

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
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General Comments on Work Plans	
The Long Beach Naval Shipyard Commander and Personnel at Southwest Division have expressed a strong willingness and desire to limit the number of phases of investigation for the facility. The Department also supports this proposal. However, the RI/FS Work Plan as it is proposed seems too general and is not directed toward defining the lateral and/or vertical extent of contamination.	To limit the number of phases of investigation, conditional samples, including temporary well points to define the lateral and vertical extent of groundwater contamination and additional soil sampling to better define the extent of source areas, have been added for many of the sites. The rationale for timing of conditional sample collection is included in the work plan rationale sections for each site.
Site 4 Data Quality Objectives (DQOs) should include all of Site 4. Specifically the area east of the jogging path to the inner harbor sea wall should be investigated for subsurface and groundwater contamination.	The referenced area of Site 4 has been added to the DQOs as an area of concern for suspected groundwater and subsurface soil contamination, as identified by DTSC and the Regional Water Quality Control Board (RWQCB). As agreed in the comment discussion meeting, sampling proposed in this area includes groundwater and soil samples from five temporary well points for the potential chemicals of concern that were identified based on chemicals found in the surrounding areas.
Historical aerial photograph reviews are proposed prior to selecting sampling points at a number of sites. The Department should be advised of all meetings scheduled to review and discuss photographs.	Section 4.4.2 of the Sampling and Analysis Plan (SAP) has been revised to state that DTSC will be notified to review the aerial photographs.

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<p>Due to the numerous abandoned oil wells in the area, particularly along Seaside Drive, the Gasper [sic] Aquifer should be characterized because of the pathway provided by the abandoned wells for contaminants from the surficial groundwater.</p>	<p>Plates 1 and 2, which identify operating and abandoned wells, have been added to the Work Plans as a reference for the RI (see new Section 3.1.4.6). Characterization of the Gaspur Aquifer is included in the DQOs for both Sites 8 and 9 where the vertical characterization of the groundwater contamination in the shallow water-bearing zone indicates that contamination has migrated to the aquitard that separates that zone from the Gaspur Aquifer. Individual groundwater plumes will be evaluated in relation to nearby wells to determine the potential for migration to the Gaspur and deeper aquifers; however, due to the lack of data concerning the lateral and vertical extent of groundwater contamination, it is difficult to determine the significance of abandoned oil wells as a migration pathway. If the initial RI data indicate that this is a potential pathway, then subsequent phases of the investigation will seek to define the extent of that contamination.</p>
LBNSY Work Plan	
<p>Table 1-1, Change Base Closure dates in the Table to 1994.</p>	<p>Base closure dates for the NAVSTA Long Beach are updated from September 1996 to September 1994 in Table 1-1.</p>
<p>Section 3.2.3, Wastewater discharge to publicly owned treatment works (POTW) are typically regulated by a Wastewater Discharge Permit from the local agency. The report refers to a NPDES permit. Please clarify this reference.</p>	<p>The text in Section 3.2.3 is clarified to state that discharge to the POTW is regulated by a wastewater discharge permit. Also, more information regarding pretreatment of metal-contaminated wastewater at the Shipyard has been added to this section. The same revision was made for the NAVSTA Long Beach Work Plan.</p>
<p>Section 3.2.5.2, Reference to terrestrial wildlife at Long Beach Naval Complex should include unimproved Site 6.</p>	<p>The text in Section 3.2.5.2 states that little or no natural, undisturbed wildlife exists at NC Long Beach. This statement also applies to the unimproved area of Site 6A because of the heavily industrialized areas around it.</p>
<p>Table 3-8, Should include solvents under waste description for Site 3.</p>	<p>Solvents were added to the waste description for Site 3 in Table 3-8. The same revision was made for the NAVSTA Long Beach Work Plan.</p>

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Section 3.4.2, The background groundwater samples from B-22 may be influenced by upgradient contamination at Reeves Field. Facilitywide groundwater sampling and analysis should provide a more accurate characterization of true background groundwater conditions.	Comment noted. As stated in Section 3.4, the current background data set is very limited and a more thorough characterization of background concentration in soil and groundwater will be completed during the RI.
Section 8.2.2, The soil analysis for Site 13 refers to "total petroleum hydrocarbons". From Table 8-1 it appears Method 418.1 was run, therefore, the proper name for the analysis should be "total recoverable petroleum hydrocarbons (TRPH)".	Text revised.
Section 10.9, Monthly progress reports should be supplied to DTSC.	Text was added to Section 10.9 stating that the Navy will provide appropriate monthly progress reports to DTSC. The same revision was made to the NAVSTA Long Beach Work Plan.
NAVSTA Long Beach Work Plan	
Section 1.3.2, Update closure status of Long Beach Naval Station.	Base closure dates for the NAVSTA Long Beach have been updated from September 1996 to September 1994 in Section 1.3.2 and Table 1-1.
Table 5-7, As discussed in the DQO meeting, an underwater survey is to be conducted on the outer side of the Mole. This should be stated in the table. It is acceptable to reference the outer mole underwater survey for Site 4 if its extent will include Site 3.	Table 5-7 has been updated to include Site 3 in the underwater survey for the Mole to identify areas where erosion has caused potentially contaminated soil to be exposed. Text is also added to Section 5.5 (Work Plan Rationale) to discuss the purpose of the underwater survey.
Section 6.5, DQOs for Site 4 should include the remainder of Site 4. Specifically, the area East [sic] of the jogging path to the inner harbor should be investigated for subsurface and groundwater contamination.	The referenced area of Site 4 has been added to the data quality objectives in Section 6.5 as an area of concern for suspected groundwater and subsurface soil contamination, as identified by DTSC and RWQCB. As agreed in the comment discussion meeting, sampling proposed in this area includes groundwater and soil samples from five temporary well points for the contaminants of concern that were identified based on contaminants found in the surrounding areas.

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Section 7.5, Propose multiple well points instead of one MW to confirm the presence or absence of petroleum hydrocarbons.	The sampling strategy for Site 5 is modified in Section 4.10.2 of the SAP to include installation and sampling of temporary well points along the downgradient edge of the site as well as installation and sampling of a monitoring well at the previous boring location. These samples will undergo fast-turnaround analysis for TPH (diesel and gasoline, CA LUFT) and Target Compound List (TCL) volatile organics. If contamination is confirmed, then the extent will be evaluated and the contaminant level quantified using a combination of temporary well points and monitoring wells, as proposed in the Draft Work Plan.
Section 10.3, Propose that a copy of the field summary report prepared after the completion of each round of field activities will be sent to DTSC.	Text added to Section 10.3 states that the Navy will forward a copy of the field summary report to DTSC. The same revision was made to the LBNSY Work Plan.
General Comments on Sampling and Analysis Plans	
All references to Site 4 should include the area across the entire Mole (from the outer edge to the inner harbor sea wall) north of the ServMart sites.	The appropriate figures in both the NAVSTA Long Beach and LBNSY SAPs have been revised to include this area.
Table 2-1 should include solvents under waste description for Site 3.	Table 2-1 has been updated.
The SAPs should include tabs for the specific sites.	Tabs have been added for the sections Preliminary Phase I Activities, General Sampling Approach, Facilitywide Investigation, and each site in Section 4.0 of NAVSTA Long Beach and LBNSY SAPs.

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<p>Field screening for DNAPLs and PCBs should be considered for sites where qualitative results may be sufficient in preliminary efforts to define the extent of a plume.</p>	<p>Temporary well points with fast turnaround analysis are proposed at most sites to define the extent of potential plumes. In general, the analyses are limited to a set of indicator chemicals such as TCL volatile organics (which include dense nonaqueous phase liquids [DNAPLs]). Because volatile organics are the primary chemicals of concern at most sites and are very mobile, they are more appropriate than PCBs as indicator parameters in assessing the extent of contamination.</p> <p>A preliminary evaluation indicated that using a mobile laboratory to analyze groundwater from temporary well points is not cost effective. However, prior to implementing the fieldwork, use of a mobile laboratory will be reevaluated.</p>
<p>If the sampling and analysis at Site 12 confirm that soil in this area is a concern due to the historical spreading of sandblast grit (tributyltin notwithstanding) in the area, then the extent of sampling of Site 12 may need to be expanded to include areas outside of the drum crushing area. Specifically, areas north of Building 314 toward the northern property boundary of the facility may need to be evaluated.</p>	<p>The DQOs and sampling program for Site 12 are revised to reflect that other sandblast grit disposal in the area is a potential concern. Surface soil sampling in Lot X is added (Section 4.11.1 of the LBNSY SAP) and the analyte list (Table 4-18 of the LBNSY SAP) for the well points along the downgradient boundary of Lot X is expanded to include iron, copper, and lead, indicator metals for general sandblast grit contamination. The DQOs and Work Plan Rationale for Site 12 (Section 7.5 in LBNSY Work Plan) state that if the results from Lot X indicate that surface soils and/or groundwater has been impacted by sandblast grit disposal above levels of concern, then the investigation of Site 12 will be expanded to Lot C, the area referenced in the comment.</p>

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Table 4-4. "Potential Chemicals of Concern". Confirm that constituents shown in parentheses for Site 3 and Site 6A were not detected above screening values.	Table 5-6 (Work Plan), the screening evaluation summary for groundwater for Site 3, confirms that the constituents in parentheses are not above the screening criteria. Likewise for Site 6A, Tables 8-5 and 8-6 (Work Plan), the screening evaluation summary for soil and groundwater confirm that the constituents in parentheses are not above the screening criteria.
Section 4.4.3. Section 4.4.2 refers to geophysical techniques in support of the aerial photograph review for Sites 1, 2, 3, and 6A. Section 4.4.3 only refers to geophysical techniques for Sites 1, 2, and 6A. Because none of the three methods is expected to work at Site 3, no geophysical surveys is planned at the site.	The text in Sections 4.4.2 and 4.4.3 has been corrected and revised to further explain the aerial photograph review and geophysical survey tasks. Aerial photographs will be reviewed for all sites. Because of the high conductivity of the soil in the area, electromagnetic techniques and ground penetrating radar are not generally useful. However, a magnetometer may be useful in locating landfill sites or sites that contain ferrous metal, and therefore, will be used at Sites 1, 2, and 6A. Because none of the three methods is expected to work at Site 3, no geophysical surveying is planned at the site.
Section 4.5.4. In the first paragraph, reference is made to collecting GW samples at depth using well points where vertical (characterization of) contaminant concentrations is required. How will this determination be made?	Section 4.5.4 provides the general well point sampling approach used at NC Long Beach. As noted in the revised Section 4.5.4, each site-specific section states where vertical contaminant concentrations are needed.
Section 4.6.3. How were the locations of the deep CPT borings selected? Provide justification.	Section 4.6.3 has been revised to provide justification. Basically, locations were selected to augment data collected at the site-specific investigations and provide coverage sufficient to develop facilitywide cross-sections.
Site 3, Section 4.8.2.1. Subsurface sampling should include analysis for TPH using Method 8015M for diesel.	Section 4.8, including Table 4-11 and 4-12, is revised to include analyses of TPH (diesel, CA LUFT, Method 8015M) in subsurface soil and groundwater samples collected at Site 3.

