

**COMMENTS ON
DRAFT GROUNDWATER INVESTIGATION WORK PLAN
FOR IRP SITES 9, 12, AND 13
AT THE LONG BEACH NAVAL SHIPYARD**

1. **Figure 3-5.** Compound concentrations exceeding Region IX PRGs for tap water are flagged. However, the work plan states that data is to be screened against either California Ocean Plan criteria or Risk-Based Concentrations (RBCs) for upper interval groundwater and California Ocean Plan criteria or MCLs for lower interval groundwater. Please flag data using criteria relevant to the work plan.
2. **Section 3.2.2.1 and Figure 3-11.** Figure 3-11 does not show all of the arsenic impacted samples that are discussed in this section. For example, there is no data posted for SB-12-01, SB-12-04, or HP-12-34. Please include the detected concentrations of arsenic at these locations on Figure 3-11.
3. **Section 3.2.2.2 and Figure 3-12.** Figure 3-12 shows seven samples with arsenic above background, however, only five sample locations are discussed in the text. Also, the sample results box for SP-12-16 is not connected to any of the points on the map.

There is no sample results box for HP-12-01 on Figure 3-12, but this figure is cited in the sentence discussing this sample in the second paragraph on page 3-35.
4. **Section 3.3.1.2, p. 3-36 and Section 3.4.1.2, p. 3-41.** Please explain why the defined boundary of GWAOPC4 is very small on Figure 3-14 when neither the horizontal nor the vertical extent of contamination have been determined.
5. **Section 4.1.2.3.** It is not clear which monitor wells will be installed to determine the groundwater flow direction and hydraulic gradient in the lower coarser-grained, water bearing interval and which wells are proposed to investigate the 1,1-DCA detection. The text (bottom of page 4-31 and top of page 4-32) says that Figure 4-1 includes monitor well locations to refine the groundwater conceptual model for the 1,1-DCA plume, but no wells are shown on Figure 4-1 in the GWAOPC-4 area. Please explain and add the proposed wells to Figure 4-1.
6. **Section 4.1.2.4, p. 4-32, last paragraph.** It is possible that chlorinated solvents other than 1,1-DCA are present in the lower aquifer. All groundwater samples from the lower aquifer should be analyzed for the full suite of chlorinated solvents included in the 8010/8020 method, not just 1,1-DCA as stated in the third and fourth sentences. Please modify the fourth sentence to include the full range of chlorinated VOCs in the 8010/8020 list.
7. **Section 4.2.3, p. 4-46 and Section 6.3.1.2, p. 6-3.** Please note that in order to obtain the most accurate data, field parameters DO and Eh must be measured in a flow through cell instead of open containers because any exposure to the atmosphere immediately changes the value of these parameters.

APPENDIX A — DRAFT QUALITY ASSURANCE PROJECT PLAN

1. In general, the Quality Assurance Project Plan is well written and complete.
2. All SOPs involving sample collection, handling, field measurements, etc. referenced in the document should be included as an appendix to either the QAPjP or the Field Sampling Plan to ensure field personnel have proper instructions.
3. **Section A.6.2.3, p. A-29.** The comment that only 10 percent of the manually input data will be internally verified is not adequate and would result in missing input errors. The manually input data should to be entered by double-blind hand entry, and the resulting files must then be compared by computer to eliminate discrepancies. Alternatively, all hand entered data must be checked.