DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
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DALY CITY, CALIFORNIA 94014-1976

IN REPLY REFER TO :

16 June 2003

From: Commanding Officer, Engineering Field Activity West, Naval Facilities Engineering Command

To: Distribution

Subj: **RESPONSE TO AGENCY AND RESTORATION ADVISORY BOARD COMMENTS ON DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION INSTALLATION RESTORATION SITE 22, NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA**

Encl: (1) Responses to comments from the U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB), and the Restoration Advisory Board (RAB) on the Draft Supplemental Remedial Investigation [RI], Installation Restoration Site 22, Naval Weapons Station Seal Beach Detachment Concord, California (NWSSBD Concord), dated February 12, 2003

1. In accordance with Section 10.7 (e) of the Federal Facility Agreement (FFA), enclosure (1) is forwarded for your review and consideration for acceptance. Due to the fact that the results of this supplemental remedial investigation have identified the need for further site characterization, the Navy has not submitted the Draft Final Supplemental RI report at this time. The Navy finds this need for further characterization to be good cause for an extension to the Site 22 schedule. Therefore, pursuant to Section 14 of the FFA, the Navy hereby requests an extension for submission of the Draft Final Supplemental RI report from 16 June 2003 to 10 September 2004. In the interim, the Navy proposes to develop a draft sampling plan addendum by 15 August 2003 for conducting the additional site characterization, and a Revised Draft Supplemental RI report by 13 May 2004 in which the results of the additional characterization will be reported. These proposed Site Management Plan (SMP) changes are reflected in the Draft Annual Amendment to the SMP that was submitted to the Agencies for review on 12 June 2003.

2. If there are any questions or comments regarding the enclosure (1), please contact the undersigned at Telephone No. 650-746-7451.

16 June 2003

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Sincerely

STEPHEN F. TYAHLA, P.E., CHMM
By Direction

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Subj: **RESPONSE TO AGENCY AND RESTORATION ADVISORY BOARD COMMENTS ON DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION INSTALLATION RESTORATION SITE 22, NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA**

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RESPONSE TO AGENCY AND RESTORATION ADVISORY BOARD COMMENTS ON DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION INSTALLATION RESTORATION SITE 22 NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA

This document presents the Department of the Navy's (Navy) responses to comments from the U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB), and the Restoration Advisory Board (RAB) on the Draft Supplemental Remedial Investigation [RI], Installation Restoration Site 22, Naval Weapons Station Seal Beach Detachment Concord, California (NWSSBD Concord), dated February 12, 2003 (TtEMI 2003a). The comments addressed below were received from the EPA on April 16, 2003; DTSC on April 14, 2003; RWQCB on April 8, 2003; and Restoration Advisory Board on March 3, 2003 and February 24, 2003, respectively.

EPA COMMENTS AND NAVY RESPONSES

EPA General Comments

1. Comment: **The draft Supplemental RI Report concludes that the source of arsenic is most likely anthropogenic. However, it appears possible a portion of the arsenic detected in surface soils at Site 22 is non-anthropogenic in nature. Based on the boring logs contained in Appendix C, it appears that the soil type in the upper 3 feet of the site soils is different than the deeper soils. Specifically, the upper 2 to 4 feet of the vadose zone contains significantly higher fractions of gravel than deeper soils. The soils in the upper few feet of the vadose zone are often characterized as different (Unified Soil Classification System) than the underlying soils. It is possible that prior to the construction of Building 7SH5, fill was brought to the site to level it for development or for construction of the adjacent magazines. There are more than 100 earth-covered magazines in the vicinity of Building 7SH5, and the construction of these types of magazines typically requires that fill be imported to the site. If fill was imported to the site, it could contain naturally-occurring trace elements such as arsenic. In fact, arsenic, antimony and mercury, which are the three metals characterized by the Navy as being present at concentrations above ambient, are markers for gold ore in Carlin-type sedimentary deposits (which also require the presence of active tectonics, which are also locally present). The RI Report should be revised to provide additional evidence necessary to determine whether elevated concentrations of arsenic may be associated with fill material. If the source of the arsenic is shown to be fill, it should be fairly easy to characterize the extent of contamination. Please revise the RI to indicate whether there is any evidence that fill was imported to the site, and if so, what the source of this fill was. If historical topographic maps are available for the site, the RI should be revised to include an analysis of them compared to current topography. Otherwise, please provide a topographic map of the site at a suitable scale and attempt to discern if there are unnatural grade breaks present at the site. In addition, please provide an assessment of the rock type of the gravel present in the upper few feet of the site vadose zone.**

Response: Section 1.3.2 of the RI report will be revised to indicate that fill material was used for construction of the Site 22 building, roads, and railways. Available construction drawings for Building 7SH5 were reviewed, and it appears that on the order of 2 to 4 feet of fill material were placed at the site as foundation for buildings, roads, and railways and that the fill materials were locally derived from NWSSBD Concord property. The exact source location of the fill on NWSSBD Concord property has not been determined based upon a review of available records. A description and map of pre-and post-construction topography will be added to the draft final RI report.

The Navy agrees that one potential source of arsenic at Site 22 may be a combined result of both anthropogenic arsenic (from surficial application of pesticides) and naturally elevated arsenic concentrations in fill derived from local geologic deposits. The Navy further agrees that the majority of the gravel at the site is located within the upper 3 feet. However, gravel lenses up to several feet thick also were identified at depth in several locations across the site (including 7SHSB023, 7SHSB105, 7SHSB108, 7SHSB109, 7SHSB114, MW01, MW02, MW03, and MW04), and the composition of the gravel clasts at these locations is not readily distinguishable from the clast composition within the fill areas.

As indicated in Section 2.3.2, Page 2-4 (second paragraph), "The composition of gravel clasts includes siltstone, quartz vein, metamorphic rocks (granodiorite and greenstone), and chert."

EPA Specific Comments:

1. Comment: **<u>Section 3.2, Chemical-Specific Applicable or Relevant and Appropriate Requirements, Page 3-2</u>: As most of the elevated arsenic concentrations are found within the upper six inches of site soils, it appears that the Clean Water Act would be an Applicable or Relevant and Appropriate Requirement (ARAR) for this site for protection of surface water. Similarly, it appears that the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) could be an ARAR. Please revise the RI to include the Clean Water Act and FIFRA as ARARs, or indicate why they are not included as ARARs.**

Response: The Clean Water Act (CWA) is only an ARAR if the site is directly or indirectly affecting surface water quality. At this time, there is no indication that surface water is impacted by site activities. There is no surface water at the site, so the CWA does not apply to any on-site surface water. Any rainwater in the area either infiltrates into the surface to become groundwater or flows along the surface as surface runoff. All surface runoff is channeled into the network of drainage ditches. The storm water outfall that drains the magazine area has been monitored and regulated as part of the Navy's storm water pollution prevention program. The last storm water report was submitted in 2001 (CH2M Hill 2001). In that report, here is no indication that arsenic from the site is impacting the outfall that drains Site 22 and the rest of the magazine area (CH2M Hill 2001). Any impacts to the outfall will be addressed as part of the storm water management plan. If future sampling of the outfall were to indicate that concentrations of arsenic (originating from Site 22) exceeded CWA standards (such as the California Toxics Rule), the Navy will evaluate whether the CWA should be an ARAR for Site 22.

FIFRA regulates the sale, distribution, and use of pesticides. Currently the Navy is not selling or using insecticides, fungicides, or rodenticides at Site 22. The Navy has determined that FIFRA does not contain any requirements relating to the possible remediation of arsenic in soil or surface water that are either applicable or relevant and appropriate to Site 22.