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<p>Site 3, Section 4.8.3. More than one deep well point should be proposed to adequately address the existence of DNAPL contamination and its lateral and vertical extent. Also, this section contains numerous typographical errors.</p>	<p>Two additional deep well points have been added to the sampling program described for Site 3 in Section 4.8.3. The two well points will be placed in waste pits if they can be identified in aerial photographs. Otherwise, they will be located as shown in Figure 4-6. Typographical errors have been corrected.</p>
<p>Site 4. A sixth AOC should be added to DQOs for Site 4. This should incorporate subsurface soil characterization for appropriate constituents in the area east of the jogging path and north of the Alternate Site 1 ServMart location.</p>	<p>The referenced area of Site 4 has been added to the DQOs in Table 4-13 as an area of concern for suspected groundwater and subsurface soil contamination, as identified by DTSC and RWQCB. As agreed in the comment discussion meeting, sampling proposed in this area in Section 4.9.3 includes groundwater and soil samples from five temporary well points for the chemicals of concern that were identified based on contaminants that have been found in the surrounding areas. These include TCL volatiles, TPH (diesel and gas), and TAL metals.</p>
<p>Section 4.10. A grid of temporary well points should be implemented regardless of the analytical results from one monitoring well. The TRPH contamination was verified in the SI. Figure 4-9, Groundwater Investigation Decision Tree, should be amended accordingly. Same for Section 4.10.1.2.</p>	<p>The sampling strategy for Site 5 has been modified in Section 4.10.2 to include installation and sampling of temporary well points along the downgradient edge of the site. These samples will undergo fast-turnaround analysis for TPH (diesel and gas) and TCL volatile organics. If contamination is confirmed, then the extent will be evaluated and the contaminant level quantified using a combination of temporary well points and monitoring wells, as proposed in the Draft SAP. Figure 4-9 and Section 4.10.1.2 are updated accordingly.</p>
LBNSY Sampling and Analysis Plan	
<p>No specific comments on the Draft Sampling and Analysis Plan for Long Beach Naval Shipyard are included from this reviewer. Other than the comments contained in the General Comments for the Complex as a whole, the SAP for LBNSY appears to be adequate to sufficiently characterize Sites 8-13.</p>	<p>No response required.</p>

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<p>Section 2.2, Remedial Action Objectives. The language quoted from the National Contingency Plan is entirely valid for the purposes of protecting human health. However, LBNC might very well have contaminated sediments in the harbor. Risk assessment for these sediments will probably focus on nonhuman receptors. OSA advises the Navy to make some clear statement in the final work plan about its remedial action objectives for protection of nonhuman receptors.</p>	<p>The following text has been added to Section 2.2 in both work plans to clarify the remedial action objectives for nonhuman receptors.</p> <p style="padding-left: 40px;">There are no endpoints specified by EPA or DTSC for determining an acceptable level of risk for nonhuman receptors. Therefore, the remedial action objective for nonhuman receptors is to minimize to the maximum extent feasible adverse environmental effects such as changes in population abundance, age structure, reproductive potential and fecundity, species diversity, and food web or trophic diversity (EPA, 1989).</p> <p style="padding-left: 40px;">U.S. EPA. <i>Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual</i>, Interim Final, March 1989.</p>
<p>Section 2.3.1, Preliminary Risk Evaluation. OSA finds that the concentrations of chemicals in soil published by USEPA Region IX as draft Preliminary Remedial Goals (PRGs) are not appropriate to use as screening criteria because important pathways are not considered. See comments below for Appendix B.</p>	<p>The Region IX PRGs were not used as screening criteria in the Draft Work Plans. Instead, risk-based concentrations were calculated using the methodology outlined in Appendix B. See further comments on revisions to the screening criteria approach below.</p>
<p>Sites 1 through 4. During meetings between DTSC and the Navy, considerable mention was made of underwater surveys of the physical condition of the Mole. However, no reference is made to such surveys. Will they be used or made available. If the Mole has deteriorated near Site 3, the sea could be in direct contact with old waste pits.</p>	<p>Section 6.5, Work Plan Rationale for Site 4, does include underwater surveys of the outer edge of the Mole as part of the data quality objectives. Section 5.5, Work Plan Rationale for Site 3, has been revised to include an underwater survey and identify areas where erosion has exposed potentially contaminated soils. The SAP (NAVSTA Long Beach) has also been revised to include the underwater survey.</p>

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<p>Appendix A, Preliminary ARARs Evaluation. We note that California ARARs are not summarized in this appendix. OSA strongly recommends the use of the cancer potency factors published by the Standards and Criteria Work Group of CAL-EPA. If the Department can assist the Navy in any way in preparing a list of ARARs appropriate for California sites, please contact either Region 4 or OSA.</p>	<p>The State response to the Navy's request for the identification of State ARARs is included as an attachment to Appendix A in the Final Work Plans. As noted in Appendix A, at this time, these are considered to be potential State ARARs and the Navy is including them, for now, without accepting them or approving them as complying with CERCLA and the NCP. Also, as presented, the list of potential ARARs provided by the State is not specific enough for purposes of evaluating data quality objectives and conducting the RI/FS. The Navy is continuing to work with DTSC to better define how the State regulatory requirements may apply to NC Long Beach.</p> <p>The CAL-EPA cancer potency factors and Leadsread model were used in calculating the risk-based concentrations for soil in conjunction with the federal EPA values. As stated in the Work Plan, the CAL-EPA toxicity values are included for purposes of evaluating data quality objectives. The applicability of these toxicity values is under review by the Navy.</p>
<p>Appendix A, Preliminary ARARs Evaluation. We could not locate an explanation of the significance of the values in parentheses. Are these proposed values?</p>	<p>The values in parentheses are nonpromulgated criteria standards and are included as to-be-considered values. The note was included on Table 2-1 in the draft and was added to Table A-2 (formerly A-1) in the final.</p>

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<p>Appendix B, Screening Risk Assessment Methodology. (comment annotated) The dermal exposure pathway was not included in the screening risk assessment methodology for soils. Inclusion of the dermal pathway would lower the risk-based concentrations by a factor of 2 to 10. OSA feels that the screening procedure proposed by the Navy could lead to premature exclusion of sites from further investigation.</p> <p>The Navy proposed a more acceptable method for preliminary screening of sites in a submission to the Department regarding Marine Corps Air Station El Toro. The method proposed for the El Toro installation resulted in risk-based screening criteria for carcinogenic and noncarcinogenic effects of chemicals in soil in a residential setting. The method included exposure to both adults and children and included pathways of ingestion, dermal contact, and inhalation of vapors and/or dust. This proposed method, as modified in response to comments from OSA, is recommended for use at LBNC.</p>	<p>As agreed at the comment discussion meeting, the screening criteria for soil have been modified to include four exposure pathways for the residential and industrial surface soil exposure scenarios: ingestion, inhalation of volatiles, inhalation of dusts, and dermal contact. Default exposure parameters, as outlined in the Risk Assessment Guidance for Superfund (RAGS), were used, as for the El Toro evaluation. Appendix B has been revised and it details how the risk-based concentrations for soil were calculated and exceptions to the use of the default exposure parameters.</p> <p>Table 2-2, the summary of screening criteria for soil, has been updated and all of the initial evaluation tables for soil and associated text have been revised to reflect the new soil screening criteria. Table 4-4 in the SAP, which shows potential chemicals of concern has also been updated.</p>
<p>Appendix D, Sediment Toxicity Evaluation, page 3. We expect that the Navy will locate the primary reference from JRB Associates for their EP criteria for metals.</p>	<p>The citation for the JRB Associates document has been added to the reference list. A copy of the document will be forwarded to DTSC as soon it is available.</p>

