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ALAMEDA POINT  
SSIC NO. 5090.3

## Department of Toxic Substances Control

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Arnold  
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May 10, 2004

Mr. Thomas L. Macchiarella  
Southwest Division Naval Facilities Engineering Command  
Attn: Code 06CA.TM  
1220 Pacific Highway  
San Diego, CA 92132-5190

### **DRAFT REMEDIAL INVESTIGATION REPORT, IR SITE 28, TODD SHIPYARD, OPERABLE UNIT 6, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document dated February 13, 2004. Attached are comments from the Office of Military Facilities (OMF) and the Geological Services Unit (GSU). Comments from the Human and Ecological Risk Division (HERD) will be forwarded under a separate cover. Please contact me at 510-540-3767 or [mliao@dtsc.ca.gov](mailto:mliao@dtsc.ca.gov) if you have any questions.

Sincerely,

Marcia Liao, Ph.D., CHMM  
Remedial Project Manager  
Office of Military Facilities

Enclosure

Mr. Thomas Macchiarella

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Cc (via US Mail and email):

Ms. Anna-Marie Cook  
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Cc (via email):

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**DTSC COMMENTS**  
**DRAFT REMEDIAL INVESTIGATION (RI) REPORT**  
**SITE 28 TODD SHIPYARDS**  
**ALAMEDA POINT, ALAMEDA, CALIFORNIA**

**Part I: Comments from Office of Military Facilities (OMF)**

This RI report is clearly and succinctly written. The OMF appreciates the effort and would like to offer the following comments.

*Former Impoundment*

1. Page 1-13 states that the former impoundment located in EBS parcel 62, just south of the IR 28 boundary, showed only low levels of contamination. Page 1-11 asserts that the sampling at the impoundment provided no conclusive indication of contamination or relationship to shipyard activities. However, a review of Figure 1-4 suggests that the EBS sampling may have not been indicative of the potential contamination at the impoundment because all four EBS samples appear to be located on the edge. It is our opinion that the impoundment, although outside IR 28 site boundary, warrants further investigation.
2. The aerial view of 1973 and 1975 show a darkened area north of the impoundment (Appendix A, Figures A-14 and A-15). Please discuss what the darkened area was and if it warrants any concern.
3. We appreciate the inclusion of historical aerial photographs in this RI report and recommend all future RI submittals include pertinent historical maps and aerial photographs.

*Storm Drain Investigation*

4. Given that the storm sewer lines at IR Site 28 have essentially never been investigated, it is inappropriate to conclude at this time that "..... the unnamed shoreline outfall on the northern boundary of IR Site 28 has no known connection to the former NAS Alameda storm sewer system (Page 1-13)" and "...no storm sewer lines .... have been confirmed at the site (page 5-5)".

Also, given that the 2001 sediment screening study showed elevated concentrations of PCBs, metals and PAHs in sediment locations generally corresponding with the unnamed outfall (page 1-14), it is possible that the subject outfall is connected to NAS Alameda's storm sewer system, perhaps via the open storm drain located adjacent to Main Street to the south of IR Site 28, and further investigation on the storm drain is warranted.

5. Chemicals in groundwater can migrate along or through preferential pathways such as storm water pipelines. Given the lack of conclusive evidence at this time that the unnamed outfall is not connected with the NAS Alameda storm sewer system, we disagree with the statements that "This transport pathway may be insignificant because... no storm sewer lines or other buried utilities have been confirmed at the site (pages 5-4 and 5-5) and "Transport of impacted groundwater by influx into storm sewer piping is considered unlikely at IR Site 28 (ES-8 and Page 5-15)".

#### *Railroads*

6. The railroads at IR Site 28 were in operation from 1880s to 1960s and various weed killers and rail-tie preservatives may have been used historically. Please discuss if the EBS and RI have adequately addressed herbicides and wood preservatives other than arsenic containing compounds.

#### *Data Evaluation, Data Validation and Detection Limits*

7. The OMF assumes that the VOC samples collected in 2002 used Encore sampler. Please confirm.
8. The OMF assumes that all RI data collected in 2002 have been checked for the detection limits to ensure that the detection limits were below the comparison criteria as established in the data quality objective (DQO) or Section 3.5 (i.e. residential PRG, MCL, CTR etc) and analytes reported as non-detects are not artifacts caused by high detection limits. Please confirm.
9. It is our understanding that the EBS data collected between 1998 and 1999 have not been validated. Please discuss the detection limits of the EBS data used in this report and any uncertainty such high detection limits, if exist, may bring to the nature-and-extent discussion.
10. The OMF appreciates the clarity this RI has brought in describing the selection of chemicals of interests for nature-and-extent discussion and chemicals of potential concerns (COPCs) for risk assessment. However, there is still one minor discrepancy.