2. Comment: **<u>Section 6.1.2, Identification of Chemicals of Concern in Soil, Page 6-3</u>: To be consistent with EPA policy, chemicals that exceed risk-based screening concentrations should not be excluded from quantitative consideration in the risk assessment based on a comparison to background concentrations. According to EPA, 2002 COPCs with high background concentrations should be discussed in the risk characterization, and if data are available, the contribution of background to site concentrations should be distinguished. COPCs that have both release-related and background-related sources should be included in the risk assessment. When concentrations of naturally occurring elements at a site exceed risk-based screening levels, that information should be discussed qualitatively in the risk characterization."**

Response: For consistency with EPA (2002a) policy, the risk characterization presented in the human health risk assessment (HHRA) will be revised to include a discussion of ambient levels for metals that exceeded risk-based screening levels, but were excluded in the quantification of site risks because they are present at concentrations that are consistent with ambient levels. The risk characterization also will be revised to include discussion of the relative contribution of ambient levels of metals to overall risk for those metals that were quantitatively evaluated (as they exceeded ambient levels).

3. Comment: **<u>Section 6.1.2.2, Screening of Essential Human Nutrients, Page 6-4</u>: Metals considered essential nutrients were compared to "ambient concentrations in California." According to the information presented in Table 6-2, ambient concentrations of these elements in California exhibit ranges greater than an order of magnitude, as would be expected in a state as geologically diverse as California. This comparison should be limited to ambient concentrations that more closely resemble soil/geological conditions at Site 22.**

Response: The intent of the comparison of site essential nutrient concentrations to ambient concentrations of these elements throughout California is to show that concentrations of essential nutrients at the site are not significantly greater than naturally occurring levels. According to EPA (1989), essential nutrients that are present at concentrations below background or slightly elevated above background do not need to be considered in the risk assessment. In most cases, maximum concentrations of essential nutrients at the site are similar to the lower end of ambient concentrations observed throughout California, and none of the concentrations is close to the maximum ambient concentrations observed throughout California. Therefore, whether ambient concentrations based on similar soil/geological conditions at Site 22 are similar to the lower, mid-range, or upper range of ambient concentrations measured throughout California, site concentrations either would not exceed or would not significantly exceed ambient concentrations.

4. Comment: **<u>Section 6.4.1, Risk Characterization Methodology, Page 6-10</u>: The text in this section discusses various EPA guidance regarding risk levels considered protective of human health. Reference is made to the EPA memorandum regarding the role of the baseline risk assessment in Superfund remedy selections, as well as the target risk range as outlined in the NCP. Consideration of the NCP risk range is an integral part of the remedial decision process; however, the risk assessment is not, in and of itself, a remedy selection document. EPA Policy (EPA 1995) clearly states that the risk assessment is only one part of the risk management process, and that the risk assessment should not contain language which discusses the acceptability of any particular risk level. Further, risk management decisions necessarily involve many considerations, not just those associated with the risk assessment process. By confining risk management language to the risk assessment, the Navy unnecessarily limits important additional information from consideration in the risk management process. Accordingly, the risk management language presented in this section should be moved to the conclusions section of the RI.**

Response: The discussion of the National Contingency Plan risk management range is included in the risk characterization section of the HHRA to provide benchmarks for comparison to assist the reader in interpreting risk results. The text will be reviewed and revised, where appropriate, to ensure that no statements reflecting risk management decisions are included in this section. In addition, the conclusions section of the RI will be revised to include language concerning risk management.

5. Comment: **<u>Section 7.2.5, Assessment and Measurement Endpoints, Page 7-5</u>: The Screening-Level Ecological Risk Assessment (SLERA) only evaluates upper-trophic-level receptors. Regardless of habitat quality or the probability that sensitive plants are present at the site, the SLERA should be revised to include readily-available screening benchmarks for plants and terrestrial invertebrates in order to provide an additional point of reference for risk characterization purposes.**

Response: The SLERA only evaluates upper-trophic-level receptors in accordance with the final Sampling and Analysis Plan (SAP) approved by EPA on September 18, 2002 (2002c).

Because plants and invertebrates at Site 22 are disturbed by grazing and are not considered to have high ecological or social value, they were not identified as assessment endpoints. To address EPA's concern, the SLERA will be revised to consider plants as a measurement endpoint for the modeled herbivores (tule elk and western harvest mouse) and invertebrates as measurement endpoints for the American robin, an insectivorous bird. Site concentrations in soil will be compared with readily available screening benchmarks for plants and terrestrial invertebrates, including EPA's risk-based soil screening levels (2000) and the Oak Ridge National Laboratory's benchmarks for terrestrial invertebrates and plants (Efroymoson and Others 1997a, 1997b).

6. Comment: **<u>Section 7.3.2, Exposure and Effects on Terrestrial Vertebrates, Toxicity Reference Values, Page 7-15, and Appendix H, Western Harvest Mouse Dose Calculations Table</u>: The ERA does not use the revised Toxicity Reference Value (TRV) for exposure of mammals to lead as published in California Department of Toxic Substances Control/Human and Ecological Risk Division EcoNote 5 (November 21, 2002, see the following link: http://www.dtsc.ca.gov/ScienceTechnology/eco.html#EcoNOTE5). Please revise the ERA to use the updated TRV.**

Response: Section 7.3.2 of the ecological risk assessment (ERA) will be revised to include the updated lead TRV for mammals.

7. Comment: **<u>Section 7.7.1, Bioavailability of Metals, Page 7-36</u>: The text cites results of a deionized water Waste Extraction Test (WET-DI) and argues that these data "provide a useful tool for evaluating bioavailable metal concentrations in soil at Site 22." U.S. EPA does not concur that these results provide useful information for evaluating bioavailable metal concentrations, particularly because the Navy did not provide results of acid extraction tests. One would expect the DI extraction results to result in an underestimation of the bioavailable fraction to which upper-trophic-level receptors evaluated in the ERA would be exposed, partly because ingested prey and soil is subject to acidic conditions in the gut. Since the information regarding bioavailability is not site-specific, is not quantitatively evaluated in the ERA, and is not applicable to estimates of exposure for bird and mammal receptors, the WET-DI test results should be removed from the text.**

Response: Discussion of the WET-DI data in Sections 7.7.1 and 7.7.4 will be removed from the text, as suggested.

8. Comment: **<u>Section 9.2, Recommendations</u>: In addition to arsenic and semivolatile organic compounds (SVOC) analyses for groundwater, U.S. EPA also requests that perchlorate and volatile organic compounds (VOCs) be added. As previous discussed as part of the Site 13 perchlorate/Record of Decision delay, U.S. EPA staff believe Site 22 represents a suitable monitoring location for assessing potential perchlorate contamination within the broader Inland Area, given its proximity to munitions storage areas, groundwater flow direction, and adjacent off-site residential areas. VOCs were analyzed and detected in low levels in groundwater at Site 22 several years ago, and should be re-analyzed to verify past results.**

Response: As discussed with the regulatory agencies, the Navy has agreed to analyze a perchlorate sample from the downgradient well at Site 22. This is to take place concurrent with the sampling event for the four groundwater monitoring wells at Site 13 (scheduled for 16-19 June 2003).

In a future, separate effort, groundwater analysis of metals (including arsenic), SVOCs, and VOCs will be performed for all four wells at Site 22. The Navy will prepare a SAP for the proposed groundwater sampling, in consultation with the regulatory agencies.