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<p>Table D-1. How close to the limit of detection is 0.0075 mg/kg, the value for mercury based on equilibrium partitioning? This value might not be useful. OSA notes that for chemicals with values based on both equilibrium partitioning and the effects range low (ER-L), the value based on equilibrium partitioning tends to be two to three orders of magnitude higher. Because these values are to be used in a screening procedure, OSA feels that the values based on equilibrium partitioning might not be adequately protective of environmental health. Therefore, OSA recommends that USEPA's method of comparative toxicity be used to develop a screening value for all chemical which have not ER-L. The comparison criterion would then be the lower of the values developed using equilibrium partitioning and comparative toxicity.</p>	<p>The sample detection limits observed for mercury in sediment samples analyzed for the Site Inspection ranged from 0.15 to 0.24 mg/kg. As discussed on pp. D-11 and D-12, it is recognized that, in some cases, the screening criteria are lower than the detection limits that are practically achievable. The laboratories will be requested to report the instrument or method detection limits, as well as the CLP detection limits, to get as close to the screening criteria as practical.</p> <p>To address the second part of the comment, the texts on pp. D-7 and D-12 have been revised to state that, in the absence of ER criteria, screening levels will be developed based on comparative toxicity. If equilibrium partitioning criteria are also available, the lower of the comparative toxicity and equilibrium partitioning values will be used.</p>
<p>Appendix D, page 8. OSA concurs that concentrations detected to date for Al, Ba, Be, Fe, and V indicate that these metals are not of concern. The third bullet on p. D-12 should be made to conform with the text on p. D-8.</p>	<p>Comment noted and revisions made.</p>
<p>Appendix D, page 8. OSA concurs that screening for tributyltin will suffice for the class of organotins. However, we are not prepared to ignore the toxicity of mono- and dibutyltins.</p>	<p>Comment noted.</p>
<p>Appendix D, page 11. OSA recognizes that controversy exists regarding the interpretation of data from the analysis of acid-volatile sulfide (AVS). Nevertheless, we suggest the Navy state how and when these data will be used. For instance, if bioassay of a sediment sample from 10 cm deep yields 100 percent lethality, can data on AVS be used to determine the appropriateness of the sample?</p>	<p>Text has been added to the AVS discussion on p. D-11 to clarify that the purpose of the AVS and simultaneously extracted metals analyses is to evaluate the ratio of potentially bioavailable metals to total metals. This data will then be used to relate metals concentrations to bioassay and bioaccumulation data.</p>

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<p>Appendix D, page 11. Because instrument detection limits do not account for matrix interference and CLP detection limits are only generally applicable, OSA suggests that the figure of merit is the sample quantification limit (SQL), which is analogous to the instrument detection limit for each sample. OSA does not believe that a single set of detection limits should be used to describe sediment or any other medium.</p>	<p>Concur with reviewer on comment. The point of the text discussed is that the laboratory will be asked to report the sample quantification limit, which may be higher than the instrument detection limit or the method detection limit, depending on the level of matrix interference.</p>
<p>Appendix D, page 14. The term "unacceptable factors" is unacceptably vague. If this refers to such factors as those described in the first paragraph on page D-20, we suggest that the Navy call these "factors not related to site activities". Regional contamination with low levels of DDT and congeners might fall into this category. In fact, OSA recommends that the Navy state in the Work Plan how they intend to interpret the certain finding of low levels of chlorinated pesticides in harbor sediments against the known regional background.</p>	<p>The text referring to "unexpected factors" as a reason for conducting Phase II sampling has been deleted and the decision tree has been simplified. The decision to pursue Phase II sampling will be based on a cost-benefit analysis (i.e., the cost of collecting the additional data vs. the cost of remedial action).</p> <p>The reference stations would be tested for the same parameters as the samples from the harbor. The data from the reference stations will be compared to that from the harbor samples to determine whether the harbor samples have significantly higher chemical concentration, toxicity, or bioaccumulation potential.</p>
<p>Appendix D, page 18. OSA feels that the proposed approach to locating appropriate background sediment is sound. The Navy will be required to gain the concurrence of the Department and the Regional Water Quality Control Board on these locations before actual sampling.</p>	<p>Text has been added stating that the proposed reference station locations will be approved by DTSC and the RWQCB prior to sampling.</p>
<p>Appendix D, page 19. The second reference to a polychaete is apparently an error. <i>Holmesimysis costata</i> is a mysid shrimp that was recommended by Dr. Polisini of OSA as a test species; the species shown is apparently a misspelling. The other species and assays seem to be appropriate for the bioassay of sediment. OSA will wish to review the protocols for these tests before commencement of testing.</p>	<p>The spelling error has been corrected. The specific protocols to be used will depend on the laboratories chosen for the analyses. Text has been added stating that the protocols will be reviewed by the regulatory agencies prior to testing.</p>

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Decision Tree, Figure D-1 and pages D-19 to D-21. The Navy describes what actions would be recommended upon several combinations of findings of chemical analysis and bioassay, all in accordance with Figure D-1. <i>We found these examples rather confusing. We suggest presentation in a tabular summary, showing the results of the different assays and the actions taken for the four examples described in the text.</i>	Table D-3 has been added to better illustrate various decision tree scenarios. All of the examples in the text are included in the table, so much of the text has been deleted to make the section more clear and concise.
Appendix G, Data Qualifiers. (comment annotated) OSA recognizes the value of qualifiers for the purposes of data validation under USEPA's Contract Laboratory Program (CLP), as shown in this appendix. These same qualifiers are summaries in Exhibit 5-4 in RAGS Part A. However, only three of these qualifiers - B, J, and U - are of value to the risk assessor, as in Exhibit 5-5 from RAGS Part A. Inclusion of the longer list in the RI/FS report will make the tables of data cluttered and difficult to use. Several of the qualifiers shown in Appendix G render data useful only for qualitative purposes. Inclusion of such values in data tables will make it especially difficult to decide which values to use in the risk assessment.	The only purpose of Appendix G is to define the qualifiers that appear with the SI data that is presented in the Work Plan, not to define which qualifiers will be used for the RI. We also disagree with the commenter that only B, J, and U are useful qualifiers. There are several qualifiers that indicate whether the value is biased high or biased low, which is useful for both risk assessment and other data evaluation activities.
Appendix H. The authors switch repeatedly between English and metric units for velocity. <i>This is confusing. Please use just one set of units.</i>	Metric units are used only on pp. H-2 and H-3, and in both cases, the English units are provided in parentheses.
Appendix H, pp. H-6 and H-7. An "incremental approach" is stated to have been selected over the hydrodynamic modeling approach because of the "stepwise nature of addressing the problem". This is circular. Please state why one approach is better than the other for this site.	The text has been revised to state that an incremental approach has been selected since, at this stage of the investigation, it is not clear that contaminated sediments are a problem that will require remediation. Therefore, it is more prudent to proceed in a stepwise fashion and avoid extensive data collection and modeling efforts if they do not prove to be necessary.

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<p>Appendix H, p. H-10. Historical information on the effectiveness of natural recovery is needed to select this remedial method over other candidate strategies. It would seem that natural recovery could only be applied to areas of toxic sediment defined by bioassays if the substance(s) responsible for the toxicity is defined. However, such cause-effect relationships usually cannot be established. The Work Plan should reflect the difficulty (or the impossibility) of applying natural recovery to areas of contamination defined by bioassays.</p>	<p>Natural recovery (or the no action alternative) will be evaluated in the Feasibility Study. Text has been added to state that selection of natural recovery as a remedial alternative will require a clear understanding of the relationship between toxic effects observed and contaminant concentration.</p>
<p>Appendix H. How is the analysis of sediment transport used to identify likely zones of deposition in the harbor or elsewhere? This analysis should be used to select sites for sampling which are most likely to have been contaminated by transported sediment.</p>	<p>The Conceptual Model and Work Plan Rationale for Site 7 (Section 9.3 of NAVSTA Work Plan) discuss how the sediment transport model was applied to determining areas of concern and the sampling strategy for Site 7.</p>

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<p>General. All future documents containing descriptions of geology, geophysics, groundwater chemistry or flow, or engineered features, plans for investing such, or interpretations of physical conditions must be signed by a geologist or (civil) engineer registered by the State of California.</p>	<p>A California registered geologist's signature has been added to the Work Plans and Sampling and Analysis Plans.</p>
<p>Section 3.4.1, Background Soils. There is no discussion of the relative concentrations of metals, minerals, or organics in any samples other than the two chosen for background for screening level purposes. Based on my evaluation, in many cases the concentrations in the two "background" samples are amongst the highest. Sample B-11 is high in calcium and perhaps so in mercury. Sample B-22 is high in aluminum, barium, chromium, copper, iron, lead, nickel, and vanadium. In contrast, samples B-4, B-7, B-13A, B-14, B-16, B-44 and B-45 are all relatively low in minerals and organics, yet provide a good range of values upon which to base statistical interpretations of background and use for comparison to screening levels for health-based criteria.</p> <p>I recommend that the final version of the RI/FS work plan utilize data from the samples that comprise a distinct grouping representing apparently unimpacted soils. All tables displaying background data, comparisons of the data to screening levels, data reinterpretations, and test re-writing should be accomplished before determining the need for further sampling for background. I believe adequate samples representing reasonably expected concentrations in background have already been acquired, but defer final judgement until the existing data have been analyzed and the Navy has developed rationale for further sampling, if such is necessary.</p>	<p>The limitations of the "background" subsurface soil and groundwater samples collected during the SI are noted in the Work Plans. Although the samples cited seem to have relatively low levels of metals and organics, many of these samples are from areas where metals are potential chemicals of concern and it is questionable whether they are representative of "ambient" or "background" conditions. Also, the data set is not large enough to provide a statistically significant estimate of the range of ambient level of metals at the site in subsurface soil and groundwater.</p> <p>To clarify the relationship between the level of metals and minerals in the "background" samples and the rest of the samples collected during the Site Inspection, an appendix is added to each work plan which lists the concentration of each metal in groundwater, soil, and sediment from highest to lowest (Appendix F for LBNSY; Appendix I for NAVSTA). Text added to Section 3.4 (both Work Plans) references these appendices.</p>

