UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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April 2, 2007

Mr. Thomas Macchiarella, Code 06CA.TM
Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

RE: Draft Work Plan for Data Gap Sampling Investigation, Installation Restoration Site 28, Alameda Point,

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by Innovative Technical Solutions, Inc and submitted by the Navy on January 29, 2007. We offer the following comments on the Workplan:

GENERAL COMMENT

1. The analytical laboratory has not been specified in the text as indicated in EPA's guidance document QA/R-5 and the text indicates that a laboratory will be selected in the future. Please include the name of the laboratory in the text of final version of the Draft Work Plan and SAP or submit text and worksheet replacement pages once the laboratory has been selected.

SPECIFIC COMMENTS

1. **Section 3.0, Rationale for the Proposed Sampling, Pages 9 through 11:** Section 3.0 contains a discussion of copper concentrations in groundwater, but arsenic concentrations are discussed more generally. According to the text on page 11, concentrations of arsenic in soil are expected to be addressed by soil excavation and institutional controls, and the installation of a new monitoring well will provide additional information on arsenic concentrations in groundwater. However, the discussion on arsenic concentrations in Section 3.0 is vague. Please revise Section 3.0 to include a more detailed summary of arsenic data, similar to that of copper.

2. **Section 4.0, Field Activities, Page 13:** The first sentence of Section 4.0 states that the primary objective of the proposed sampling is to gain characterization data to support the development of a remedial design to address copper in groundwater near the shoreline. However, the text in Section 3.0 indicates arsenic is also a contaminant of concern at this site. Furthermore, Section 3.1 indicates boring 28HP001 will be advanced to help define arsenic concentrations, and the proposed monitoring well (Section 3.2) is intended to provide a better understanding of arsenic concentrations. Please include characterization of arsenic in soil and groundwater as one of the objectives of this sampling effort.

3. **Section 4.3.3, Monitoring Well Construction, Page 18, and Figure 4, Typical Monitoring Well Construction:** The first complete paragraph on page 18 states that the monitoring well screen will be 10 feet long; however, Figure 4 indicates that the screened interval will be 5 to 10 feet long. Please resolve this discrepancy.

4. **Section 4.3.4, Monitoring Well Development and Sampling, Page 19:** The text states that after a minimum of "48 hours following well installation (to allow the surface seals to set properly), the monitoring wells will be developed," but the purpose of the minimum 48 hour period is also to allow the bentonite/cement grout to set. Please revise the quoted statement to include time for the bentonite/cement grout to set.

5. **Figure 3, Proposed Sampling Locations:** Figure 3 presents proposed sampling locations and includes copper concentrations in groundwater for reference. However, the executive summary indicates that delineation of both copper and arsenic in groundwater is required, and that the proposed monitoring well will be installed directly downgradient of the existing monitoring well with the maximum arsenic concentration. Because the proposed sampling locations are intended to delineate arsenic concentrations in groundwater as well as copper concentrations, it would be helpful if previous arsenic data was included on this figure as well. Please revise Figure 3 to include arsenic and copper concentrations, or include arsenic concentrations on a separate figure.

Appendix A, Sampling and Analysis Plan

1. **Appendix A, Section 1.5, Data Quality Objectives, Page A-13:** Arsenic was also used as an anti-fouling metal by the Navy (see *Marine Fouling and Its Prevention*, United States Naval Institute, 1952), but this is not acknowledged in the text. Please revise the text to state that arsenic was frequently used as an anti-fouling agent in bottom paints for marine vessels.

2. **Appendix A, Section 1.5, Data Quality Objectives, Pages A-12 through A-16:** It appears that the Data Quality Objectives (DQOs) do not address all of the objectives of this data gap investigation. In Step 1 of the DQO process, the problem is stated as 1) better delineation regarding the distribution of copper in

soil and groundwater and 2) collecting additional data on arsenic concentrations in groundwater. The principal study questions identified in Step 2 of the DQO process do not include copper concentrations in groundwater. Please include copper concentrations in groundwater, as well as the associated screening criterion, in the principal study questions and modify the DQOs accordingly.

Additionally, in Step 5, no action level or decision rule is specified for copper in groundwater. Please specify the action level and decision rule for copper in groundwater.

3. **Appendix A, SAP Worksheet #19, Page A-31:** The last two lines in this table appear to be identical but have different holding times. It appears that the fourth line in this table should be for the Analytical and Preparation Method 7470A rather than 6020/3050B. Please resolve this discrepancy.

4. **Appendix A, Section 2.2.2, Soil and Grab Groundwater Sampling Procedures, Pages A-33 and A-34:** It is not clear that sufficient soil samples will be collected from each boring to meet all of the stated objectives. The third paragraph of Section 2.2.2 indicates soil samples will be collected from up to three depth intervals per boring, which will be advanced to approximately 20 to 30 feet below ground surface (ft bgs). These intervals are intended to include a soil sample from the interval with the greatest amount of shipyard related debris, a soil sample from the bottom of artificial fill/top of naturally deposited Bay Sediment Unit interval, and a sample from the soil/groundwater interface. Specific intervals are to be selected based on professional judgment.

