing long term monitoring at HP-SO1-B11 if reductive dechlorination and/or advection is resulting in unacceptable levels of vinyl chloride at this area. It is important to note that contaminants onsite from sources upgradient of Site 1 could be remediated in a system constructed at the hot spot.</p> <p>Section 3, Human Health Risk Assessment for Ambient Air, states that this information is intended to augment the HHRA presented in the final remedial investigation report. It is important that all relevant information regarding human health risk assessment be presented in a single report that addresses all sources of risk. The overall risk for OU3 will not be accurately assessed until risks from volatile organic compounds, radiation, and UXO are compiled in one report.</p>	<p>The Navy agrees that it is possible that higher concentrations may be found upgradient in a landfill situation. Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.</p> <p>Volume II of the OU-3 RI Report Addendum (forthcoming) will present comprehensive risk assessment results. UXO is a technical safety issue, not a human health or ecological risk driver.</p>

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8	One of the recommendations of the Draft RI/FS is landfill gas monitoring over several quarters. Two quarters have elapsed since the sampling reported here was completed. What plans are in place to expedite this ongoing quarterly monitoring in support of the remedial design?	A long-term landfill gas monitoring system will be installed and monitoring will be performed before and after installation of the remedial system.
<b>SPECIFIC COMMENTS</b>		
1	The dates of the datagap sampling are not readily apparent in the introductory text. This information would help put this report into context within the scope of the OU3 RI/FS/ROD sequence. Furthermore, it would be easier to compare historic concentrations of COCs at Monitoring Well MO28A (Figure 2-3) if specific collection dates were noted.	The text and Figure 2-3 have been modified, as requested.
2	Vinyl Chloride is shown in Table 2-6 as 1500 ug/m <sup>3</sup> at SG-SO1-B9-3 while it is not shown on Figure 2-4, OU-3 Landfill Gas, for the same location, nor is this level of VC, 1500 ug/m <sup>3</sup> , used in the risk assessment analysis shown in Table 3-2 of the Addendum. This issue requires resolution prior to use of these risk assessment results.	Figure 2-4 has been modified, as requested.  Volume II of the OU-3 RI Report Addendum (forthcoming) will present comprehensive risk assessment results.
3	Figures 2-5 and 2-6 are entitled "Surface Flux," but data posted on Figure 2-6 are shown as concentration (ug/m <sup>3</sup> ). Please correct.	Figures 2-5 and 2-6 have been modified, as requested.
4	Please consider showing the former burn area on all maps, particularly on the soil gas/flux maps, to facilitate evaluation of data relative to this historic activity.	All Figures in Section 2 have been modified, as requested.
<b>Department of Toxic Substances Control Comments Draft HHRA in Support of Remedial Action Objectives for Radiological Materials at OU-3 dated May 22, 2000</b>		
1	It is important that all relevant information regarding contamination and human health risk assessment be presented in a single report that addresses all sources of risk. The overall risk for OU3 will not be accurately assessed until risks from volatile organic compounds, radiation, and UXO are compiled in one report.	Volume II of the OU-3 RI Report Addendum, the Risk Assessment and Radiological Closure Report, will include the revised Radiological HHRA and corresponding response to comments. These documents will be finalized following removal of radiological anomalies above about 10,000 counts per minute, previously identified at the site. In addition, the final version of Volume II will present comprehensive human health and ecological risk assessment ERA results for chemical and radiological items remaining at the site. This risk assessment will provide a summation of the individual cancer and noncancer risk values to allow complete evaluation of risk to human and ecological receptors. Unexploded Ordnance (UXO) removal will be documented in Volume III of the RI Addendum.
2	Please refer to U. S. EPA Office of Solid Waste and Emergency Response (OSWER No. 9200.4-18, August 22, 1997): Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination. DTSC recommends the use of the OSWER 15 mrem radiation standard instead of 25 mrem.	Volume II of the OU-3 RI Report Addendum, the Risk Assessment and Radiological Closure Report, will include the revised Radiological HHRA and corresponding response to comments.
3	The Area Adjustment Factor is a valid concept, but it can be viewed as a manipulation to make the risk appear lower. To facilitate evaluation of the appropriateness of the AAF used in the report (the proposed golf course area), it would be helpful to also use the area of OU3 in the calculation. This area would be the largest potential area affected by radiation, as determined by the surveys and delineated by the most recent OU boundary configurations.	Volume II of the OU-3 RI Report Addendum, the Risk Assessment and Radiological Closure Report, will include the revised Radiological HHRA and corresponding response to comments.
4	Because the exposure of future receptors would be dictated by the use of the planned golf course, it might be appropriate to consider including monitoring after the golf course is completed. This would allow evaluation of areas where receptors would spend more time (e.g., tees, greens).	Postclosure monitoring will be addressed in the Revised Draft FS Report.
5	The text on page 9 (Exposure Setting and Potential Receptors) make reference to a "thin layer of topsoil." Based on the Draft OU3 RI/FS Addendum, the soil cover is approximately two feet thick.	Volume II of the OU-3 RI Report Addendum, the Risk Assessment and Radiological Closure Report, will include the revised Radiological Human Health Risk Assessment (HHRA) and corresponding response to comments.