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<p>(See Previous Page)</p>	<p>(Response to Comment from Previous Page Continued)</p> <p>The background sampling approach recommended for subsurface soils and groundwater in the work plan is cost-effective in that it uses wells that are to be installed in uncontaminated areas as part of the sitewide groundwater elevation monitoring network. There is no data for surface soils, so the surface soil sampling program is also unchanged. However, text added to Section 10.5.6 (Evaluation of Background Concentrations) states that the samples to be included in the background data sets for groundwater, subsurface soil, and surface soil will be evaluated on an individual basis. First, the samples that are to be collected as part of the facilitywide investigation from "clean" areas will be evaluated to determine whether all of the samples are representative of that population. Any samples that appear to have concentrations that are significantly different than the rest of the "background" population will be discarded from the data set. Then site-specific samples from both the SI and the RI will be evaluated to determine whether they have concentrations that are significantly different than the background population. The background data set may be expanded to include some of these samples if appropriate.</p>

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Sampling and Analysis Plans	
<p>General. The discussions of ground penetrating radar (GPR), cone penetrometer testing (CPT), and Hydropunch surveys are very open-ended. No mention is made of using any areal survey tools in grid patterns to locate subsurface features such as trenches or pits, or to resolve fill areas or stratigraphy. Many pages are devoted to determining the health risk from exposures to contaminated soil and groundwater, the key to making decisions regarding cleanup locations, methods, and levels. Yet the basic data to define the actual, physical description of the subsurface will never be generated in a detail commensurate to the effort involved with the risk assessment. GPR is mentioned as a tool to locate underground utilities at proposed boring locations; CPT may be used where well points may be installed; and Hydropunch may be used as the vehicle for installing the well points. At the technical committee meetings there was discussion that GPR would be tested to see if it is useful for this site. The testing may have been conducted. If so, the technical committee should have access to the printouts and grid locations, so that we may make informal decisions regarding the use of GPR.</p> <p>I recommend maximum use be made of survey techniques such as GPR, CPT, and Hydropunch to define the subsurface in three dimensions, the sooner the better. Phase 2 can also benefit by focused use of survey techniques to define contaminant plumes in three dimensions.</p>	<p>The Final SAPs include more extensive use of survey techniques such as geophysical surveys, temporary well points, and cone penetrometer testing. In response to site-specific comments, additional "planned" well points have been added to Sites 3, 4, 5, 8, and 13. To limit the number of phases, "conditional" well points were originally proposed in the Draft SAPs for Sites 5, 6A, 8, 9, 12, and 13. The SAP has been revised to add conditional well points at Sites 1, 2, 3, 4, 6A, and 11.</p> <p>As originally proposed, CPT is being used to evaluate the stratigraphy in six locations for the facilitywide investigation and at specific sites where deep temporary well points are being installed. CPT will not be used to evaluate stratigraphy at shallow well points because it is inappropriate at such shallow depths (depth to groundwater is about 20 feet below ground surface).</p> <p>Section 4.4.3 (Geophysical Surveys) is revised. In short, previous experience in the area indicates that, due to the fine grain nature of the hydraulic fill material that makes up the subsurface within NC Long Beach and the relatively high conductivity (from high salinity in the pore fluids) of the vadose zone soil, both GPR and electromagnetic techniques do not perform well and have limited use for exploratory activity. However, a magnetometer may be useful for screening the subsurface at landfills or sites that contain ferrous metals. Consequently, at NAVSTA Long Beach, geophysical surveying will be conducted at Sites 1, 2, and 6A using the magnetometer and other equipment as needed. None of the other sites contain material which could be identified using a magnetometer.</p>

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<p>(See Previous Page)</p>	<p>(Response to Comment from Previous Page Continued)</p> <p>Despite these limitations, extra effort will be made to locate the tributyltin disposal pit at LBNSY (Site 12). If potential disposal areas are identified at Site 12 in the aerial photograph review, available geophysical surveying techniques (which may include GPR, electromagnetic techniques, and the magnetometer) will be used. It is not cost-effective to use these technologies on more than a very limited basis. The reference to using several geophysical techniques, including GPR, for utility clearance was intended to allow flexibility. It is unlikely that GPR will be useful for this purpose either. If desired, grid locations for those sites where geophysical surveying will be done, can be provided after selection of a subcontractor and prior to implementation.</p>
<p>Section 4.5.2, Background Surface Soil Sampling Approach (Shipyard) and Section 4.5.2.2, Background Surface Soil Samples (Station). There is no discussion of the review process for the data from the proposed presumed background locations. As for the RI/FS Work Plan comment above, the existing data needs to be reviewed prior to deciding whether more samples for background are needed. Further, should additional locations be deemed necessary, the data must be reviewed prior to calculating a range of background values. The criteria for excluding (perhaps more importantly, including) various samples as background should be the topic for agreement by the technical committee before the results are published as drafts.</p> <p>I recommend that this section be changed to reflect full consideration of existing data prior to designing further sampling; that rationale be provided for additional sampling; and that the technical committee be involved in setting the criteria for excluding and including data used for background.</p>	<p>There is no data for surface soils at the facility. Refer to the response to the Work Plan comment for discussion of other issues involved in the background sampling program and the changes made.</p>

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<p>Section 6.3, Well Installation and Completion. Though the SAP recognizes the need to use a cement in the grout that provides good service in brackish conditions, the cement type is not specified.</p> <p>I recommend that the SAP explicitly list the cement type so that the technical committee can judge the appropriateness of the type and the geologist responsible for executing the SAP orders the proper type, the drillers are told explicitly, and the load is checked for the specified cement type.</p>	<p>Section 6.3.1.1 has been revised to specify Portland (Type II) cement.</p>
<p>Section 6.3.2, Well Development. The SAP states that well development will not proceed beyond removal of 10 well volumes. The SAP does not state how that volume was selected, nor what the implications are of a well not meeting the development criteria. The SAP does state performance criteria for completion of development, but the volume restriction supersedes other criteria. Usually, when a well cannot meet standard performance criteria (e.g., steady pH, EC, turbidity), the implication is poor well design, construction, or both.</p> <p>I recommend that the restriction on well volumes be deleted, or the rationale for the restriction be explicit and reviewed by the technical committee.</p>	<p>The volume restriction has been removed in Section 6.3.2.</p>

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<p>Section 6.3.3, Aquifer Testing. The SAP states that the expected length of time for pumping during an aquifer test is four hours. Often, an aquifer test lasting less than 24 hours does not provide data regarding recharge or barrier conditions. The information desired from the aquifer tests is implied parenthetically (transmissivity, hydraulic conductivity, and specific yield). If recharge and barrier conditions are not needed for this investigation, then perhaps four hours is adequate, but the rationale for the selection of four hours (rather than 2 to 8 hours) is not provided. Slug tests are discussed as possible alternatives to pumping tests in wells where water production is inadequate for pumping tests. Experience has shown that slug tests, if performed in wells of similar construction and using the same technique at each well, can provide good relative data regarding the distribution of hydraulic properties. Slug tests performed in wells that also have pumping tests will provide some degree of calibration. Indeed, the number of pumping test(s) may be reduced based on the initial pumping test and slug test data, with an emphasis on a few good pumping tests lasting longer than four hours and using slug tests as correlative tools. Such a technique may save disposing of large quantities of pumped water and save time overall.</p>	<p>Sections 4.6.8 and 6.3.3 are revised to propose conducting four slug tests for the aquifer tests. Due to the fine grain nature of the subsurface material, wells are unlikely to have adequate production for pumping. Hydraulic conductivity calculated from the results of the slug tests will be compared to published data and values estimated from grain-size analysis. If values are comparable, no further testing will be conducted at this time. If hydraulic conductivity values are not comparable, piezometers will be installed and pumping tests performed. Pumping rate and recovery water level will be monitored for as long as necessary (for an estimated 4 to 8 hours) to assess the hydraulic conductivity. Table 6-1 has been added to show time intervals between water level measurements that may be used. Details will be provided at a later date as necessary.</p> <p>Recharge and barrier conditions are not needed at this time, but may be assessed at later stages of the RI/FS as part of the evaluation of remedial alternatives.</p>

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<p>I recommend that the technical rationale for selection of aquifer pumping tests lasting four hours be provided. Also, the SAP should explicitly state what information normally acquired during full pumping tests is not necessary to acquire at this site. The accuracy of such tests should be discussed in light of the needed degree of accuracy for the risk assessment. Consideration should be given to perform a few full-length pumping tests with slug tests as correlative tools.</p> <p>Mention is made of transducers and data loggers, but no mention is made of the frequency of "picking" water levels.</p> <p>I recommend that the SAP state the data pick frequency, with the normal method of acquiring early data at a very short frequency, falling off at a geometric rate.</p>	
<p>Section 6.5, Water Level Measurements. There is a typographical error stating that groundwater levels will be measured to the nearest 0.01 inch, rather than 0.01 feet.</p>	<p>The text in Section 6.5 has been revised.</p>
<p>Section 6.6.1, Groundwater, Item 4. The unit designation of 1 per mil for salinity measurement may be confusing to the lay reader.</p> <p>I recommend that the unit designation be 1 part per thousand (ppt) or 1 gram per liter (g/l), as appropriate.</p> <p>The criterion of purging by pumping three times to dryness in slowly producing wells is not supported by rationale (the norm is twice), and appears to be in conflict with minimizing fluid production (restricting the volumes removed during development and abbreviated pumping tests).</p> <p>I recommend that the SAP provide explicit rationale for purging three times to dryness, rather than once.</p>	<p>The text has been revised to read "part per thousand".</p> <p>The text in Section 6.6.1 is revised. In low yielding wells, the pump will be throttled down to a flow rate such that three well volumes can be removed. If the pump cannot be throttled low enough to achieve a constant flow, these wells will be pumped dry one time to obtain a representative water sample.</p>