9. Comment: **The following items should be corrected or clarified:**

- **On page 1-6, the concentration of Total Oil and Grease in a sample collected from the site septic tank is given as 11 ug/l (micrograms per liter), which is below the method detection limit of the standard oil and grease measurement methods. Please verify the units.**

- **On page 2-5, the area of the Sacramento River Basin is given as 5,000 square miles (70 miles by 70 miles). The actual drainage area of the basin is in excess of 25,000 square miles.**

- **In Appendix G, the threshold dose for arsenic that is believed to cause toxic effects in sensitive humans is given as 20 to 60 grams per kilogram per day, rather than in micrograms per kilogram per day.**

Response: Page 1-6 will be revised to indicate that the concentration of total oil and grease (O&G) detected in the septic tank sample was 11 milligrams per liter.

Page 2-5 will be revised to state that the Sacramento River Basin covers nearly 27,000 square miles (Domalgaski and Brown 1996)

The units error in Appendix G will be corrected.

DTSC COMMENTS AND NAVY RESPONSES

DTSC General Comments

1. Comment: **The Department agrees with the conclusion that Arsenic is potentially a major contaminant and its' nature and extent need to be determined. We find that the following questions need to be answered as part of the investigation.**

<u>Vertical and Lateral Extent</u>: Although the Navy's findings indicate the majority of Arsenic is bound up in surface soils, not all borings followed this pattern. Soil boring 7SHB022 reported contamination greater at depth. It is recommended that the Navy spend some of its resources in determining if Arsenic does reside at depth.

<u>Human and Ecological Risk</u>: With the location of Site 22 near the boundary of Naval Weapons Station Seal Beach, Detachment Concord, the potential for wind blown transportation needs to be evaluated.

Response: Vertical and Lateral Extent: Considerable resources have been spent to determine whether arsenic is elevated at depth. Arsenic was detected in soil at 250 milligrams per kilogram (mg/kg) at Location 7SHSB022, from 10 to 10.5 feet below ground surface (bgs), during the Phase I RI. This sample was originally collected as part of the background data set for Sites 22 and 13. To determine whether arsenic in soils was indeed elevated at depth, the Navy resampled soil at Location 7SHSB022 as part of the supplemental RI (Sample 7SHSB109); the arsenic concentration in the deep soil sample (9 to 9.5 feet bgs) was 7.4 mg/kg, which is within background levels for the site (see Figure 5-1 of the Draft Supplemental RI). In addition, soil samples were collected at three depth intervals (0 to 0.5, 3.0 to 3.5, and 9.5 to 10 feet bgs) from 14 locations to assess whether arsenic was elevated throughout the soil profile. Arsenic concentrations in the 14 soil samples collected from 9.5 to 10 feet bgs, as part of the Supplemental RI, ranged from 5.5 to 14 mg/kg, indicating that arsenic at depth is within background levels for the site (the 99th percentile upper confidence limit of the mean [UCL_{99}] for the site background arsenic concentration is 23 mg/kg).

Human and Ecological Risk: The Navy conducted an evaluation to determine if arsenic in windblown dust from the site may expose residential receptors at the properties adjacent to Site 22 to unacceptable risk. The evaluation involved comparing the on-site exposure point concentration (EPC) for arsenic in surface soil (88 mg/kg), to the EPA Region 9 preliminary remediation goal (PRG) for arsenic in residential soil, based on the inhalation exposure pathway; the EPC was the 95th percentile upper confidence limit of the mean (UCL_{95}). The residential soil PRG for arsenic, based on the inhalation exposure pathway, is 590 mg/kg. This comparison shows that the on-site EPC for arsenic is well below the inhalation-based PRG for arsenic. The PRG for arsenic is based on a target risk level of 1E-06; therefore, on-site residential risk associated with inhalation of arsenic in soil that is released to air from wind is less than EPA's acceptable risk level of 1E-06 (using a risk ratio calculation, the risk is 88 mg/kg/590 mg/kg x 1E-06 = 1.5E-07). If the potential on-site residential risk from inhalation of windblown arsenic is less than EPA's acceptable risk level of 1E-06, then potential off-site residential risks from inhalation of windblown arsenic are likewise less than 1E-06. Potential off-site residential risks would be less than potential on-site risks, because wind and terrain will cause dispersion of airborne arsenic, resulting in dispersed (reduced) concentrations of arsenic as it travels from the site.

The HHRA will be revised to include this evaluation based on both the existing and new data planned for collection at the site.

Inhalation exposure to ecological receptors was not included in the SLERA. As a result, risk may be slightly underestimated. However, given the COPCs and their associated environmental fates (Adriano 1992 and Alloway 1990), the underestimation would be insignificant in dose calculations.

2. Comment: **Ground Water: The full suite of chemicals of concern should be included in a round of ground water analysis. The reliance of chemical data from 1997 or older does not take into account the dynamic nature of ground water transport.**

Response: The Navy is planning to collect groundwater samples for analysis of metals, SVOCs, VOCs, pesticides, from each of the four existing wells, and perchlorate from one well at Site 22 concurrent with the June 2003 sampling of groundwater wells at Site 13. No additional groundwater samples are planned for analysis of total petroleum hydrocarbons (TPH), because TPH was not detected during the four quarters of groundwater monitoring conducted in 1997, after the former underground storage tank (UST) was removed.

3. Comment: **Comments from agencies entrusted as Natural Resources Trustees need to be solicited regarding ecological risk and findings. Those agencies include but are not limited to: the California Department of Fish and Game, the U. S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Association.**

Response: Copies of the draft supplemental RI report were submitted to the Natural Resource Trustees on February 12, 2003, with a request for comments by April 13, 2003, including the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration. No comments have been received from these agencies.

4. Comment: **With respect to determining if Volatile Organic Compounds are a continuing issue, Soil Gas studies are recommended.**

Response: Data collected at Site 22 to date have not indicated a VOC release to soil or groundwater at Site 22 that would warrant a soil gas survey. Potential source areas for VOCs were investigated, including collection of 72 soil samples and 19 groundwater samples analyzed for VOCs at the site. VOCs in soil were infrequently detected (detected in 8 of 72 samples); all concentrations were more than two orders of magnitude below residential PRGs (see Table 5-1 of the Supplemental RI). The VOCs trichloroethene (TCE), bromodichlormethane, chloromethane, and chloroform were detected at low levels (2 micrograms per kilogram or below) in samples below 7 feet bgs collected around the UST fill pipe (7SHSBB010), and in 7SHMW04 and 7SHMW02.

If a major source of VOCs exists at the site, it would likely be observed in groundwater. Groundwater samples were analyzed for VOCs in 3 grab samples collected from temporary wells in 1995 and 16 samples collected from four permanent monitoring wells installed in 1997. 1,1,1-trichloroethane (TCA) and TCE were the only VOCs detected in groundwater at low levels; all detections of 1,1,1-TCA and TCE from the permanent monitoring wells were below the drinking water maximum contaminant level (MCL).

The Navy is developing a SAP addendum for collection of groundwater samples at the site; VOC analysis in groundwater is planned for inclusion in the SAP addendum.

DTSC Specific Comments:

1. Comment: **ES1 and Section 1.3.4 discuss the States signature of the Draft Record of Decision in 1998. As the Record of Decision was withdrawn due to further evaluation of data, the discussion serves no purpose.**

Response: ES1 and Section 1.3.4 will be revised, as suggested.

2. **Comment:** **ES-3 and ES-5 both discuss the correlation between Arsenic and other metals but come to different conclusions, please clarify.**

Response: Page ES-5 will be revised to clarify that, "Lack of statistical correlations of arsenic concentrations with other metals (antimony, iron, and manganese) in surface soils indicated that the source of arsenic at the site is most likely anthropogenic."