As Page 4-3 explains, results for analytes reported above detection limits at least once in RI or EBS are summarized in Table 4-2 (soil) and Table 4-5 (groundwater) and those exceed the comparison criteria are considered chemicals of interest (Tables 4-3 and 4-7). Page 6-2, on the other hand, states that all chemicals that were reported in at least one sample

collected during the RI were included as COPCs and presented in Table 6-1.

Given such selection criteria, one would expect that the analytes listed in Table 6-1 (i.e. COPCs) would be a combination of Tables 4-2 and 4-5 because the criteria used in compiling Tables 4-2, 4-5 and 6-1 are the same (i.e., compounds detected at least once are selected and tabulated). But a cursory review, as shown below, does not necessarily agree with it. Please explain.

ANALYTES	TABLE 4-2 (soil) & TABLE 4-5 (groundwater)	TABLE 6-1 (soil & groundwater)
VOC	15 analytes (based on RI data)	24 analytes (based on RI data)
PAHs	17 (based on RI)	8 (based on RI)
SVOC other than PAHs	3 (based on EBS)	--
Pesticides/PCBs	18 (based on EBS and RI)	15 (based on RI)
Organotin	4 (based on RI)	4 (based on RI)
Metals	21 (based on EBS and RI)	21 (based on EBS and RI)

11. Table 6-1 inadvertently includes organotin as pesticides/PCBs. Please correct it.
12. There appears to have some minor discrepancies in the sample inventory. According to Figure 1-4, EBS samples were collected from 17 locations within IR Site 28 boundary. But in various parts of the report only 12 locations were referenced (e.g. Figure 3-1, Pages 4-1 and 4-3). Besides, Page 4-3 states that EBS samples were collected at two different depths at each of the 12 locations and subject to chemical analyses. Later, it states that a total of 30 EBS samples were analyzed for SVOCs and 22 analyzed for pesticides, PCBs, and metals. Please explain why the SVOC samples subject for chemical analyses were far more than what were presumably collected (i.e. 24). Another seeming discrepancy is in Table 1-2 where a total of 39 SVOC samples were reported. Please reconcile the discrepancies.

*Extent of Soil Contamination*

13. We appreciate the use of "spider diagrams" to illustrate the extent of contamination. Please consider showing historical site features rather than current site features to help determine the sampling locations relative to the historical site features. Besides, color blue and green do not provide a very good contrast. Please consider using more contrasting colors or symbols to differentiate the levels of contamination.

14. Although not addressed under CERCLA, petroleum is regulated under RCRA. Please include a "spider diagram" for total petroleum hydrocarbons (TPHs) based on the EBS data.
15. Like other sites at Alameda Point, the cleanup level for PAHs is likely to be based on benzo(a)pyrene (BaP) equivalent. Please calculate BaP equivalent and include it in the RI.
16. Unlike other figures in the nature-and-extent section, Figure 4-1 is shown in 1":80' scale. To help the reviewers compare the maps, please keep the scale consistent (i.e. 1":100').

#### *Uncertainty Analysis*

17. Because the EBS data were not validated and verified, they were not included in the risk assessment. This means the data pool used in the risk assessment (based solely on 2002 RI data) is a smaller sect of the data used in the nature-and-extent discussion (based on EBS as well as 2002 RI). Some bias or uncertainty may be introduced as a result. Please discuss it (Although Section 4.1.2 indicates such analysis will be presented, no such discussion is currently provided in Section 6.2.5 *Uncertainty Analysis*).

#### *Ecological Risk*

18. The OMF reiterates the position outlined in our comments to IR Sites 14 and 15 that fragmenting the area along the Oakland Inner Harbor into geographically separated areas does not present a full picture of any potential ecological hazard. We believe some type of area-wide ecological risk assessment, including IR Sites 14, 15 and 28, should be developed once the other adjacent areas are ready for transfer.

### **PART II: COMMENTS FROM THE GEOLOGICAL SERVICES UNIT (GSU)**

Please see the attached GSU memo dated April 9, 2004.

### **PART III: COMMENTS FROM THE HUMAN AND ECOLOGICAL RISK DIVISION (HERD)**

The HERD comments will be forwarded under a separate cover.