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<p>Well Point Water Sampling. Following the initial paragraph are guidelines for sampling. Are these guidelines applicable to all groundwater sampling and not just well point groundwater sampling? They seem to apply to all groundwater sampling.</p> <p>I recommend that the guidelines, if applicable to all groundwater sampling, be separated by as section that explicitly states that they apply to all groundwater sampling.</p>	<p>The guidelines apply to both monitoring well and well point groundwater sampling. Section 6.6.1 includes a new section.</p>
<p>Section 6.6.5, Subsurface Soil, 2nd para. Reference to the "blocking plug" is ambiguous. Does this imply that a plug or a blank center bit will be used rather than a center bit with fishtail teeth?</p> <p>I recommend that "blocking plug" be changed to read "center bit" or "center fishtail bit".</p>	<p>Concur. The text in Section 6.6.3 has been revised to use "center bit".</p>
<p>Section 6.7.2, Groundwater and Soil Sampling Equipment. The decontamination procedure, the third bulleted item parenthetical remark (when semivolatile and nonvolatile organic contamination may be present) implies knowledge of the conditions at the site. The sites where rinsing with subgrade methanol may not necessary are as known now as they will be when the samplers are there. Why not specify which sites the rinse is or is not required?</p> <p>I recommend that the SAP state explicitly which sites are suspected of having semivolatile or nonvolatile organics contamination for the purpose of sample equipment decontamination and therefore at which sites a methanol rinse is required. The samplers should be instructed at which locations a methanol rinse is required and which locations they must merely be prepared to perform the methanol rinse if situations warrant.</p>	<p>Concur. Section 6.7.2 has been revised to state that methanol will be used at all sites on NAVSTA Long Beach and at all sites except Site 11 on LBNSY.</p>

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<p>Section 6.9.2, Packaging and Shipping. There is no discussion of the method to verify that coolers reached and maintained a maximum temperature of 4°C.</p> <p>I recommend that the SAP include the method to verify that ambient temperatures in the shipping coolers was lowered to a maintained 4°C.</p> <p>There is no discussion of the criteria or procedures for resampling should samples be lost, tampered with, or broken due to mishandling or freezing.</p> <p>I recommend that the SAP include criteria for when the loss of the sample would cause the need for resampling (i.e., are there samples by themselves that are critical to the Phase 1 investigation?).</p>	<p>Concur. Section 6.9.1 is revised. The temperature of the sample cooler will be measured and recorded prior to shipping the samples and upon arrival at the laboratory to ensure 4 degrees Celsius is maintained.</p> <p>Section 6.9 has been revised to state that if a sample is tampered with, broken, or otherwise lost before analysis, the need for resampling will be evaluated on a case-by-case basis. Lost samples and resampling will be documented in the RI report.</p>
<p>Section 6.12.4, Trip Blanks. The sentence, "Samples collected...TCL volatiles" contains the awkward phrase, "separately together".</p> <p>I recommend that the sentence be rewritten.</p>	<p>Concur. The text in Section 6.12.4 is revised.</p>
<p>Section 6.12.6, Harbor Sediment Reference Samples (NAVSTA SAP only). The first sentence is ambiguous. The phrase "surface deep" is awkward.</p> <p>I recommend that that sentence be rewritten.</p>	<p>Concur. The text in Section 6.12.6 is revised to read "surface and deep".</p>

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Comment	Response
<p>Screening Risk Analysis</p> <p>1) The screening risk assessment methodology used to characterize groundwater conditions at the sites referenced in the report are not considered appropriate for establishing cleanup standards. State requirements, identified for the Long Beach Shipyard by us, should be used for the above. A list of the Los Angeles Regional Water Quality Control Board requirements for the referenced facilities was provided to DTSC Long Beach on April 6, 1993. Site specific and chemical specific cleanup criteria will be developed after the proposed round of sampling has been completed.</p> <p>2) The screening risk assessment methodology does not take into account the oil and gas wells present in and around the Naval Station and Shipyard. Some of these wells are directly downgradient of the contaminated sites. The possibility that these wells could serve as a pathway to underlying aquifers should be discussed. A map showing the abandoned and producing wells on and in the immediate vicinity of the Naval Station and Shipyard should be included in the plan.</p>	<p>As discussed in Appendix A (Preliminary Evaluation of Potentially Applicable or Relevant and Appropriate Requirements [ARARs]) and in Section 2.3.1 of the Work Plans, the data indicates that neither the shallow water-bearing zone nor the Gaspar Aquifer in the area of the NC Long Beach would be considered a source of drinking water due to high total dissolved solids (TDS); therefore, drinking water criteria would not be applicable. Instead, the exposure pathway of concern is discharge to surface water, so surface water criteria have been used as screening criteria for groundwater at this stage of the RI/FS. TDS data will be collected during the RI to confirm the appropriateness of this determination. Text has been added to Section 2.3.1 to indicate that the RWQCB will reevaluate whether drinking water standards are applicable after the initial RI data are available.</p> <p>Section 3.1.4.6 has been added to the Facilitywide Assessment portion of the Work Plans to discuss operating and abandoned oil wells in the area. Plates 1 and 2 show the location of operating and abandoned wells. There is no indication that the contamination released to the shallow water-bearing zone would reach any further than the Gaspar Aquifer, so these are the two zones that are the focus of the RI activities. However, as more data on the horizontal and vertical extent of the groundwater plumes becomes available, Plates 1 and 2 will be used together with oil well logs and abandonment records to evaluate the potential threat to lower aquifers.</p>

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(See Previous Page)	(Response to Comment from Previous Page) Section 4.7.3 (Site 8) of the SAP has been revised to state that if well point sampling indicates that contaminants have migrated to nearby oil wells, the well status, well construction records, abandonment procedures, and other information will be reviewed. If these records show that migration to lower aquifers may have been facilitated by the oil wells, a well will be installed in the Gaspar Aquifer. Section 4.8 (Site 9) of the SAP already contains provisions for installing a monitoring well in the Gaspar Aquifer if contamination is a potential threat to lower aquifers. Section 4.10.1 (Site 11) of the SAP has been revised to state that well records will be reviewed if well points show that contamination has migrated to the wells east of the site.
Site 3: Industrial Waste Disposal Pits 1) The eastern and western boundaries of the site have not been located. 2) Surface soil samples should also be taken outside the site limits to define the location of the disposal pits.	Should contamination be found in the groundwater samples collected at the site boundaries, as currently defined, 20 conditional temporary well points have been added in Section 4.8.3 as a provision to determine the extent of the groundwater plume. If the surface soil samples collected within the waste disposal area, as currently defined, indicate that the concentrations are above levels of concern, then the extent of the surface soil contamination will be addressed as part of the remedial action plan. Seven conditional surface soil samples have been added as a provision to Section 4.8.1 to better define the area of concern.

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<p>Site 4: Mole Extension Operations</p> <p>1) Proposed sampling points and monitoring wells are all centrally located in areas of known contamination (excepting two shallow well points in Alternate Site 1). Sampling points and wells should also be located outside these previously investigated areas in order to define the horizontal and vertical limits of soil and groundwater contamination.</p> <p>2) Monitoring wells and soil borings should be proposed in the northern portion of the jogging trail on the mole and in the area directly east of the fill area (south of Pier 9).</p>	<p>Areas of known contamination were previously well-defined. See the summary of previous investigations in the Work Plan. However, in Section 4.9.3 of the SAP, 20 conditional well points have been added as a provision to better define the lateral and vertical extent of contamination. The additional well points will be installed if the groundwater data indicate the presence of contaminant plumes that exceed levels of concern. Also, a provision for up to three conditional monitoring wells, to provide for long-term monitoring of contaminant plumes, has been added. The well points will be analyzed for indicator parameters and the wells will be analyzed for chemicals of concern as indicated by the initial round of sampling.</p> <p>The referenced area of Site 4 has been added to the data quality objectives as an area of concern for suspected groundwater and subsurface soil contamination, as identified by DTSC and the RWQCB. Section 4.9 has been revised to propose sampling groundwater and soil samples from five temporary well points for the chemicals of concern that were identified based on contaminants that have been found in the surrounding area. These include TCL volatiles, TPH (diesel and gasoline), and TAL metals.</p>

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<p>Site 6A: Boat Disposal Location</p> <p>1) The draft Sampling and Analysis Plan calls for determining the vertical extent of soil and groundwater contamination. The plan should also include a proposal to determine the horizontal limits of both soil and groundwater contamination.</p>	<p>The horizontal extent of the potential soil contamination is assumed to be the site boundaries, since the disposal operations were limited to that area. Confirmation of the horizontal extent of the soil contamination will be in the course of the remedial action, if the risk assessment and ARARs evaluation for the soils in the disposal area indicate that remedial action is required.</p> <p>A provision for up to 20 conditional well points to better define the lateral extent of contamination has been added to Section 4.11. The additional well points will be installed if the groundwater data from the boundary wells indicate the presence of a contaminant plume that exceeds levels of concern beyond the site boundaries. Also, a provision for up to three conditional monitoring wells to provide for long-term monitoring of contaminant plumes has been added. The well points will be analyzed for indicator parameters and wells will be analyzed for chemicals of concern as indicated by the initial round of sampling.</p>
<p>Site 8: Building 210 Trichloroethene Disposal Site</p> <p>1) Groundwater sampling of MW-24 is proposed. However, MW-24 is upgradient of the site.</p> <p>2) Given the site history, groundwater samples taken along the fenceline would be more appropriate.</p> <p>3) A well should be installed in the parking lot downgradient of the disposal site.</p> <p>4) An oil well exists immediately downgradient of the disposal site. This potential pathway to underlying aquifers should be addressed.</p>	<p>As agreed in the comment discussion meeting, Section 4.7 has been revised to include installing three temporary well points along the fence, just downgradient from the disposal area. Groundwater from the well points will be analyzed for TCL volatile organics. The final SAP retains the provision for up to 20 conditional well points to define the extent of potential plumes that exceed the screening criteria and three wells for long-term monitoring of any significant plume.</p> <p>Regarding the evaluation of oil wells as a potential pathway to lower aquifers, see the response to the first comment made by this reviewer.</p>