3. **Comment:** **ES-4: Trichloroethane and Trichloroethene appear to be used to describe the same sampling data, please clarify.**

Response: Page ES-4, second paragraph, fifth sentence, will be revised to correct a typographical error. The sentence will be revised as follows.

"The EPC [exposure point concentration] for 1,1,1-trichlroeth**a**ne was below the RBSL and tap water PRG."

RWQCB COMMENTS AND NAVY RESPONSES

RWQCB General Comments

1. **Comment:** **It is Board Staff understanding that the Navy most plausible hypothesis of the source of Arsenic at the site is pesticide applications to agricultural fields possibly combined with the Navy's pest control program. Board Staff recommends that an improved analysis to this hypothesis be researched. For example, Board Staff would like to propose the following:**

- **The general area surrounding Building 7SH-5 was regraded. It is unknown why regrading occurred and where the fill material present there originated. Board Staff noted that soil contamination was heterogeneously distributed (both laterally and vertically).**
- **Board Staff notes that contamination was not solely confined to surface soils. For example at soil boring 7SHSB022 Arsenic concentrations were found to increase with depth.**
- **It is recommended that the Navy evaluate if contaminated windborne dusts are reaching neighboring properties, exposing the population to unacceptable risks caused by inhalation of Arsenic.**
- **Board Staff recommends that the Navy perform an archival search to determine which pesticides might have been applied at the base, at what frequency and concentrations. Furthermore, to validate pesticide source hypothesis, the Navy should sample for other contaminants (in soils and groundwater) associated with pesticide use that might be recalcitrant to biodegradability.**

Response:

- Please the see response to EPA General Comment 1.
- Please see the response to DTSC General Comment 1.
- Please see the response to DTSC General Comment 1.

The Navy has conducted a records search to help identify the potential source of arsenic at the site and has reviewed available pesticide records to determine what pesticides may have been applied on site. To date, no Navy records have been uncovered that indicate a likely source of arsenic at the site. However, local newspaper articles from 1947 indicate that sodium arsenate may have been applied to portions of the Inland Area as an herbicide (Contra Costa Gazette 1947a and b; Attachment A).

Sodium arsenate is a pentavalent form of inorganic arsenic ($Na_2H\ AsO_4$). Arsenate (As V) is less mobile in soils and less toxic than arsenite (As III). From the mid-19th century to the mid-1940s, inorganic arsenic, such as sodium arsenate and lead arsenate, were the dominant pesticides used by farmers and fruit growers. Use of inorganic arsenic compounds in agriculture virtually disappeared beginning in the 1960s. Sodium arsenate was also used until the late 1980s as an ant bait. Based on this information, the most likely source of arsenic at Site 22 is the surface application of sodium arsenate as an herbicide.

2. **Comment:** **Groundwater quality should be fully analyzed for chemical of concerns found in soils such as metals, pesticides, Total Petroleum Hydrocarbons (TPH).**

Response: Please see the response to DTSC General Comment 2.

TPH was analyzed in groundwater during both the 1995 and 1997 groundwater sampling events. In 1995, groundwater samples were collected from three temporary wells (7SHSB010, 7SHSB011, 7SHSB012). TPH as motor oil was detected in groundwater at concentrations of 630, 450, and 380 micrograms per liter (µg/L), respectively. On February 7 1997, the UST formerly located south of building 7SH5 was removed, including 59 cubic yards (yd^3) of hydrocarbon-impacted soils. Subsequent to the UST removal, four permanent groundwater monitoring wells were installed on site and were sampled for TPH over four consecutive seasons (7SHMW001, 7SHMW002, 7SHMW003, and 7SHMW004). TPH was not detected in any of the four permanent groundwater wells sampled in March, June, September, and December 1997. Because no TPH has been detected in groundwater over four seasons at the site, no additional TPH sampling is recommended.

3. **Comment:** **It would be an extremely useful exercise if the Navy modeled Antimony, Arsenic, Lead, concentrations in site's soils using SADA (Spatial Analysis and Decision Assistance software http://www.tiem.utk.edu/~sada/). This effort would provide a better understanding of the probabilistic distribution of Arsenic in site's soils. It would aid the Navy in determining the probable extent of negatively impaired soils. Finally, these maps would support the locations of future additional samples that might help in the delineation of the lateral and vertical contaminations profiles.**

Response: The Navy will consider the appropriateness of SADA and similar software packages to support the design of future investigations at Site 22.

RWQCB Specific Comments:

1. **Comment:** **<u>Executive Summary, Screening Level Ecological Risk Assessment, p ES-5</u>: Board Staff suggests enhancing the section outlining why a reevaluation of the food chain modeling applied to the American Robin resulted in acceptable risk to that receptor. For example a summary of the conservative assumptions made in that analysis would improve the conclusions advanced by the Navy.**

   Response: Page ES-5 will be revised, as suggested.

2. **Comment:** **<u>Executive Summary, Conclusions and Recommendations, p ES-5</u>: Board Staff suggests revising the statement that there were no statistical correlations between Arsenic concentrations and other metals as this is contradictory to page ES-3 which states that a correlation was found between antimony and Arsenic.**

   Response: Please refer to the response to DTSC Specific Comment 2.

3. **Comment:** **<u>Section 1.3.2, History, p 1-5</u>: Please clarify the type of "inert equipment" stored in Building 7SH5. Additionally, Board Staff is interested to learn more about the regrading operations that occurred around the site such as: cause of the operation, volume and source of the regrading materials, application of pesticides post operation.**

   Response: The type of inert equipment stored at Building 7SH5 included bomb and missile fins, shipping containers, wood palates, nails, metal strapping materials, and empty bullets (without explosive equipment inside). Explosive materials were not stored in Building 7SH5 (TtEMI 2003b).

   See the response to EPA General Comment 1 regarding the grading operations on site. There has been no known regrading since original development of the buildings at Site 22.

   The Navy has reviewed available records regarding pesticide application at the site. Records that indicate the source of arsenic (Pesticide Compliance Program 2002) have not been found. However, based information presented in the response to RWQCB General Comment 1, the most likely source of arsenic at Site 22 is the surface application of sodium arsenate as an herbicide.

4. **Comment:** **<u>Section 1.3.4, Previous Environmental Assessments, p 1-7</u>: The Navy should refine the reporting of the Underground Storage Tank (UST) Investigation. Information such as: purpose of the UST, length of petroleum pipeline, the remedial activities implemented to address the soil contamination, map indicating UST/ soil removal locations are missing from the report. Finally, Board Staff is concerned that a significant amount of contamination remains in the soil (35,000 mg/ kg TPH-d (diesel) and 4,300 mg/ kg TPH-mo (motor oil)) particularly in the vicinity of 7SHSB001. The Navy needs to outline a proposed schedule that will address the residual TPH contamination detected at the site.**

Response: Details regarding the UST investigation and removal are summarized in the UST Closure report prepared by KTW & Associates (1997). Section 1.3.4 will be revised to include additional details regarding the purpose of the UST.

The 1,000-gallon steel UST formerly located along the west of building 7SH5 was installed in 1944 to supply diesel fuel to the three heaters in the building (KTW & Associates 1997). It is likely that the UST was filled by a railroad tanker car through a fill pipe located at the southeastern corner of Building 7SH5, next to the railroad tracks. The fill pipe ran to the former UST, about 3 feet bgs and 10 feet away from the building, along the southwestern side of the building. The three heaters inside of the building were connected to the UST by two 0.5-inch lines. These lines ran about 5 feet from the western wall.