## Department of Toxic Substances Control

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Arnold Schwarzenegger  
Governor



Terry Tamminen  
Agency Secretary  
Cal/EPA

### MEMORANDUM

**TO:** Marcia Liao, Project Manager  
Office of Military Facilities  
700 Heinz Avenue, Suite 200  
Berkeley, California 94710

*Marie J. McCrink*

**FROM:** Marie McCrink, RG, HG  
Associate Engineering Geologist  
Geologic Services Unit

**REVIEWED**

**BY:** Mike Finch, R.G.  
Senior Engineering Geologist I  
Geologic Services Unit

*MOF*

**DATE:** April 9, 2004

**SUBJECT: REVIEW OF THE DRAFT REMEDIAL INVESTIGATION REPORT, IR SITE 28, TODD SHIPYARDS, ALAMEDA POINT, ALAMEDA, CA, DATED FEBRUARY 13, 2004 (Log # 031165)**

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### ACTIVITY REQUESTED

Per your request, the Northern California Geologic Services Unit (NCGSU) has reviewed the *Draft Remedial Investigation ((RI) Report, IR Site 28, Todd Shipyards, Alameda Point, Alameda, CA*. The document is dated February 13, 2003 and was received by the NCGSU on February 16, 2004. The RI Report was prepared by Bechtel Environmental Inc., (BEI) for the Department of the Navy, Southwest Division, Naval Facilities Engineering Command, San Diego. The GSU has been requested to review the technical adequacy of the remedial investigative approach, the characterization of nature and extent of contamination, and the conclusions and recommendations presented. Review activities consisted of reading the document, reviewing the file for background issues, and reviewing the sites within the framework of the ongoing base-wide groundwater monitoring program.

## PROJECT SUMMARY

The purpose of this report is to characterize the nature and extent of soil and groundwater contamination, assess risk to human health and the ecological receptors, collect information to support a Navy recommendation for either no further action (NFA) or further action, including progression to a feasibility study (FS), and to present the results, conclusions, and recommendations of the RI conducted for IR Site 28.

IR Site 28 is a 2.9 acre site along the Oakland Inner Harbor waterfront that currently contains portions of a fenced dog park and a parking lot for commuters using the Alameda Ferry. The parking lot is paved, the dog park is covered with shredded bark, and the rest is unpaved. There are no buildings on the site. The Todd Shipyards site was purchased from the Navy in 1970, used as an extension of the adjoining shipyard property until 1983, to Alameda Gateway Limited, and reverted back to Navy ownership in 1995 after a dispute regarding property transfer.

The two most likely sources of soil and groundwater contaminants at Site 28 are from former railroads that crossed the site and historic shipyard activities at and near the site. Former railroads and associated activities have probably resulted in the elevated concentrations of iron and polynuclear aromatic hydrocarbons (PAHs), arsenic, and arsenic-containing herbicides. The presence of organotin compounds and metals in soils along the shoreline are related to shipyard wastes. Following are the GSU's comments and recommendations.

## COMMENTS AND RECOMMENDATIONS

1. General Comment. This was a well written and well organized document. The investigative approach and scope, nature and extent, fate and transport, and risk assessment discussions were kept separate and unambiguous. This made the review and identification of issues clear. The GSU appreciates the effort and expertise that produced this report.
2. Executive Summary. On page ES-7, subsection **Groundwater Contamination**, the GSU recommends the definition and site specific use of the California Toxics Rule criteria be provided.
3. Section 1.3.4.6 – Base-wide Groundwater Monitoring Program. The GSU recommends that IR Site 28 be added to the base-wide monitoring program as soon as possible. It is unclear why the Navy would exclude this site, especially since the risk assessment has identified several metals in groundwater that should be monitored regularly.
4. Section 2.5.2 – Hydrogeology, IR Site 28. In the 4<sup>th</sup> paragraph, it is stated that a groundwater elevation map of the First Water Bearing Zone (FWBZ) is shown in

Figure 2-9, which was constructed from data collected during base-wide groundwater monitoring in April, 1998. The GSU recommend a recent map from the current base-wide groundwater monitoring program be used for Figure 2-9.

In the 5<sup>th</sup> paragraph, the term temporary *stilling well* is used. The GSU recommends the term *stilling well* be defined.