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Comment	Response
<p>Site 11: Hillside East of Drydock 1</p> <p>1) Three shallow wells are proposed in this area. The surface relief is 20 feet. Groundwater is estimated to be 10 feet below ground surface at the toe of the slope and 20 feet below ground surface at the top. This implies that the direction of groundwater flow is towards the drydock. However, flow direction is reported to be to the northeast. We will require that the correct groundwater flow direction in the area be determined.</p> <p>2) Upon determination of the directions of groundwater flow, monitoring wells should be located downgradient of the site. If groundwater flow direction is to the north-northeast as stated, monitoring wells/sampling will be required downgradient of the northern portion of the site.</p> <p>3) If contamination is discovered, additional wells/sampling may be required to adequately characterize the site.</p> <p>4) An oil well exists at the top of the slope. The potential pathway provided to the underlying aquifers should be discussed.</p>	<p>Groundwater flow direction will be confirmed from the facilitywide data prior (see Section 4.4.1, Initial Groundwater Elevation Survey) to locate the wells at Site 11. As stated in the data quality objectives for Site 11, monitoring wells will be placed upgradient and downgradient of the site to evaluate the potential impact to groundwater from the sandblast grit disposal. The location of monitoring wells at Site 11, shown in Figure 4-9, has been changed to show two wells on the perceived downgradient side of the site (north-northeast). These locations may change after evaluation of the facilitywide elevation data.</p> <p>Should the monitoring wells indicate that groundwater has been impacted by the metals from the sandblast grit, a provision for up to 10 conditional well points has been added to evaluate the lateral and vertical extent of contamination.</p> <p>Regarding the evaluation of oil wells as a potential pathway to lower aquifers, see the response to the first comment made by this reviewer.</p>
<p>Site 13: Paved Tank Farm Area</p> <p>1) Soil and groundwater contamination is known to be present at this site. Groundwater direction is unclear.</p> <p>2) Additional wells should be installed to determine the groundwater flow and to characterize the existing plume.</p>	<p>Minimal groundwater contamination was detected at Site 13 during the RCRA Facility Investigation. Only copper and zinc exceeded the screening criteria for groundwater, and the only organic detected was diethylphthalate (a common laboratory contaminant), which was below the screening criteria.</p> <p>As agreed in the comment discussion meeting, Section 4.12 has been revised to include three temporary well points on the downgradient side of Site 13. Groundwater from these well points will be analyzed for TCL volatile organics, TCL semivolatile organics, and TAL metals. The final SAP retains the provision for adding up to 20 conditional well points to define any potential plumes.</p>

RESPONSE TO COMMENTS NAVAL STATION LONG BEACH, CALIFORNIA DRAFT RI/FS SAMPLING AND ANALYSIS PLAN	
13 September 1993	Sheet 1 of 3
Comments by: J. Michael Lyons, California Regional Water Quality Control Board, Los Angeles Region Response by: Kathy Brewer and Peter Torrey, CH2M HILL	
Comment	Response
Table 4-6. The detection limits for metals do not mention whether these limits are for sediment or water samples.	Concur. A footnote has been added to Table 4-6 to explain to contract-required detection limits (CRDLs) for Target Analyte List (TAL) metals. As explained in the Contract Laboratory Program (CLP) Inorganic Statement of Work, the CRDLs are instrument detection limits obtained in pure water that must be met using the procedures outlined in the CLP protocols. Detection limits for matrices other than pure water are not listed because they may be considerably higher depending on the sample matrix. For instance, detection limits for soil vary with soil moisture.
Whole Sediment Bioassays (WSB). Three species are mentioned for WSBs. We suggest eliminating the mysid WSB and substituting a bioassay using sediment pore water in order to evaluate contamination of the interstitial water of the sediment. Since many contaminants are found in the interstitial water, the pore water test may be more relevant ecologically. A recommended species for this test is abalone.	<p>The marine biologist who prepared the sediment evaluation program for NC Long Beach reviewed the pore water bioassay protocol provided by Mark Stephenson from the California Department of Fish and Game Marine Pollution Studies Laboratories. The following potential difficulties in implementing the method were noted:</p> <ul style="list-style-type: none"> • The equipment used to extract the pore water is fairly specialized. It is likely that there are only a few laboratories that would be able to do the work. • The protocol consistently refers to samples from the top 2 cm of sediment, which is generally the "wettest" portion. The Sampling and Analysis Plan indicates that the sediment samples will be collected down to 10 cm of sediment, so sediment volumes larger than the 6 liters discussed in the protocol may be required to obtain the needed pore water volume.

RESPONSE TO COMMENTS NAVAL STATION LONG BEACH, CALIFORNIA DRAFT RI/FS SAMPLING AND ANALYSIS PLAN	
13 September 1993	Sheet 2 of 3
Comments by: J. Michael Lyons, California Regional Water Quality Control Board, Los Angeles Region Response by: Kathy Brewer and Peter Torrey, CH2M HILL	
Comment	Response
(See Previous Page)	(Response to Comment From Previous Page Continued) <ul style="list-style-type: none"> • Meaningful interpretation of the pore water bioassay results requires that the chemistry of the pore water be analyzed in addition to the chemical analyses planned for the whole sediment sample. This significantly increases the sediment sample volume required and potentially doubles the analytical cost associated with the sediment sampling program. <p>The pore water bioassay is a developing method that would provide some useful data in the interpretation of sediment toxicity. However, since it would not be practical or cost effective to collect sufficient sediment to analyze the pore water for the potential chemicals of concern (semivolatile organics, pesticides and PCBs, and metals), the usefulness of this method is limited and does not provide a great improvement over the WSB. Therefore, the sediment bioassay testing protocols listed in the Draft SAP have not been changed in the Final SAP.</p>
Bioaccumulation. We are unclear as to which species would be used for the bioaccumulation studies. The Bedded Sediment Bioaccumulation Test mentioned does not indicate what protocol would be used.	Macoma is prevalent in the area and is one of the species listed for the Bedded Sediment Bioaccumulation Test. The protocols will be finalized once the laboratories have been selected. Appendix D (Sediment Toxicity Evaluation Approach) in the NAVSTA Long Beach Work Plan and Sections 4.8.4, 4.9.4, and 4.12.3 in the SAP have been revised to indicate that DTSC and the RWQCB will have an opportunity to review and approve the protocols selected for both the bioassay and bioaccumulation tests.
Tissue Sampling for Bioaccumulation. The approach to the tissue sampling is unclear. We recommend consistent use of the same species from each sampling station, if possible.	Text has been added to Appendix D in the NAVSTA Long Beach Work Plan and Section 4.12.3 in the SAP to state that similar species will be collected from each sampling location, if possible. The preference is for molluscs, but if a sufficient mass cannot be obtained, then polychaetes and other species may be used.

RESPONSE TO COMMENTS NAVAL STATION LONG BEACH, CALIFORNIA DRAFT RI/FS SAMPLING AND ANALYSIS PLAN	
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Comments by: J. Michael Lyons, California Regional Water Quality Control Board, Los Angeles Region Response by: Kathy Brewer and Peter Torrey, CH2M HILL	
Comment	Response
Section 6.7. Procedures for disposal of chemicals used for decontamination of sampling equipment are reported to be in Section 6.7. However, there is no mention of these procedures in this section. These wastes must be disposed of in an acceptable manner.	The text has been corrected to read Section 6.8.

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
13 September 1993	Sheet 1 of 1
Comments by: Alvaro Gutierrez, California Department of Toxic Substances Control (DTSC) Response by: Kathy Brewer and Peter Torrey, CH2M HILL	
Comment	Response
<p>NOTE: Many of the comments and recommendations regarded grammar. Typographical and grammatical errors were corrected and are not formally mentioned in this response to comments. The project team appreciates the careful review. Responses to the substantive comments follow.</p>	
Sampling and Analysis Plan - NAVSTA Long Beach	
<p>Page 1-1, Section 1.0, Paragraph 3, line 3 and Page 4-1, Paragraph 1, Line 5 Specify the section of the Workplan [sic] where the conceptual model is applicable.</p>	<p>The text has been revised in Section 4.1 to clarify this reference. However, the conceptual models for each site are identified with their own headings in each site-specific section of the Work Plan.</p>
<p>Page 4-61, Bullet 2, Submit information about assessing the groundwater parameters.</p>	<p>Section 4.6.1 has been revised to state that groundwater direction and velocity are of primary interest in evaluating groundwater flow patterns.</p>
Quality Assurance Project Plan - NAVSTA Long Beach	
<p>Comments have been addressed.</p>	
Sampling and Analysis Plan - LBNSY	
<p>Page 4-1, Paragraph 1, Line 5, Specify the section of the Workplan [sic] where the conceptual model is applicable.</p>	<p>The text has been revised in Section 4.1 to clarify this reference. However, the conceptual models for each site are identified with their own headings in each site-specific section of the Work Plan.</p>
Quality Assurance Project Plan - LBNSY	
<p>Page A-43, Equation for Recovery and Percent Recovery, Provide references and sources for this equation [sic].</p>	<p>The equation can be found in the CLP Statement of Work for Inorganic Analysis, EPA, July 1988.</p>
<p>Other comments have been addressed.</p>	