Because petroleum products are exempt from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program, the Navy will address RWQCB's petroleum concerns under the Navy's UST program.

5. Comment: **<u>Section 2.1, Physical Setting, p 2-2</u>: The length and use of the northeastern/ northwestern drain lines should be indicated in the report. Please map these features on Figure 2-1. The Navy should clarify the purpose of the drainage channel as well.**

Response: Figure 2-1 will be revised to show the northeastern and northwestern drain lines. As stated in Section 2.1 of the draft supplemental RI, the specific purpose of the northern drain line is unknown, although it may have been used to drain condensate from air compressors in the building. Section 2.1 will be modified to indicate that: (1) the northern drain line is about 84 feet long, (2) the western drain line is about 100 feet long and was used for an environmental chamber that tested missile component exposure to water (PRC 1997), and (3) the purpose of the drainage ditches was to collect storm water runoff.

6. Comment: **<u>Section 2.4.2, Local Hydrology, p 2-5</u>: It would be useful to the current understanding of hydrogeological conditions, if the Navy describes if semi confined and/ or confined aquifer conditions were found at the site.**

Response: Section 2.4.2 will be revised to state that semiconfined groundwater conditions were found at the site.

7. Comment: **<u>Section 4.5.2, Groundwater Criteria, p 4-7</u>: Board Staff recommends that the Navy indicates the linear distance between the closest public/ private groundwater well and Building 7SH-5. The Navy should also indicate if the monitoring well is found up/ down/ cross gradient from Building 7SH-5.**

Response: Section 4.5.2 of the Supplemental RI will be revised to state that the closest known off-site well to Building 7SH5 is an irrigation well located at Concord High School, about 1,000 feet southeast of Building 7SH5. The localized direction of groundwater flow, based on the four existing monitoring wells at Site 22, is due west, indicating that the Concord High School well is not downgradient from Building 7SH5. The closest public supply wells are in Mallard Slough, located over 3.5 miles northwest of Site 22; these wells are not used as drinking water. Drinking water for the area is municipally supplied by the Contra Costa Water District; their water source is primarily surface water from the delta.

8. Comment: **Section 4.6, Statistical Analysis of Soil and Groundwater Data, p 4-7: The Navy should clarify in this section if the soil data tabulated is from discrete or composite samples.**

Response: The Navy will revise Section 4.6 to state that all samples were discrete samples, with the exception of 7SH-SFC, where a composite soil sample was collected from three points in the drainage ditch, as shown on Figure 2-3. For the statistical analysis, all samples were treated as discrete, independent samples.

9. Comment: **Section 4.6.1, Calculation of Descriptive Statistics for Soil and Groundwater, p 4-8: It is unknown to Board Staff why the 95th percentile and the one-sided upper 95th percentile upper confidence limit on the arithmetic mean were chosen instead of the 99th percentile for both of these indices. The use of the 99th percentile would be more conservative.**

Response: Following EPA guidance, the one-sided 95 percent upper confidence limit of the mean (UCL_{95}) was used to calculate EPCs for chemicals. An upper confidence limit of the mean is the appropriate metric when the objective is to make inferences concerning the true average concentration based on measurements obtained in a sample. A percentile of the sample measurements is inappropriate for this purpose. The "bounding" approach described in EPA (2002a) was chosen to explicitly account for the uncertainty of censored measurements in cases where the detection frequency was less than 85 percent. This approach is based on calculating a distribution for values of the UCL_{95} that are theoretically possible, based on the sample data. The maximum value from 2,000 calculations of the UCL_{95} was selected as the EPC. This is the most conservative value that could be selected based on this approach. For all other detection frequencies, the EPC was the lesser of the UCL_{95} (calculated using a distributional approach) and the maximum detected concentration.

10. Comment: **Section 5.2, Results of Groundwater Sample Analysis, p 5-5: The Navy should indicate if silica gel cleanup methodology was used prior to quantification of motor oil and diesel concentrations in soil and groundwater samples.**

Response: Section 5.2.1 will be revised to state that silica gel cleanup methodology was not used at Site 22, which is consistent with the field sampling plan for the RI. At the time the motor oil and diesel data were collected in 1995 and 1997, silica gel cleanup methods were not commonly used. These methods are typically used to eliminate interference in a sample result associated with high organic content in soils, such as is present in the wetland soils of the Tidal Area.

11. Comment: **<u>Figure 5-1, Concentrations of Arsenic in Soil</u>: The Navy should highlight the samples used to evaluate the distribution of Arsenic in soil relative to the proximity of Building 7SH-5. It is also unclear why sample 7SH-SFC was composited horizontally across three boring locations.**

Response: As described in Section 5.1.2.1 of the draft report, the following sampling locations were selected to evaluate the distribution of arsenic in soil relative to the proximity of Building 7SH5: 7SHSB103, 7SHSB104, 7SHSB111, 7SHTP001A, 7SHTP001B, 7SHTP001C, 7SHTP001D, 7SHTP001E, 7SHTP001F, S52-01, and S52-02. Figure 5-1 will be modified to highlight these sampling locations.

Sample 7SH-SFC was a composite sample proposed in the Site Investigation [SI] Work Plan (PRC Environmental Management, Inc. [PRC] 1991) and was collected as part of the SI sampling conducted in 1992. As explained in the work plan, the samples served as downgradient samples from the suspected disposal pit area. It is not unusual to composite soil samples horizontally across three boring areas for SI sampling efforts, when the objective of the samples is to determine whether a site warrants further investigation.

12. Comment: **<u>Table 4-4, Soil Preliminary Remediation Goals For Detected Analytes</u>: The Navy should cite the EPA (Environmental Protection Agency) Region IX table issue date from where these PRGs (Preliminary Remediation Goals) were taken. The Navy should also include the Arsenic non-cancer and cancer end point values in this table. Board Staff recommends tabulating the conservative Total Chromium PRG instead of the Chromium III values. Board Staff recommends using the Mercury PRG instead of the mercuric chloride criteria. Finally, the Navy should clarify in which instances the California Modified PRG was used instead of the USEPA Region IX remediation goals.**

Response: Table 4-4 will be revised to include cancer and non-cancer-based PRGs, notes that indicate when California-modified PRGs were used instead of EPA Region IX PRGs, and a reference to the 2002 EPA Region IX PRGs.

Because there are no sources of chromium VI related to current and previous land uses at Site 22, use of the chromium III PRG is considered to be appropriate.

The mercury PRG listed in Table 4-4 is the PRG for mercury and compounds, not the mercuric chloride criteria. On February 10, 2003, EPA issued a revision to the 2002 PRG tables and replaced the entry for "Mercury chloride" with the designation "Mercury and compounds," similar to earlier versions of the PRG table, to avoid unnecessary confusion.

13. Comment: **<u>Executive Summary, p ES-1 and Section 1.3.4 Previous Environmental Assessments, p 2-8</u>: Board Staff recommends that the Navy outlines which State of California regulatory agency(ies) signed the Site 22 Record of Decision (ROD) in 1998. The statement that the SAP (Sampling Analysis Plan) was developed in consultation with the SFBRWQCB is erroneous. Board Staff did not provide comments on the SAP. Please modify accordingly.**

Response: Please see the response to DTSC Specific Comment 1 regarding the ROD discussion.

Page ES-1 and Section 1.3.4 of the report will be revised to indicate that RWQCB did not provide comments on the SAP.

14. Comment: **<u>Executive Summary, p ES-4</u>: The Navy mentions 1,1,1 trichloroeth*a*ne as being a chemical of potential concern in groundwater. However, in the subsequent sentences 1,1,1 trichloroeth*e*ne is discussed. Please resolve this discrepancy.**

Response: Please refer to the response to DTSC Specific Comment 3.