**RESPONSE TO COMMENTS ON THE ALAMEDA POINT DRAFT REMEDIAL INVESTIGATION/FEASIBILITY STUDY ADDENDUM  
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
<b>Department of Health Services, Review of Draft HHRA in Support of Remedial Action Objective for Radiological Materials at OU- 3, Alameda Point, dated May 22, 2000</b>		
1	<p>This document was reviewed to ensure that the requirements of the California Code of Regulations, Title 17, have been or will be met once the property is no longer under federal jurisdiction. This document indicates that discrete sources of radioactive materials will not be removed prior to use of the property for recreational purposes. Because radioactive material will remain at the site after transfer, the requirements of Title 17 must be met. It is not clear whether the site will require a license from the Radiologic Health Branch (RHB), or, if a restricted release can be achieved under the new federal regulations (Radiological Criteria for License Termination, 10CFR20.1400, <i>et seq.</i>). We suggest that you work closely with the RHB, the DHS branch responsible for licensing decisions. An initial point of contact, David Wesley, Sr. Health Physicist, can be reached at (916) 445-1884 (Dwesley@dhs.ca.gov).</p>	<p>Volume II of the OU-3 RI Report Addendum, forthcoming, will present RI comprehensive HHRA results and directly address this comment.</p>
<b>Melissa K. Gunter, Waste Management Engineer, California Integrated Waste Management Board</b>		
1	<p>Board staff agrees with the conclusion that, before the final containment system is designed, periodic monitoring and an additional landfill gas investigation are necessary in areas where methane detection was above one percent.</p>	<p>A long-term landfill gas monitoring system will be installed and monitoring will be performed before and after installation of the remedial system.</p>
<b>Ken Kloc, OU-3 Focus Group member and Arc Ecology employee</b>		
1	<p>Inappropriate use of a dilution factor for surface water screening values</p> <p>The Navy proposes to multiply various marine wildlife screening values, such as the Marine Ambient Water Quality Criteria (AWQC), by a factor of 10, in order to come up with site-specific marine wildlife screening criteria. According to the Navy, this procedure is based upon NOAA recommendations. Two comments on this issue: First, the Navy does not cite an NOAA technical document supporting the use of a dilution or attenuation factor. Indeed, according to the OU-3 RI, the NOAA has no official methodology which defines the use of an attenuation factor of 10 for the screening of groundwater discharges.</p> <p>Second, the appropriate screening procedure for the groundwater-to-surface water pathway should be the RWQCB's procedure. However, the Water Board does not use a dilution factor for shallow water discharges to the Bay, and does not use an attenuation factor for groundwater concentrations measured within 300 feet of the Bay shoreline. Since the Navy's shoreline wells are within 300 feet of the shoreline, the Navy should use unadjusted screening criteria in its analysis. This would result in the identification of additional areas of problem contamination in shoreline groundwater at OU-3.</p>	<p>The text of the OU-3 RI Addendum has been modified to include an expanded explanation of the ecological reference value (ERV) development using standard National Oceanic and Atmospheric Administration (NOAA) practice. The requested reference is included below:</p> <p align="center">Buchman, M.F. 1999. NOAA Screening Quick Reference Tables. NOAA HAZMAT Report 99-1. Seattle, WA. Coastal Protection and Restoration Division. National Oceanic and Atmospheric Administration. 12 Pages. September.</p> <p>In addition, the San Francisco Regional Water Quality Control Board does not consistently require a 300-foot buffer zone. For instance, the Navy's ongoing preparation of the corrective action plan for Alameda Point presented scientific justification for not requiring any buffer zone for migration of total petroleum hydrocarbons in groundwater and discharge to surface water.</p>
2	<p>Need to consider AWQC (Human Health for Consumption of Organisms)</p> <p>Given that a significant stretch of the current OU-3 shoreline is destined to become a recreation area at which fishing and shellfishing may take place, the AWQC (Human Health for Consumption of Organisms) are relevant to the remedial action. These AWQC values should be reported in the RI/FS Addendum and they should be considered in developing cleanup goals for groundwater.</p>	<p>The sediment work group is evaluating risks associated with all sediments and offshore areas, including areas adjacent to OU-3. Therefore, evaluation of AWQC (Human Health for Consumption of Organisms) will be deferred to the sediment work group and will not be addressed in the OU-3 RI Report.</p>

