



December 22, 2010  
Project 4850.005.3

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Mr. Scott Anderson  
Mr. David Clark  
Department of the Navy  
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Subject: **Comments on November 15, 2010 Draft Groundwater Sampling Work Plan Addendum to the Final Sampling and Analysis Plan**  
Site 21, Site 24, and Site 32 Treasure Island  
San Francisco, California

Dear Mr. Sullivan, Mr. Anderson and Mr. Clark:

On behalf of the Treasure Island Development Authority (TIDA), AMEC Geomatrix (AMEC) has reviewed November 15, 2010 Draft Groundwater Sampling Work Plan Addendum to the Final Sampling and Analysis Plan for Sites 21, 24 and 32, Treasure Island, San Francisco, California (Draft Work Plan). Additionally, we reviewed portions of the Sampling and Analysis Plan (SAP) presented as Appendix C. We did not review the Accident Prevention Plan (Appendix A), the Waste Management Plan (Appendix B) or the Contractor Quality Control Plan (Appendix D). Our comments are provided below.

#### GENERAL COMMENTS

- **Rationale for Selected Sampling Locations and Analyses.** The document does not present the rationale for how sampling locations were selected and how certain analyses (dissolved gases, arsenic, sulfate, ferrous iron and alkalinity) were assigned to a subset of the wells to be sampled. Although the SAP contains a worksheet called "Sampling Design and Rationale" (Worksheet #17), this worksheet does not actually discuss the sampling rationale. It would be helpful if the proposed sampling locations for Sites 21 and 24 were presented on figures showing current volatile organic compound (VOC) concentrations, so that the reader might be able to assess whether the proposed sampling locations are appropriate. Additionally, it would be helpful if Figures 3 and 4 identified which wells will have samples analyzed for constituents other than VOCs.
- **Specific questions about the sampling plan.** We have the following specific questions about the sampling plan, based on the information available in the Draft Work Plan. We may have additional questions after we have had to opportunity to review figures requested in the previous comment.

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- In our December 21, 2010 comments on the Draft Treatability Report for Site 21, we questioned whether there are sufficient data available to assess whether the plume expanded to the north of the original plume boundary. It may be prudent to include additional sample locations on the north side of the plume to address this question.
- Why are samples from only two wells at Site 24 (24MW-08B and 24-IEW4) being analyzed for arsenic and how were these two wells selected?
- Samples from Site 32 are being analyzed for total petroleum hydrocarbons (TPH) and dissolved metals, but not for petroleum-related volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Has previous sampling demonstrated that VOCs and SVOCs are not of concern? Please provide the rationale for excluding analyses for petroleum VOCs and SVOCs.
- **Analysis of Samples for Dissolved Organic Carbon (DOC).** Samples from Sites 21 and 24 should be analyzed for dissolved organic carbon (DOC). This parameter is useful for evaluating the amount of substrate remaining in the treatment zone. To evaluate the potential for contaminant rebound after substrate has been depleted, groundwater monitoring should continue to occur until DOC concentrations reach pre-treatment levels. This sampling should occur, at a minimum, in monitoring wells that experienced rebound following the 2003 (Site 24) and 2005 (Site 21) injection programs.

#### **SPECIFIC COMMENTS**

- **Section 1.0 Introduction.** We have two comments on this section.
  - The text states that arsenic data will be used to assess the rate of biodegradation at Sites 21 and 24. While we concur that arsenic analyses should be performed to assess whether in situ bioremediation has caused arsenic mobilization, we are unclear how the data can be used to assess rate of biodegradation.
  - The SAP (Worksheet #11, Step 3) indicates that field measurements will be collected at all Site 21 and 24 wells for pH, conductivity, oxygen-reduction potential (ORP), dissolved oxygen (DO), temperature, and turbidity. We concur with the collection of these field measurements. However, the text in Section 1.0 and elsewhere in the Draft Work Plan does not include these parameters in the list of field analyses to be performed. We recommend that the Draft Work Plan be revised to include these parameters, consistent with Worksheet #11 of the SAP.
- **Section 3.2 Groundwater Sampling (Site 24).** The text states that "an additional 41 wells have been proposed for sampling if site conditions change." Given that it is currently unknown what changes might occur in the future, how were these 41 locations identified for potential future sampling? Isn't it conceivable that only a subset of these wells might be sampled in the future? And isn't it conceivable that other wells (not included in the 41 currently identified) might warrant sampling in the future? Please provide additional information about how the additional 41 wells were identified.



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- **Section 4.1 Site History (Site 32).** The text should explain that significant petroleum impacts were discovered in the eastern portion of Site 32 when remediation activities (soil removal) was conducted in 2009. Additionally, the text should clarify that the two monitoring wells were installed specifically to assess whether the petroleum had affected groundwater. As currently written, it appears that the wells were installed to assess groundwater impacts from all chemicals of concern at Site 32.
- **Figure 1.** The site boundaries shown for Sites 21, 24 and 32 appear to be incorrect.
- **Figure 3.** The legend identifies wells as "Sampled" or "Not Sampled." Please clarify whether the "Sampled" wells are those being proposed for the monitoring program.
- **Appendix C, SAP, Sections 14.2.1 Bladder Pump.** The text states that each well will have dedicated tubing but it does not indicate whether the pumps will be dedicated. If non-dedicated downhole (bladder) pumps are used, the text should indicate that pumps will be decontaminated before each use and sampling should progress from the least contaminated to the most contaminated well.
- **Appendix C, References.** The document should reference the more recent 2010 USEPA National Functional Guidelines for Inorganic Data Review, rather than the older 2004 document.

We appreciate the opportunity to review the Draft Groundwater Work Plan Addendum. Feel free to contact me if you have any questions.

Sincerely yours,  
AMEC GEOMATRIX, INC.

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Project Hydrogeologist

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Principal Geologist

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cc: Mr. Michael Tymoff, TIDA  
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