15. Comment: **<u>Section 1.1.3, Supplemental Remedial Investigation Objectives, p 1-2</u>: Board Staff recommends reporting the distance between Building 7SH-5 and the highest reported detection of Arsenic in soils.**

Response: Section 1.1.3 of the Supplemental RI will be revised to state that the highest reported detection of arsenic in surface soils (210 mg/kg at 0 to 0.5 foot bgs) was from Soil Boring 7SHSB114, located 275 feet from Building 7SH5.

16. Comment: **<u>Section 4.2, Data Collected during Previous Investigations, p 4-1</u>: Board Staff recommends that the Navy indicate the dates when the various stages of the field characterization took place.**

Response: Section 4.2 will be revised to indicate the dates when various field investigations took place.

17. Comment: **<u>Section 5.4, Geochemical Correlations Between Arsenic and Other Metals, p 5-7</u>: Site-specific Lead concentrations detected should be correlated with Arsenic values found at the site. This effort would potentially clarify if the pesticide lead arsenate might be the contamination signal detected in the site's soil. The presentation of statistical correlations between particle size/ soil types and contaminant concentration would be useful as well. It might help elucidating probable relationships between Arsenic mobility and soil characteristics.**

Response: The correlation of arsenic and lead was evaluated using site-specific soil concentrations from a total of 42 samples, collected at depths from 0 to 16 feet bgs. The correlation was found relatively weak for shallow samples collected from 0 to 1 foot bgs (the coefficient of correlation is 0.40). Arsenic concentrations in shallow samples (0 to 3 feet bgs) are significantly higher than at depth and range from 3.9 to 210 mg/kg, with an average of 58.06 mg/kg. Arsenic concentrations in shallow samples exceed the estimated background levels.

However, arsenic concentrations in deeper samples appear to correlate more strongly with lead concentrations (coefficient of correlation of 0.63, based on 27 soil samples with arsenic and lead analyses). Arsenic concentrations in deeper samples appear to be consistent with the background levels, with an average of 11.6 mg/kg. With the exception of 4 out of 42 samples, lead concentrations in both shallow and deep soils appear to be consistent with background concentrations.

It is expected that higher arsenic concentrations will be associated with finer-grained materials. However, the presentation of statistical correlations between particle size/soil types and arsenic concentrations is not likely to help clarify the relationships between arsenic mobility and soil characteristics, because mobility of arsenic is affected primarily by soil pH and oxidation-reduction potential (redox).

Lead concentrations at the site were not elevated, which one would expect if lead arsenate were the source. Of over 40 lead samples collected at the site, only 1 sample contained lead at a concentration slightly above the residential PRG (a maximum detected site concentration of 165 mg/kg; the California-modified residential PRG is 150 mg/kg). Based on the lack of correlation at the surface between arsenic and lead and the fact that lead concentrations were not elevated at the site, it is unlikely that lead arsenate is source of arsenic.

18. Comment: **<u>Section 8.1, Fate and Transport of Arsenic p 8-1</u>: Board Staff recommends that a site's specific soils leachable test be conducted under hydrologically unsaturated and saturated flows conditions to determine the mobility of chemical of concerns. For example, the EPA Synthetic Precipitation Leaching Procedure could be used to determine the capacity of site's soils to leach Arsenic. It is important to determine in this study the Arsenic species distribution in site's soils. Arsenic toxicity is dependent on the chemical form found. Arsenites (As III) are more soluble than Arsenates (As V which comprises bacterially methylated organic arsenic species).**

Response: The site-specific leaching test, following the EPA Synthetic Precipitation Leaching Procedure (SPLP), can be conducted for vadose zone soils. The goal of the test is to predict the dissolved-phase concentration of arsenic in the pore space of a saturated soil sample; this can indicate what concentrations of arsenic can be potentially expected in groundwater directly under affected soils. However, the SPLP-derived concentrations of arsenic are likely to be overestimated, because this test method introduces a significant dilution of a potential "leachate." In addition, SPLP test results do not directly provide information on arsenic species in the dissolved phase. In order to determine what concentrations of arsenic can potentially leach from soil, it is preferable to directly measure groundwater by collection of metals data from existing monitoring wells. Additional groundwater sampling is planned at the site for metals.

Arsenic species distribution in site soils is primarily controlled by pH and redox potential. At high redox levels, As (V) predominates and arsenic mobility is low. As the pH increases or the redox decreases, As (III) predominates. Given almost neutral pH measured in soil samples from the site (pH range of 6 to 8.5), it is expected that As (V) predominates in sites soils and arsenic mobility is generally low.

19. Comment: **<u>Analytical Tables</u>: Analytical tables reporting contaminant concentrations detected in soils and groundwater for each sample taken should be presented in this section. For example, the tables outlined in Appendix F do not report the locations where the concentrations are tabulated. It would be useful to map locations where ambient levels and/ or regulatory screening criteria were exceeded.**

Response: Analytical tables reporting all chemical concentrations detected in soil and groundwater are presented in Tables 5-1 through 5-4 for soil and in Table 5-9 for groundwater.

The tables in Appendix F are statistical summary tables that show statistical information calculated for the three depth intervals evaluated (0 to 0.5, 0 to 3, and 0 to 10 feet bgs). Because these are statistical summary tables that describe a data set, it is not possible to identify individual sampling locations on those types of tables.

Figure 5-1 will be modified to identify arsenic samples that exceed the UCL_{99} background level in soils (23 mg/kg). All arsenic samples in soil exceeded the residential PRG of 0.39 mg/kg. No other chemicals in soil exceeded residential PRGs, with the exception of lead in a surface soil sample collected from S52-03 (165 mg/kg), which slightly exceeded the residential PRG of 150 mg/kg.

20. Comment: **<u>Table 6-9, Comparison of Groundwater Concentrations to Risk-Based Screening Levels</u>: The Navy should report the contaminant concentrations detected in groundwater at the site in this table.**

Response: Table 6-9 presents groundwater EPCs for groundwater contaminants of potential concern (COPC) and compares the EPCs to risk-based screening levels. Therefore, the title of the table will be revised to "Comparison of Groundwater Exposure Point Concentrations to Risk-based Screening Levels."

COMMENTS BY RAB MEMBER, IGOR SKAREDOFF, AND NAVY RESPONSES

Mr. Skaredoff's General Comments

1. Comment: **I agree that Arsenic is a major concern and that it is likely due to poisoning of ground squirrels. Arsenic and Lead (from Lead Arsenate) should be surveyed all over the Station, wherever ground squirrel poisoning is likely to have taken place, especially, near the Contra Costa Canal.**

Response The exact source of arsenic in soils at Site 22 is unknown. As stated in the response to RWQCB General Comment 1, the most probable source of arsenic in soils at the site is the surface application of sodium arsenate to soils as an herbicide. As stated in the response to RWQCB Specific Comment 17, lead and arsenic concentrations are not correlated in surface soils, which indicates that it is unlikely that lead arsenate is the source of arsenic in surface soils.

It is unlikely that arsenic-containing compounds were used to control ground squirrel populations on base. The ground squirrel control agent use on base was methyl bromide, a fumigant, based on newspaper articles from the 1950s (Contra Costa Gazette 1954). Methyl bromide use does not leave toxic agents behind in soil. EPA is currently phasing out the use of methyl bromide, because it is an ozone-depleting gas.