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS HEALTH AND SAFETY PLANS	
13 September 1993	Sheet 1 of 2
Comments by: Jerry D. Early, AIH, California Department of Toxic Substances Control (DTSC) Response by: Peter Torrey, CH2M HILL	
Comment	Response
<p>NOTE: Some of the comments result from the fact that the Health and Safety Plan is incomplete because specifics are unknown at this time. These specifics will be provided when the CLEAN 2 contractor prepares an update.</p>	
<p>Page 1, paragraph 3. Plan states that it was written to satisfy the requirements of Title 8, sections 3203 and 1509. Plan must be written in accordance with Title 8, section 5192. The elements are found in subsection (b)(4)(B) 1-10.</p>	<p>The plan has been revised to cite the requirements of Title 8, Section 5192, Subsection (b)(4)(B) 1-10.</p>
<p>The HASP should be site specific and organized so that the laborer can read and understand the risks and precautions. The plan appeared generic in nature and not well organized! b4B1 - A safety and health risk analysis for site task and operation in the work plan [sic]. Each task and location should be itemized accompanied by a risk analysis. A tables format is useful.</p>	<p>Table 3-1 has been added to identify the hazards/risks for each task at each site.</p>
<p>Section 3.8, page 5. b4B3 - PPE to used for each of the tasks [sic]. cotton [sic] or Tyvek is not recommended for VOCs. Clarify the PPE regimen for each task and possible task.</p>	<p>VOC levels detected in previous investigation were all below 1 ppm except acetone which was found as high as 4.4 ppm in soil. VOCs at those levels are not an effective skin hazard. Tyvek should provide protection adequate to keep soil off work clothes and skin. PPE levels for each task and potential upgrading is described in detail in Section 5.0.</p>
<p>These are but a few comments. A complete plan review to be conducted when a detailed, site specific plan is submitted.</p>	<p>A complete plan will be submitted by the contractor (the CLEAN 2 contractor) implementing the RI/FS.</p>
<p>Page 17, Section 3.1.1. Please indicate what reference is being used. The guidelines do not appear to comply with ACGIH recommendations. Follow the ACGIH recommendations or recommendations that are more stringent.</p>	<p>ACGIH heat stress guidelines are recommendations that do not recognize use of PPE in computations. The heat stress tables shown are from NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Activities NIOSH 85-115.</p>
<p>Page 18, Section 3.2. Physical hazards and controls. 5192 (b)(4)(B)(1) A safety and health risk or hazard analysis for each site task and operation in the work plan [sic]. Recommend using a tables format to itemize the task and the accompanying risk. The HSP does not make it clear which task is associated with which risk.</p>	<p>Table 3-1 has been added to identify the hazards/risks for each task at each site.</p>

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS HEALTH AND SAFETY PLANS	
13 September 1993	Sheet 2 of 2
Comments by: Jerry D. Early, AIH, California Department of Toxic Substances Control (DTSC) Response by: Peter Torrey, CH2M HILL	
Comment	Response
<p>Section 5.0 Full-face mask or chemical goggles in level C & B. As per 5192 g 5, PPE for each site task based upon risk must be specified. It is not possible to get a good seal and wear goggles with a full-face respirator on. Please specify what types of Tyvek coveralls are to be worn for each risk.</p>	<p>Section 5.0 is revised to specify the type of Tyvek coveralls for each level of protection and the type of eye protection.</p>
<p>Section 6.0 1. As per 5192 h, specific details as to when, where, and types of monitoring would be conducted is required. 2. As per 5192 h 4, high risk employees need to be identified. Provide information that correlates the type of monitoring with the activity. A table format would be helpful in expediting plan review.</p>	<p>Section 6.0 is revised to specify the type of monitoring required for each task at each site. High-risk employees will be identified by the CLEAN 2 contractor.</p>
<p>Page 37, Section 6.1. Instruments to be calibrated prior to use. b4B5. A vague statement, is this each day, once a week? Provide a calibration schedule and include QA precautions (at end of shift).</p>	<p>Sections 6.0 and 6.1 and Tables 6-1 and 6-2 of the SAP provide calibration and preventive maintenance information. These tables will be revised by the CLEAN 2 contractor when the actual equipment to be used is known.</p>
<p>Safety shower/eyewash location does not conform with the 5162 (a) & (b) & (c). The plan failed to meet the requirements for accessibility to emergency eyewash and shower facilities. Section (c) states that the eyewash and shower facilities shall be accessible and require no more than 10 seconds for the injured employee to reach. (a) and (b) states that they must comply with ANSI standard Z358.1. A statement to that effect would be required.</p>	<p>Showers and eyewash facilities will be located within a reasonable distance of site activity, and eyewash bottles will be carried by sampling teams. Title 8, Section 5162 refers to routine operations when handling hazardous substances. The RI activities are not routine.</p>

RESPONSE TO COMMENTS	
NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA	
DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
13 September 1993	Sheet 1 of 7
Changes made at the direction of the Navy or for further clarification	
Work Plans	
Executive Summary, p. ES-3. Volatilization added to the migration pathways considered for soil.	
Executive Summary, p. ES-4. The summary of the field investigation has been updated to reflect the revised sampling program, as outlined in Table 10-1.	
Section 1.1. Naval Supply Center Detachment changed to Naval Fleet and Industrial Supply Center (FISC). Also revised in subsequent sections.	
Figure 1.1. Boundary between Cities of Los Angeles and Long Beach updated.	
Figure 1.3. Site 4 boundary updated to include area on Mole east of the jogging path. Former Quonset Hut Site added for Site 9. Revisions also made on subsequent figures showing these areas.	
Section 1.3.2 (NAVSTA Work Plan only) and Table 1-1. The closure date for Naval Station Long Beach revised from September 1996 to September 1994.	
Section 2.1, last paragraph. Text revised to state, "Key decisionmakers involved in these meetings were the NAVSTA Long Beach and LBNSY RPMs and program managers, and the project managers (PjMs) from DTSC Region IV (Long Beach) and RWQCB (Los Angeles)."	
Table 2-3. Note added to see Appendix D for an explanation of how screening criteria for sediment were derived.	
Figure 3-3. Revised to remove unnecessary and unclear information.	
Figure 3-16. Approximate vertical dimensions added to Mole cross-section.	
Section 3.2.2. Text revised to state, "On Terminal Island, the areas west and east of the facility are used for commercial shipping, liquid bulk handling, heavy industrial activities, and commercial fishing activities."	
Section 3.2.3. Information on the water supply and storm water drainage for the NC Long Beach facility has been updated. Text has been added to state that it does not appear that any drainage lines carry storm water drainage from north of Ocean Boulevard to the West Basin of Long Beach Harbor.	
Section 3.2.4. Text revised to state, "There are no residential areas on Terminal Island; the population of Terminal Island would be primarily workers. There are some quarters for Navy personnel on Long Beach Naval Station."	
Table 3-3. Civilian population estimates updated using information provided by Naval Shipyard.	
Figure 3-26. Offsite transport pathway for surface soil by wind and subsurface soil by wind in an excavation scenario designated as minor pathways.	

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
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Section 3.3.3. Text added to state, "It should be emphasized that these are preliminary evaluations of the relative importance of each of these exposure pathways. A complete exposure pathway evaluation will be provided as part of the baseline risk assessment."	
Section 3.3.4. Second sentence revised to state, "There are some quarters for Navy personnel on the Naval Station, however, none of the source areas are situated within those areas."	
Site 3 (Section 5.4, NAVSTA Work Plan). Beryllium added to the list of metals that exceeded the screening criteria in soil.	
Site 3 (Table 5-7, NAVSTA Work Plan). Depth for surface soil samples changed from 0-6" to 0-3". Analysis for organotins changed from Level IV (CLP methods) to Level V (special analytical methods) since there is no CLP method for organotins. Same changes made on all other data quality objective tables containing these components.	
Site 4 (Section 6.4, NAVSTA Work Plan). Text added to state that toluene and xylene exceeded screening criteria in soil where benzene was detected. Other text related to screening evaluation for soil revised to more accurately describe revised soil screening table.	
Site 4 (Table 6-13, NAVSTA Work Plan). For the data quality objectives outlined for the identified area of soil contamination at Alternate Site 1, semivolatile organic compounds and lead added to the analyses for soil and lead added to the analyses for groundwater. For the subsurface soil and groundwater in Fill Area, asbestos deleted from groundwater analysis.	
Site 4 (Figure 6-7, NAVSTA Work Plan). Figure added to show a conceptual cross-section of Fill Area sampling at Site 4.	
Site 5 (Section 7.1, NAVSTA Work Plan). Building number for pass office changed to 675 and for the daycare facility to 685. Changes also made on Figures 7-1 and 7-2.	
Site 6A (Section 8.3, NAVSTA Work Plan). Added the following text describing groundwater runoff at Site 6A: "Based on topographic maps for Terminal Island, it appears that surface drainage from Site 6A would run by overland flow to the east where it would eventually enter the drainage system on the UPRC property (see Figure 3-23). This drainage system discharges to the Cerritos Channel. Because Site 6A is fairly flat, it is not expected that there would be a significant erosion problem at Site 6A that would lead to contaminant transport via storm water drainage (personal communication, Rich Davidson, POLA, 30 August 1993)."	
Site 7 (Section 9.0, NAVSTA Work Plan). Plate 3, a bathymetric map of the harbor, was added to this section.	
Site 7 (Section 9.5, NAVSTA Work Plan). Text referring to bioconcentration testing was revised to read tissue/bioaccumulation tests.	
Site 12 (Figures 7-2 and 7-3, LBNSY Work Plan). Boundaries of Site 12 revised to show that it includes all of Lot X.	