RESPONSE TO COMMENTS ON THE ALAMEDA POINT DRAFT REMEDIATION MEDICAL INVESTIGATION/FEASIBILITY STUDY ADDENDUM  
ALAMEDA POINT, ALAMEDA, CALIFORNIA

REF	COMMENT	RESPONSE
3	<p>Need to consider EPA Region 4 screening values for marine water</p> <p>EPA Region 4 has compiled a list of screening criteria for marine surface water. For the chemicals of concern at OU-3, several of these EPA Region 4 values are lower than those that the Navy developed. These values should be reported in the RI/FS Addendum and considered relevant in developing cleanup goals for groundwater at OU-3.</p>	<p>Region 4 screening levels were considered in developing the ERV when EPA National Ambient Water Quality Criteria for Saltwater Aquatic Life Protection (4-day average continuous concentration) were not available.</p>
4	<p>Additional groundwater hotspots</p> <p>The Navy is proposing active groundwater remediation at only one limited portion of the landfill boundary (the region of the chlorinated volatile organic hotspot). However, both monitoring well data from the OU-3 RI and the recent groundwater grab samples from the RI/FS Addendum show that there may be other hotspots of petroleum and PAHs along the northwest area of the OU-3 shoreline.</p> <p>For example, total petroleum hydrocarbon (TPH) concentrations in groundwater near the former oil sump area were elevated above the Water Board's 1.4 mg/L TPH level for discharges to surface water (see table below).</p> <p>(n.b. Both soil and groundwater data at the Former Oil Sump are quite limited; for example, note the lack of data more recent than 1992 at Well M029A. Also, there are only four soil borings at the oil sump area, and it is unclear whether these borings have sufficiently characterized the sump.)</p>	<p>The elevated total petroleum hydrocarbon (TPH) concentrations measured at Well M029-A would fall below the 14 milligram per liter (mg/L) ERV, using the factor of 10 dilution applied to AWQC for other constituents.</p> <p>Two polynuclear aromatic hydrocarbons (PAH), phenanthrene and naphthalene, were detected above their ERVs. The report text presents the development of the ERV for each of these compounds. In addition, the text explains that the limited areal extent of these compounds limits the exposure point concentration (EPC) that aquatic receptors are likely to be exposed to as a result of groundwater discharge to the Bay. Therefore, the chemical characterization is complete for PAHs in groundwater near the northwestern portion of the site and will not delay the Navy proceeding with the revised Draft FS. However, existing monitoring wells in this area will be considered for inclusion in the groundwater long-term monitoring plan.</p>
5	<p>Quantity of sampling required to close data gaps</p> <p>The Navy appears to assume that the single additional round of samples collected for the RI/FS Addendum provides sufficient data to address the various data-gap issues, such as the question of whether cyanide is present in Well M025A, or whether 1,4-dioxane is present in groundwater, or whether other hotspots exist at various shoreline grab sample locations. Given the level of variability demonstrated by the shoreline monitoring wells over time, we recommend, at a minimum, four quarters of sampling.</p>	<p>Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.</p> <p>1,4-Dioxane was detected at six locations during the data gap sampling surface flux investigation. The Draft RI/FS Addendum states on Page 2-28 that this compound was not included as a target analyte in previous groundwater investigations at OU-3. Therefore, there was concern that the source of this compound in ambient air could be a result of volatilization from groundwater in these locations. However, the Navy performed a follow-up groundwater sampling event of existing monitoring wells at OU-3 and did not detect 1,4-dioxane (&lt;200 micrograms per liter [<math>\mu\text{g/L}</math>]). Complete analytical results are presented in the RI Addendum, Appendix B, and report text has been modified accordingly.</p>
6	<p>Soil gas flux measurements</p> <p>a. The flux measurements taken at the landfill may not be representative of average overall flux of VOCs from the landfill surface. The flux study was carried out four days after a several-day period of rain. As such, infiltrating rain water may not have had enough time to dissipate from the upper layers of soil, resulting in an uncharacteristically low soil porosity and vapor flux rate. In addition, since soil flux can also be affected by variations in barometric pressure, the RI should analyze the potential impact that this factor may have had, both prior to, and during, the flux study.</p> <p>b. The soil gas and flux measurements should be complemented with down-wind ambient air samples taken for the most conservative atmospheric conditions expected at the site.</p>	<p>The Navy agrees that this is a valid comment. Gas monitoring to be conducted prior to the remedial action will take barometric pressure and ambient air quality into account.</p>