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Drinking water is municipally supplied by the Contra Costa Water District (CCWD) in the areas that surround Site 22. The drinking water supply for CCWD originates from surface water from the Sacramento-San Joaquin Delta, conveyed through the Contra Costa Canal. The Contra Costa Canal is a concrete-lined channel located over 1.2 miles away from Site 22. Water conveyed through the Contra Costa Canal does not come into direct contact with soils or groundwater in the Inland Area. The canal is operated and maintained by the CCWD). Water from the canal is treated and regularly tested for chemical and biological contamination by CCWD prior to reaching the tap. Recent water quality reports are available on the CCWD website at http://www.ccwater.com/.

2. Comment: **The persistent darkened area over the leach field should be investigated for contamination. It is likely that VOCs and perhaps other materials were dumped into the sewer connected to the leachfield.**

Response: The darkened area that appears in the aerial photographs on the northwestern side of Building 7SH5 is a large tree that is still currently at the site.

As explained in Section 1.3.4, Page 1-6 of the draft supplemental RI report, the septic tank and leachfield were investigated as part of the Resource Conservation and Recovery Act [RCRA] Facility Assessment [RFA] Confirmation Study conducted in 1997 (PRC 1997). Details about the sampling analysis and results are presented in the draft supplemental RI report.

To assess potential releases to soil from the septic tank and leachfield, soil samples were collected from locations S52-01 through S52-04 and analyzed for VOCs, SVOCs, metals, and total O&G. None of the soil samples contained detectable VOCs or SVOCs except for the SVOC phenol. As shown in Table 5-2, phenol was detected at concentrations of 0.92 and 1.2 mg/kg from RFA Samples S52-01 and S52-02 at depths of 5 to 6 feet bgs, respectively; the residential PRG for phenol is 37,000 mg/kg. Three of the soil samples contained O&G at a maximum concentration of 280 mg/kg. Metals were not detected at concentrations exceeding the residential PRG or estimated ambient limit concentrations, except for arsenic, which has been the focus of subsequent investigations, and lead which only slightly exceeded the residential PRG of 150 mg/kg in one sample (165 mg/kg in Sample S52-03).

Because solvents were used in Building 7SH5 and an UST was formerly located near the building, groundwater at the site was evaluated for VOCs, SVOCs, and TPH in 1995 and 1997. Detected concentrations of TPH are summarized in the response to RWQCB General Comment 2. VOCs in groundwater are described in response to DTSC General Comment 4. All concentrations of SVOCs in groundwater were below MCL for drinking water established by EPA, with the exception of bis(2-ethylhexyl)phthalate (BEHP). BEHP was detected in two wells above the drinking water MCL during the June 1997 sampling event, but it was not detected in any wells during the two preceding sampling events (1995 and March 1997) or two sampling events that followed (September and December 1997). BEHP is a common laboratory contaminant (Agency for Toxic Substances and Disease Registry [ATSDR] 2003); therefore, it is likely that the observed concentration resulted from contamination introduced into the sample during laboratory analysis, rather than the presence of BEHP in site groundwater.

Future analysis of metals, VOCs, SVOCs, and pesticides in existing groundwater wells is proposed.

3. Comment: **The arguments using uncertainty and mismatches of reference organisms to disregard high toxicity values do not stand up to logical analysis. This rationale should be re-examined and appropriate revisions made to the conclusions.**

Response: Because ecosystems are complex and funding for studying them is finite, risk assessors rely on mathematical models to evaluate risk to ecological receptors. Mathematical models rely on a number of basic assumptions to simplify ecosystems; uncertainty is an unfortunate reality for all models, and uncertainty analysis is a critical component of a risk assessment (EPA 1997). Assumptions used in screening-level risk assessment models are biased to be conservative and thereby protective of ecological receptors. Examples of the conservativism inherent in SLERAs include: (1) maximum detected concentrations were used in the models, (2) it is assumed that a given receptor spends 100 percent of his/her time at the site and is exposed to the maximum concentration all of the time, and (3) it is assumed that 100 percent of a chemical that is encountered by an ecological receptor in soil is bioavailable.

For this reason, EPA and Navy guidance recommend that if results of a SLERA indicate risk, it is appropriate to re-evaluate the conservative assumptions used in the model to make it more realistic for a given site. This re-evaluation of exposure parameters was conducted; the only revision in the model was that a UCL_{95} soil concentration was used in the model, rather than the maximum soil concentration.

4. Comment: **In several instances, contaminants were found for a time, then were no longer found. What happened to them? Was something done to remove them or have they simply moved on down the groundwater gradient toward residential areas…or something else?**

Response: Groundwater samples collected from permanent monitoring wells are considered to be more representative than temporary well groundwater samples, because the wells are developed (3 well volumes of water are removed) and some of the larger particulate matter is removed. Suspended particulate concentrations in grab groundwater samples that get analyzed as part of the sample tend to impart a bias on the sample result. Because the result includes dissolved and particulate matter instead of only the dissolved fraction that tends to moves with groundwater, the result is overstated (biased high).
As described in the response to RWQCB General Comment 2, the diesel UST formerly located near building 7SH5 and 59 yd^3 of hydrocarbon-impacted soil was removed and backfilled with clean soil in February 1997. This source removal of diesel-impacted soil in February 1997 and the improved sampling methods using permanent monitoring wells may explain why TPH was not detected in any of the 16 groundwater samples collected after that time.

As explained in the response to Igor Skaredoff General Comment 2, it is likely that detected concentrations of BEHP in June of 1997 are a result of contamination introduced into the sample during laboratory analysis, rather than the presence of BEHP in site groundwater.

The TCE concentration of 27 micrograms per liter (μg/L) detected in the 1995 grab groundwater sample was higher than detected concentrations from the 1997 sampling events, probably because of the improved sampling methods used in 1997 and not due to changes in actual groundwater concentration.

The VOCs 1,1,1-TCA and TCE were only detected in the first of four rounds of groundwater samples collected during 1997, at very low concentrations (1 ug/L). For perspective, one part per billion (1 μg/L) represents one drop of water in an olympic-size swimming pool. Although laboratories exercise extreme caution in analyzing VOCs, the detection limits are very low and results are occasionally biased by cross contamination occurring within the laboratory. VOCs at the site were more consistently not detected which calls the original result into question. The absence of VOCs in subsequent sampling rounds is not unusual, given the very low concentrations and the fact that the concentration was qualified by the analytical laboratory as "estimated", which means that the laboratory cannot report the number with certainty.

Mr. Skaredoff's Specific Comments:

1. Comment: **<u>Page ES-3</u>: Diesel and motor oil initially found in concentrations of 3.5% and 0.4% respectively, were not found upon resampling. Where did they go? Could they have moved offsite with groundwater flow?**

Response: Please see the response to Igor Skaredoff General Comment 4.

2. Comment: **<u>Pages ES-4, ES-6, Item 9.1</u>: BEHP & TCE were found for first two quarters, then not found in last two quarters. Where did they go? Was anything done to remove them or did they just move offsite with groundwater flow and now exist downgadient? What is the source of BEHP?**

Response: Please see response to Igor Skaredoff General Comment 4.

BEHP is primarily used as one of several plasticizers in polyvinyl chloride resins used for fabricating flexible vinyl products. There is no known source of BEHP at Site 22.

3. Comment: **<u>Page ES-4</u>: The notation cites three Chemicals of Potential Concern, then goes on to list only two, naming trichloroethane twice.**

Later in the paragraph trichloroethene is listed. Is this correct?

Response: The three COPC are: BEHP, TCE, and 1,1,1-TCA

Please refer to DTSC Specific Comment 3.