In the last paragraph (last line, page 2-9), the average horizontal gradient is discussed. However, no discussion of the direction and magnitude of the vertical gradient have been included. The GSU recommends a discussion of vertical gradients beneath IR Site 28 be included in this section.

5. Table 3-1 – Summary of Data Quality Objectives (DQOs). In Step 2, Decision Questions, the phrases, “Upon adequate characterization,” and “Are COPCs in the FWBZ migrating to surface waters” are used. There is no discussion of defining the vertical extent of groundwater contamination, or investigating the Second Water Bearing Zone (SWBZ), which is present below the FWBZ, to confirm that contaminants have not migrated vertically. The GSU recommends the evaluation of vertical extent be discussed in **Section 3.0 – Investigative Approach and Scope**, and referenced to **Section 4.2.3 – Nature and Extent of Groundwater Contamination**. As will be commented on later, Section 4.2.3 should include, at a minimum, a discussion of previously collected groundwater data that document the presence or absence of contaminants in the next lower water bearing zone.
6. Section 3.2 – RI sampling Locations, Analyses, and Rational. Based on the information presented in Volume I, the GSU is unable to determine if the soil samples collected for analysis of volatile organic contaminants (VOCs) were collected using an Encore soil sampler. The GSU recommends that the type of sampling device used for VOCs in soil be named (in a location deemed appropriate by BEI) in this document. We suggest the first bullet on page 3-2, along with the analytical method, would be one possible place to locate this information without going to the appendices.
7. Section 4.1.2.1 & 4.1.2.3 – Volatile organic Compounds & Semivolatile Organic Compounds (SVOCs). Separate figures were not prepared for VOCs and SVOCs to show the extent of contamination because detected VOCs and SVOCs did not exceed the federal residential preliminary remediation goals (F-rPRG). The GSU believes that adequate characterization of VOCs and SVOCs has been conducted for defining the extent of contamination within the boundaries of IR Site 28 and for use in risk assessment, as long as an Encore sampling device was used for collection of VOC samples from soil. We have previously recommended the sampling device be named in an appropriate section of the report.

8. Section 4.1.3.1 – Organotin Compounds. Figure 4-8 shows reported concentrations for the four organotins detected in soil. A PRG has been not been established for these four organotins, but detected concentrations are well below the PRG for tributyltin oxide. The GSU believes that adequate characterization of organotin compounds has been conducted for defining the extent of contamination within the boundaries of IR Site 28 and for use in risk assessment. The GSU finds the distribution of elevated concentrations of organotins is adequately described in Section 4.1.3.1.
9. Section 4.1.3.2 – Polynuclear Aromatic Hydrocarbons (PAHs). Figures 4-2 and 4-3 show reported concentrations of seven PAHs that exceeded either the F-rPRG or California-modified residential soil preliminary remediation goal (Cal-mod rPRG). The GSU believes that adequate characterization of PAHs has been conducted for defining the extent of PAHs within the boundaries of IR Site 28 and for use in risk assessment. However, we recommend it be noted in the text that the lateral and vertical extent of contamination along the site boundaries has not been defined, and will possibly never be defined due to the pervasive occurrence of PAHs throughout soils at Alameda Point. However, the GSU believes the distribution of elevated PAH concentrations is adequately described in this section.
10. Section 4.1.3.3 and 4.1.3.4 – Pesticides and Polychlorinated Biphenyls (PCBs). Figures 4-4, 4-5, 4-6, and 4-7 show reported concentrations greater than the F-rPRG for Aldrin, Dieldrin, Aroclor 1254, and Aroclor 1260 in soil, respectively. The GSU believes that adequate characterization of pesticides and PCBs has been conducted for defining the extent of pesticides and PCBs within the boundaries of IR Site 28 and for use in risk assessment. However, we recommend it be concisely summarized in Section 4.1.3.3 and 4.1.3.4 that the definition of lateral and vertical extent of contamination is not complete at all site boundaries. Finally, the GSU finds the distribution of elevated concentrations of pesticides and PCBs is adequately described in these sections.
11. Section 4.1.3.5 – Inorganic Analytes. Figures 4-9 through 4-19 show reported concentrations of metals that were detected at levels greater than the federal industrial PRG (arsenic, chromium, iron, and lead), and those detected greater than either the California or the F-rPRG (antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, thallium, and vanadium). The GSU believes that adequate characterization of metals has been conducted for defining the extent of metals within the boundaries of IR Site 28 and for use in risk assessment. However, we recommend it be concisely summarized in Section 4.1.3.5 that the definition of lateral and vertical extent of metal contamination is not complete at all site boundaries. Finally, the GSU finds the distribution of elevated concentrations of metals in soil is adequately described in this section.