   The proposed remedy for contaminated soil at IR 28 is excavation of shallow soil in contaminated areas and placement of clean backfill followed by institutional controls. According to Step 5 of the DQO process, if soil concentrations exceed 1,500 milligrams per kilogram (mg/kg) copper, then the area in the vicinity of the sample will be included as part of the designated treatment area. This sample collection scheme appears to involve the collection of at least one of the three samples at or near the total depth of the borehole, which has been estimated to be 20 to 30 feet. With the second soil sample to be collected from the soil/groundwater interface (anticipated to be between 5 to 10 ft bgs), there remains only one soil sample per borehole to characterize the approximately 5 to 10 foot interval above groundwater. If one of the objectives of soil sampling is to gain information on shallow soils which may require excavation or treatment due to copper concentrations exceeding 1,500 mg/kg, additional shallow soil sampling may be warranted. Furthermore, the collection of one sample to serve multiple purposes should be approached with caution and DQOs should be provided to account for each purpose. Please clarify whether three samples in 20 to 30 ft interval are sufficient to meet all of the objectives of this data gap sampling. If not, please add additional sampling intervals and revise the WP and SAP as necessary.

5. **Appendix A, Section 2.2.2, Soil and Grab Groundwater Sampling Procedures, Pages A-33 and A-34, SAP Worksheet #19, Page A-31 and Table A-6, Sample Preservation and Storage Requirements:** Details specifying collection of soil and groundwater for bench scale analysis is described in WP Section 4.4, but specific sampling procedures for soil and groundwater were not included in the text of the SAP nor were these samples included in SAP Worksheet #19 or Table A-6. As a result, it is unclear how these samples will be collected, the containers that will be used, the preservation requirements, and the maximum holding times. Please revise the SAP to specify the interval from which the soil sample(s) will be collected and specify sampling equipment and procedures that will be used for soil and groundwater sample collection for the bench-scale test. In addition, please revise SAP Worksheet #19 and Table A-6 to include the requirements (e.g., containers, preservation requirements, holding times, etc.) for soil and groundwater samples collected for the bench scale test or provide a separate table with this information.

6. **Appendix A, Section 2.2.3, Monitoring Well Development, Page A-35:** The Draft Work Plan specifies a 48 hour period to allow cement to set before well development, but the SAP only specifies 24 hours. A 48 hour period is preferred. Please revise the text to specify that the grout will be allowed to cure for 48 hours.

   In addition, a SAP is normally more detailed than a work plan, but the text in the SAP does not specify when indicator parameters will be considered stable. Please revise the SAP to include the requirements for indicator parameter stability.

7. **Appendix A, Section 2.2.4, Water-Level Measurement, Page A-36:** The text states that "standardized methods intended to produce results that can be compared reliably over multiple measurement events" will be used, but no details of these methods have been provided and it is unclear if water-level measurements will be repeated at least twice so that measurement errors can be avoided. Please provide the specific procedures that will be used for water-level measurements. In addition, please ensure that these procedures specify that measurements will be repeated in each well until two consecutive measurements are consistent within 0.01 foot.

8. **Appendix A, Section 2.2.5, Procedure for Groundwater Sampling from a Monitoring Well, Page A-37:** The last sentence of the first complete paragraph on Page A-37 indicates the sampling pump will be placed at the midpoint of the screened interval and lowered slowly. Normally, the mid-point of the screened interval is targeted, so the purpose of lowering the intake is unclear. Please clarify where the pump intake will be placed and if it will be placed below the mid-point of the screen, please explain why this is necessary. Please also clarify where the pump intake will be placed if the top of screen is submerged.

9. **Appendix A, Section 2.2.5, Procedure for Groundwater Sampling from a Monitoring Well, Page A-38 and Work Plan, Section 4.3.5, Monitoring Well Development and Sampling, Page 27:** Dissolved oxygen (DO) should not be considered a secondary parameter since it is an indicator of the reliability of volatile organic compound (VOC) data. In addition, DO measurements collected using a flow through cell or down-hole instrument are among the most reliable parameters for field measurements. Please revise the Draft Work Plan and SAP to specify that DO is a primary stabilization parameter.

10. **Appendix A, Section 2.6.2, Field Instrument/Equipment Calibration Procedures, and SAP Worksheet #22, Field Equipment Calibration, Maintenance, Testing, and Inspection Table:** Neither the text nor SAP Worksheet 22 address calibration of the DO meter or the meter used to measure oxygen reduction potential (ORP). Please include the calibration requirements for the DO and ORP meters in the text and on Worksheet #22.

APPENDIX B, Site Specific Quality Control Plan

1. **Appendix B, Section 12.2, Drilling, Grab Groundwater Sampling, and Groundwater Monitoring Well Installation Activities, Page B-9:** The first paragraph of Section 12.2 indicates five HydroPunch™ boring locations will be advanced, and one monitoring well will be installed. The WP and SAP refer to the advancement of four HydroPunch™ boring locations and one monitoring well. Please resolve this discrepancy.

2. **Appendix B, Section 12.3, Groundwater Monitoring Activities, Page B-9:** Section 12.3 indicates the new and existing monitoring wells will be sampled during this field effort. It is not clear from the WP and SAP that the existing monitoring wells are to be sampled along with the new well. Please revise the text of the WP and SAP to clarify that all monitoring wells are to be sampled along with the newly installed monitoring well.

Feel free to call me at (415) 972-3029 if you have any questions regarding these comments.

Sincerely,

Anna-Marie Cook

Anna-Marie Cook
Remedial Project Manager

cc list next page

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