**RI/NSE TO COMMENTS ON THE ALAMEDA POINT DRAFT ENVIRONMENTAL INVESTIGATION/FEASIBILITY STUDY ADDENDUM  
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
<b>Technical Services for Committees comments on the Alameda Point Draft OU-3 RI/FS Addendum, dated April 13, 2000</b>		
<b>DATA GAPS</b>		
1	The stated purpose of the RI/FS Addendum is to provide additional environmental characterization so that the Navy can proceed with the draft final FS. There are five specific data gaps to be addressed by this Addendum. It appears that even if these data gaps are addressed, the RI will still be incomplete. A radiological risk assessment, a UXO survey and investigation, and potentially additional work resulting from future investigation of IR-2 (the West Beach Landfill) are still to be conducted at Site 1. Neither the RI nor the FS can be completed until this work is finalized.	<p>Volume II of this Addendum, forthcoming, will present results of radiological removal and HHRA revision.</p> <p>Volume III of this Addendum, forthcoming, will present results of UXO removal and geotechnical characterization.</p>
2	Cyanide was detected in groundwater in 5 of 16 locations in 1991-92. Only one location, M025-A, was resampled during this Addendum effort. No cyanide was detected at M025-A during this round of sampling; however, due to historical concentrations above the 10 ppb ERV, the Navy should conduct step-out sampling around M025-A to ensure that the extent of contamination has been defined. In addition, cyanide was detected at M001-E in 1991-92 above the ERV, but no further sampling for cyanide was conducted in the northwest area of OU-3. Step-out sampling should be conducted around M001 to define the extent of cyanide contamination.	Cyanide was detected in samples collected from existing monitoring wells between 1991 and 1992. However, evaluation of the ecological risk associated with historic detection of cyanide was performed in the OU-3 RI Report. This assessment indicated that cyanide concentrations detected in groundwater did not pose an unacceptable risk to aquatic receptors. COPCs were screened out if one of the following conditions applied to compounds detected during site investigation and characterization: (1) considered to be essential nutrients, (2) frequency of detection was less than 5 percent, (3) concentration was lower than the background (for inorganics only) concentration, or (4) the maximum detected concentration was less than the EPA AWQC for saltwater aquatic life protection (4-day average continuous concentrations). In addition, detected constituents in groundwater were compared to ERVs in a sequential fashion. The EPC was compared to the ERV. If the value was less than the ERV, the compound was dropped. If the value was greater than the ERV, the value was divided by 10 and compared to the ERV to account for dilution from groundwater to surface water, as recommended by NOAA. If the EPC divided by 10 was greater than or equal to the ERV, the compound was retained as a COPC. M001-A was therefore not sampled based on two detections above the ERV. Therefore, no additional characterization using step-out samples to evaluate the area around M001-E is required. Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.
3	The area south of M026-A to the boundary of Site 1 has no sampling points identified in the Addendum. This appears to be an area that has not been characterized, which results in another data gap.	The area south of monitoring well M026 was not referred to the Installation Restoration program during the Environmental Baseline Survey investigation, nor has monitoring well data collected during the OU-3 investigation suggested that this area poses a threat to human or ecological receptors. Therefore, the Navy feels that no additional characterization of this area is necessary.
4	The northwest area of Site 1 requires additional groundwater characterization. Table 2-1 of the Addendum shows elevated concentrations of several PAHs in groundwater at sample point HP-SO1-B3. In addition, the RI indicates that elevated concentrations of Total Petroleum Hydrocarbons were detected in 1992 in the oil sump area (M029-A), yet no sampling for TPHs in groundwater has occurred in this area since that time. Potential adverse effects to aquatic receptors cannot be fully determined until the nature and extent of chemical releases to the Bay are determined.	<p>Two PAHs, phenanthrene and naphthalene, were detected above their ERVs. The report text presents the development of the ERV for each of these compounds. In addition, the text explains that the limited areal extent of these compounds limits the EPC that aquatic receptors are likely to be exposed to as a result of groundwater discharge to the Bay. Therefore, the chemical characterization is complete for PAHs in groundwater near the northwestern portion of the site and will not delay the Navy proceeding with the revised Draft FS.</p> <p>Elevated TPH concentrations measured at Well M029-A would fall below the 14 mg/L ERV, using the factor of 10 dilution applied to AWQC for other constituents. Long-term groundwater monitoring will be implemented at OU-3. Organic and inorganic chemicals will be included as target analytes.</p>