12. Section 4.2.3.2 – Nature and Extent of Groundwater Contamination, Metals. Analysis of metals in groundwater was conducted in the four IR Site 28 monitoring wells, all screened between approximately 6 and 16 feet below ground surface (bgs). Four metals (antimony, arsenic, nickel, and thallium) were reported at concentrations exceeding the Alameda Point background concentration range, but not all four metals were reported in all wells at concentrations exceeding background ranges.

The GSU concurs with the evaluation of lateral extent of metals in the FWBZ. However, we believe the vertical extent of metals, and possibly VOC contamination in groundwater, may not have been defined in the SWBZ. We recommend discussion be added to the text to justify why the deeper portions of the Bay Sediment Unit (BSU) and/or the upper alluvial deposits of the San Antonio Formation have not been investigated for vertical migration of metals, and checked for the possible vertical migration of VOCs as well. If base-wide information exists that can justify not evaluating this apparent data gap, it should be included in this section. Otherwise, the GSU recommends installing three monitoring wells in either the deeper portions of the Bay Sediment Unit (BSU) and/or the upper alluvial deposits of the San Antonio Formation to evaluate vertical migration of metals and VOCs. Based on the cross sections presented in Section 2.0, the Young Bay Mud portion of the upper BSU, which is reported to act as a semipermeable aquitard between the FWBZ and the SWBZ, may not be present at IR Site 28 and can not be guaranteed to retard all vertical migration of contaminants.

13. Section 5.3.2.3 – Copper in Groundwater. The GSU recommends a summary be provided in this section of Attachment K1, the estimated copper concentrations at groundwater discharge points into the harbor originating from IR Site 28 wells. In spite of the low bioavailability of copper in a water body, it is still the most toxic metal to ecological receptors (specifically, benthic aquatic life) of the metals identified as COPCs in groundwater at IR Site 28.
14. Section 5.4 – Summary of Fate and Transport Issues. The GSU concurs with the analysis of fate and transport mechanisms presented for IR Site 28. Our only concern is that if VOC soil samples were not collected with an Encore sampling device, then VOCs could be present at higher concentrations than reported.
15. Section 6.4.4.2 – Aquatic Receptors. It is stated in the text that the maximum groundwater discharge concentrations of copper predicted by modeling are 4.2 µg/L at 28SW01, 3.3 µg/L at 28SW02, and 51.7 µg/L at 28SW03. This indicates a potential for copper concentrations in the vicinity of discharge from 28SW03 to exceed the water quality criteria in the benthic habitat offshore of IR Site 28. During the FS, the GSU recommends offshore sampling of sediment pore water

be conducted directly adjacent to the shoreline near 28SW03, and near the outfall adjacent to 28SW02. Even though the Navy recommends no further investigation for IR Site 28 groundwater, the GSU recommends sediment sampling to settle for certain if any detectable concentration of soluble copper is getting into the harbor.

16. Section 7.0 – Conclusions and Recommendations. The Navy recommends progression to the FS to address: (1) PAHs , pesticides, PCBs, and metals in soil; (2) chemicals in soil that represent a potential for leaching to groundwater; and (3) metals in groundwater (only in the event that groundwater remains a designated source of drinking water). In addition, the Navy concludes that arsenic, copper, and manganese are unbounded in the upgradient direction. However, the Navy proposes that completing the definition of lateral extent of these metals is not a prerequisite to completing the RI and subsequent FS because of the limited mobility of these metals in groundwater, and because the FWBZ may be de-designated as a drinking water source.

The GSU concurs with these recommendations. However, due to the ecological risk due to copper in groundwater, we recommend offshore sampling of sediment pore water for metals be conducted during the FS directly adjacent to the shoreline near 28SW03, and near the outfall adjacent to 28SW02 to settle for certain if any detectable concentration of soluble copper is getting into the harbor. We also recommend our comments be fully resolved with respect to geologic and hydrogeologic issues, especially concerning the issue of vertical migration of contaminants, before approving this draft report and proceeding to the final RI report.

Please feel free to contact me by telephone at (916) 255-3691 or by email at [mmccrink@dtsc.ca.gov](mailto:mmccrink@dtsc.ca.gov) to discuss any questions you might have.

cc: Stewart Black, GSU Supervising Senior, DTSC, Sacramento