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
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Site 13 (Section 8.4, LBNSY Work Plan). Text added to paragraph 4, "Hexavalent chromium was slightly above the CAL-EPA criteria in two samples; however, the concentrations detected were well below the federal EPA screening criteria."	
Table 10.1. Table 10-1 in both work plans revised reflect changes to the planned and conditional sampling at each site.	
Section 10.5.8. Discussion of the fate and transport analysis for the RI was expanded to clarify how a horizontal dispersion model for groundwater may be used to evaluate appropriate remedial goals for the feasibility study.	
Section 10.6. The text discussing references for the baseline risk assessment has been revised to be more comprehensive.	
Section 10.6.4. Text in second paragraph revised to read, "However, because of the possibility that residences could exist at the site in the future, both occupational and residential development will be considered as a plausible future exposure scenario.	
Section 10.7.2. Second bullet revised to read, "Evaluate potential exposure by direct measurement of bioaccumulation of contaminants by aquatic organisms or through a bioaccumulation model calibrated with laboratory bioaccumulation tests."	
Section 10.7.3. The following text replaces paragraph 7, describing the approach to the bioaccumulation evaluation: "If sufficient biomass of microfauna can be obtained while collecting sediment for chemical analysis and bioassays, concentrations of contaminants in native fauna will be measured to evaluate bioaccumulation; similar species will be tested from each sampling location where possible. If there is insufficient biomass for tissue testing at at least 70 percent of the sampling locations, then bioaccumulation models (using the chemical data collected) will be combined with laboratory bioaccumulation tests from a limited number of sampling locations to assess possible bioaccumulation effects. The sampling locations will be chosen to cover the range of sediment conditions, both physical and chemical, expected in the harbor. The bioaccumulation models that will be considered are discussed further in Appendix D. The concentrations found in the fauna or predicted through the bioaccumulation model and testing will be compared with those from the reference stations or appropriate values from the literature to make a qualitative assessment of effects of bioaccumulation on food-chain animals."	
Section 11.0. The draft working schedule for the RI/FS at each activity has been added to the Work Plans.	
Appendix A. Figure A-1 added illustration of the interaction of the ARAR and RI/FS processes. Table A-1 added an outline of Navy and State roles in identifying compliance with ARARs. Subsequent table numbers revised.	

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<p>The following text has been added to NAVSTA Work Plan Appendix D (p. D-14) describing the revised approach to the bioaccumulation evaluation.</p> <p>"Where there is sufficient biomass collected in the sediment samples, tissue testing will be done to evaluate bioaccumulation effects; similar species will be tested from each sampling location where possible. If there is insufficient biomass for tissue testing at at least 70 percent of the sampling locations, then the bioaccumulation models (using the chemical data collected) will be combined laboratory bioaccumulation tests from a limited number of sampling locations to assess possible bioaccumulation effects. The sampling locations will be chosen to cover the range of sediment conditions, both physical and chemical, expected in the harbor. Samples for the bioaccumulation testing will be limited to the top 10 cm of sediment for the reasons discussed above. The bioaccumulation model found in the <i>Evaluation of Dredged Material Proposed for Ocean Disposal: Testing Manual</i> (EPA, 1991) will be evaluated for use, along with other models discussed in <i>Synthesis of Methods to Predict Bioaccumulation of Sediment Pollutants</i> (EPA, 1992). The model to be used will be submitted to DTSC and the RWQCB for approval prior to use along with the decision criteria to be used in comparing the results of the model output with those of the bioaccumulation testing."</p>	
Sampling and Analysis Plans	
Section 1.0, 3rd paragraph. Text revised to include objectives of RI.	
Section 2.0, 1st paragraph and Figure 2-2. Naval Supply Center Detachment changed to Naval Fleet and Industrial Supply Center (FISC).	
Section 2.0, Figure 2-3. Approximate location of Former Quonset Hut Site placed on map and appropriate subsequent figures.	
Figure 3-2 revised to remove unnecessary and unclear information.	
Table 4-2 updated to incorporate site-specific changes and to note that second round sampling of monitoring wells is not included in summary.	
Table 4-3 updated to incorporate site-specific changes and include conditional samples.	
Table 4-4 revised based on the new screening criteria requested by DTSC.	
Section 4.4, 1st paragraph. Text revised to state that the QAPP and HSP must be updated prior to initiating the RI/FS.	
Section 4.4.1, 5th paragraph. Text revised to clarify that the surveying of measuring point elevations, the field audit, and technical memorandum will be prepared as part of implementation of the RI/FS.	
Section 4.4.2 revised to include possible sources of aerial photographs.	
Section 4.4.7 revised to remove statement that Waste Management Plan (WMP) will be attached as an appendix to SAP. A separately bound WMP is more convenient.	

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
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Changes made at the direction of the Navy or for further clarification	
Section 4.4.8. revised to remove statement that Data Management Plan (DMP) will be attached as an appendix to SAP. A separately bound DMP is more convenient.	
Section 4.4.9 (NAVSTA Long Beach SAP) added to briefly describe underwater survey that must be performed as a preliminary activity.	
Section 4.5.2 and appropriate subsequent sections. Text revised to state surface soil samples will be collected at 0 to 3 inches, instead of 0 to 6 inches, of depth.	
Tables 4-7, 4-9, 4-11, 4-13, 4-15, 4-17, and 4-19 revised based on regulatory comments.	
Tables 4-8, 4-10, 4-12, 4-14, 4-16, 4-18, and 4-20 revised to more clearly specify analyses to be performed on each type of samples.	
Section 4.5.2.1 (LBNSY SAP) added to describe location and number of surface soil samples to be collected at Site 12.	
Table 4-8 revised to include analyses of organotins in groundwater from facilitywide monitoring well in northeast corner of facility.	
Sites 3 and 4 (Sections 4.8.4 and 4.9.4, Long Beach SAP). Text revised to clarify sediment, tissue, bioassay and bioaccumulation testing strategy.	
Site 4 (Table 4-14 NAVSTA Long Beach SAP). TCL semivolatiles and lead added to soil analysis and lead added to groundwater analysis for Alternate Site 1. Asbestos deleted from groundwater analysis for fill area.	
Site 7 (Section 4.12, NAVSTA Long Beach SAP). Text revised to clarify sediment, tissue, bioassay, and bioaccumulation sampling. The number of bioaccumulation tests is reduced to approximately 20 percent of the surface sediment sampling locations (10 total) if less than 70 percent of the locations have sufficient biomass for tissue sampling. If necessary, bioaccumulation tests would be conducted on sediment from one location at each of the five depositional areas and from five locations in the general harbor area.	
Section 5.0, first paragraph. Text revised to state second round of groundwater samples from monitoring wells not included.	
Tables 5-1 to 5-15 (NAVSTA Long Beach SAP) and Tables 5-1 to 5-12 (LBNSY SAP) revised to incorporate regulatory comments.	
Sections 6.2.5 and 6.3.1 revised to specify Portland (Type II) cement and approximate volume of water (5 to 10 gallons) for preparing bentonite seal.	
Section 6.3.1.1, Figure 6-2, and text revised to include a 1-foot transition sand (#60 silica sand) and a minimum of 2-foot bentonite seal. If floating product is present, the seal may be less than 2 feet.	
Section 6.3.1.1, paragraph 4. Minimum hydration time for allowing bentonite to swell before installing grout seal increased to 45 minutes.	
Section 6.3.1.1, paragraph 4. The following text is added: "Volumes of grout materials will be precalculated for wells in the field notes. These values will be matched against actual quantities used and variances will be explained."	

RESPONSE TO COMMENTS	
NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA	
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Changes made at the direction of the Navy or for further clarification	
Section 6.5. The following text is added: "When possible, water level measurements will be made by one person in one day to reduce variability due to human error and changing conditions."	
Section 6.6.2. Text is revised to state that instruments will be calibrated at the start and end of each day's activities.	
Section 6.7 revised to state that a nonphosphate detergent (Liquinox) will be used instead of trisodium phosphate.	
Section 6.10 revised to state that a master log of samples will be maintained.	
Section 6.12 revised to state that NEESA guidance will be followed in frequency of quality control sample collection.	
Section 6.12.1 revised to state that duplicates will be collected at a rate of 10 percent per matrix.	
Section 6.12.2 revised to state that equipment rinsate blank samples will be collected daily for water and soil samples. Initially, samples from every other day should be analyzed. If contaminants are found, the remaining samples should be analyzed.	
Section 6.12.3 revised to state that samples of source water used for decontamination will be collected once per event per source water.	
Section 6.12.4 revised to state that trip blanks will be submitted with each cooler that contains samples for volatile organic analysis (no percentage limitation).	
Quality Assurance Project Plans	
Sections 1.0 and 4.0. Text revised to cite actual sections in SAP where information is provided.	
Section 2. Section headings added.	
Tables 2-1a, 2-1b, 2-3, and 2-4 updated based on SAP comments.	
Figure 3-1 revised, although it must be updated by CLEAN 2 contractor.	
Sections 3-2, 3-3 and Table 3-1 added to identify decisionmakers and data users.	
Section 5.3 revised to include master sample log.	
Tables 6-1 and 6-2 added to specify calibration and preventive maintenance on field sampling equipment. The tables must be updated by CLEAN 2 contractor.	
Section 7.3, Figure 7-1 and Table 7-1 added to describe flow of data during project.	

RESPONSE TO COMMENTS NAVAL STATION AND NAVAL SHIPYARD LONG BEACH, CALIFORNIA DRAFT RI/FS WORK PLANS AND SAMPLING AND ANALYSIS PLANS	
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Attachment 2 (QAPP), Section 1.15 revised to clarify that detection limits requested for organotins for groundwater and soil will be 0.63 µg/L and 2 µg/kg, respectively.	
Health and Safety Plans	
Section 1.2.2 including Figure 1-2. Naval Supply Center Detachment changed to Naval Fleet and Industrial Supply Center (FISC).	
Section 3.2. Hearing protection removed as an engineering or administrative control for buildup of explosive gases.	
Table 3-1 added to give a hazard risk analysis per task at each site at NC Long Beach.	
NOTE: Some information in the Health and Safety Plan is not included at this time and must be provided by the CLEAN 2 contractor.	