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REF	COMMENT	RESPONSE
5	TOSC concurs with the Addendum conclusions on pages 2-16 and 2-18 regarding the need for additional landfill gas investigation, including sampling protocols and analytical techniques consistent with the best available technology, and sampling conducted over several quarters to evaluate conditions.	A long-term landfill gas monitoring system will be installed and monitoring will be performed before and after installation of the remedial system.
6	Concentrations of 1,4-dioxane were detected at seven surface flux locations, which were spread over a wide area of Site 1. However, groundwater at Site 1 has not been analyzed for 1,4-dioxane. All FWBZ monitor wells should be sampled to determine whether 1,4-dioxane is present in groundwater at Site 1.	1,4-Dioxane was detected at six locations during the data gap sampling surface flux investigation. The Draft RI/FS Addendum states on Page 2-28 that this compound was not included as a target analyte in previous groundwater investigations at Site 1. Therefore, there was concern that the source of this compound in ambient air could be a result of volatilization from groundwater in these locations. However, the Navy performed a follow-up groundwater sampling event of existing monitoring wells at OU-3 and did not detect 1,4-dioxane (<200 µg/L). Complete analytical results are presented in the RI Addendum, Appendix B, and report text has been modified accordingly.
<b>DATA QUALITY</b>		
7	In evaluating the Addendum groundwater sampling effort in conjunction with other Site 1 investigation activities for overall completeness, Tables 6-31A and 6-31B of the August 1999 RI were reviewed. These tables summarize groundwater contaminant detections in the FWBZ at Site 1 from 1993-1998. There are several contaminants, primarily PAHs and inorganics, for which the percentage of reporting limits that exceeded ERVs is quite high, up to 100% in some cases. It appears that some data may have been inappropriately screened out of the COPC determination. The Navy should address this issue in the ecological risk assessment.	The Navy acknowledges that the reporting or detection limits for some of the data, particularly PAHs, were significantly above screening levels. As part of the ERA, however, for every non-detected value, a 95 UCL concentration was developed using reported values in conjunction with one-half of the method-reporting limit (MRL) for each non-detect. This EPC was compared to the ERV. For those that had all non-detect with MRLs above the ERV, a 95 UCL was developed using one-half of the MRL.
<b>ECOLOGICAL RISK ASSESSMENT</b>		
8	The Addendum does not discuss how Tentatively Identified Compounds (TICs) listed in Appendix B were addressed in the risk assessment for aquatic receptors. If TICs are omitted from the quantitative risk assessment, the justification should be documented in the ecological risk assessment discussion.	Comprehensive risk assessment methodologies and results will be addressed in Volume II of the OU-3 RI Report Addendum.
9	In defining groundwater screening criteria for aquatic receptors, the Navy multiplies whatever screening factor it deems most appropriate for each specific chemical by a factor of 10 to account for dilution from groundwater to surface water. The Addendum states that this methodology is recommended by NOAA. Where is the specific reference for this recommended method for determining groundwater-to-surface water screening criteria? Please provide documentation that this is an EPA Region 9 and Cal-EPA sanctioned practice.	Groundwater screening criteria were selected based on the quality of screening values, which included number of species tested and methodologies. The text of the OU-3 RI Addendum has been modified to include an expanded explanation of the ERV development using standard NOAA practice. The requested reference is included below and was added as a reference in the document:  Buchman, M.F. 1999. NOAA Screening Quick Reference Tables. NOAA HAZMAT Report 99-1. Seattle, Washington. Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration. 12 Pages. September.
10	The August 1999 RI for OU-3 cites EPA Region 4 water quality screening values as "Alternative Reference Values" for ecological risk assessment (Tables 6-31A and 6-31B). These values should also be included in assessment of ecological risk in the Addendum and used to determine remediation concentrations for groundwater at Site 1.	Region 4 screening levels were considered in developing ERVs when EPA National Ambient Water Quality Criteria for saltwater Aquatic Life Protection (4-day average continuous concentration) were not available.

ENCLOSURE

DRAFT FINAL  
REMEDIAL INVESTIGATION REPORT ADDENDUM

DATED 13 DECEMBER 2000

THIS RECORD IS ENTERED IN THE DATABASE AND FILED  
AS

RECORD NO. AR\_N00236\_000045