4. Comment: **<u>Page ES-4</u>: The industrial use potential cancer risk is within the risk management range. What does this mean?**

The future residential cancer risk exceeds the risk management range. The noncancer HI's are above 1.0.

Does this indicate unacceptable contamination?

Response: Language will be added to the executive summary to describe EPA's risk management range for residential cancer risk and EPA's threshold hazard index (HI) for non-cancer hazards.

To evaluate cancer risks at a site, EPA uses a risk management range for residual cancer risk of 1E-04 to 1E-06. This range represents a potential excess upper-bound cancer risk to an individual of 1 in 10,000 to 1 in 1 million from exposure to contamination at the site over a lifetime. The EPA's risk management decision methodology considers that if calculated risks are less than 1E-06, then no further action is required. If risks fall within the risk management range, then risk management mechanisms may be required, such as institutional controls. To evaluate non-cancer hazards at a site, EPA uses a non-cancer HI threshold of 1.0. Based upon the risk assessment methodology, a total HI of less than 1 indicates no potential for non-cancer health effects and remedial action generally is not warranted.

Because results of the screening-level human health risk assessment indicate that cancer risks from soils are within the upper limit of the target risk range for the current industrial worker, future worker, and hypothetical future residential scenarios and non-cancer hazards are greater than the threshold HI for the future residential scenario, an updated HHRA following additional investigation is recommended to evaluate site risks from arsenic in soil. Additional investigation is planned for the magazine area to characterize levels of arsenic in soil. The additional investigation will focus on open grasslands in the magazine area, rather than Building 7SH5, as a potential source of arsenic.

5. Comment: **<u>Page ES-4</u>: Significant Arsenic was found in soil samples. Was groundwater tested for Arsenic? (The gradient map indicates that groundwater migrates off Naval Property into the neighborhood.)**

Response: Metals in groundwater have not been evaluated at the site to date. Although the physical properties of soil and elemental arsenic make transport of significant arsenic in groundwater unlikely, the Navy is planning to collect groundwater samples for arsenic analysis in the future, as recommended in the supplemental RI report.

6. Comment: **<u>Page ES-5</u>: What is the basis for disregarding the high Arsenic and Zinc TRV's for Robins and recalculating them to be lower than 1.0?**

Response: The results of the SLERA, in which the hazard quotients (HQ) for arsenic and zinc are greater than 1.0, are presented in Section 7.4.1. Because the SLERA resulted in HQs greater than 1.0 based on the high TRV for the American robin at Site 22, a more focused, refined assessment of ecological risk (Step 3a of a baseline ERA) was conducted in accordance with Navy and EPA guidance (Navy 1999; EPA 1997). SLERAs are designed to be very a very conservative screening tool, and Step 3a is a refinement of the conservative SLERA. The results of the refined risk assessment are presented in Section 7.7.

7. Comment: **<u>Page ES-6</u>: Why is testing of groundwater for Arsenic not recommended, when Arsenic is the dominant contaminant in the area, especially around drainage ditches?**

Response: Arsenic is considered to be a metal, and as such, was included as an analyte for proposed groundwater sampling in the recommendations on Page ES-6 of the draft supplemental RI.

8. Comment: **<u>Page ES-6</u>: Why is no further characterization of risk to ecological receptors recommended when Arsenic is known to bioaccumulate up the food chain from ground squirrels to Red-Tailed Hawks, for example?**

Response: No further characterization of risk to ecological receptors was recommended, because no significant risk was indicated to the receptors modeled (western meadowlark, red-tailed hawk, tule elk, or grey fox). The bioaccumulation of arsenic to omnivorous birds, carnivorous birds, herbivorous mammals, and carnivorous mammals was modeled using a food chain modeling approach consistent with EPA guidance for ERAs (EPA 1997; EPA 1999a). The foodchain modeling used to evaluate risk to ecological receptors incorporates a bioaccumulation factor (BAF) to account for bioaccumulation of chemicals through the foodchain to upper-trophic-level species, such as the red-tailed hawk in your example. BAFs used for the dose estimates are presented in EPA (1999b).

Calculated doses were then compared with effects levels for similar receptors reported in the literature, known as TRVs. As described in Section 7.3.2 of the draft supplemental RI, low TRVs represent a conservative value, consistent with a no observed adverse effects level, and high TRVs represent a less conservative value, consistent with the lowest observed adverse effects level. Calculated doses were compared with high and low TRVs in a HQ approach. Risk was considered to be significant if HQs based on the high TRV were greater than 1.0.

9. Comment: **<u>Page ES-6</u>: The Arsenic data for Site 22 suggests widespread use of Arsenic to poison ground squirrels. A station-wide assessment of Arsenic contamination should be conducted to determine the geographical extent of the problem. The Contra Costa Canal, which supplies drinking water to Concord, Walnut Creek, Pleasant Hill, Martinez and other communities flows through the Station. Embankments above the canal, which could was into the water supply, should receive special attention.**

Response: The source of arsenic in soils is unknown at this time. As stated in the response to RWQCB General Comment 1, the most likely source is the surface application of sodium arsenate to soils as an herbicide.

Because the lateral extent of the arsenic contamination in soil has not yet been delineated, the Navy is planning to conduct additional arsenic characterization in site soils occur to address this question. The Navy will develop a SAP, in consultation with the regulatory agencies, for this study. Future investigations will focus on potential source areas.

See the response to Igor Skaredoff General Comment 1 regarding the Contra Costa Canal.

10. Comment: **<u>Page 7-19, Item 7.4.1</u>: The Lead HQ data looks very anomalous. The rationale to disregard the exceptionally high Dose/Low TRV data can just as easily be used to disregard the low Dose/High TRV data. This reasoning is spurious and should not be used to disregard the data.**

Response: Please see the response to Igor Skaredoff Specific Comment 8 and Page 7-16 of the draft supplemental RI report for a description of the low and high TRVs and interpretation of HQs.

The maximum concentration of lead detected in soil (165 mg/kg) was used in the food chain model to evaluate risk to avian receptors from exposure to lead; no data points were deemed to be anomalous, and no data were omitted. This calculated dose was then compared to the low and high TRVs to determine an HQ. HQs calculated using the high TRV for the red-tailed hawk and American robin are below 1.0, indicating no significant or immediate risk to these receptors.

HQs calculated using the low TRV for the red-tailed hawk and American robin were greater than 1.0, indicating a potential for risk. When a potential for risk is indicated, it is appropriate to look into the assumptions used in the food chain model, such as the study the TRV is based on, the assumptions related to bioavailability, and exposure assumptions, to evaluate whether potential risk is likely.

It is widely acknowledged that bioavailability of metals in the field is generally lower than under laboratory conditions (EPA 2000). The TRV for lead was based on a study using lead acetate, a highly bioavailable form of lead fed to Japanese quail. Lead in contaminated soil and dust has been estimated at being 10 to 20 percent as bioavailable as lead acetate (O'Flaherty 1998), therefore the assumption of 100 percent bioavailability used in the SLERA was highly conservative.

It is well known that different species exhibit different levels of sensitivity to metals. The lowest observed effects level (LOAEL) for exposure to lead acetate to American robins and Red-tailed hawks presented in Sample (1996) was 11.3 milligrams per kilogram per day (mg/kg-day); the calculated dose in the SLEREA assuming 100 percent bioavailability, was 3.41 mg/kg-day for the American Robin and 0.1 mg/kg-day for the Red-tailed hawk, well below the LOAEL. Because dose estimates based on the conservative SLERA food chain model are well below LOAELs, it is unlikely that lead poses risk to the American robin or Red-tailed hawk at Site 22. Page 7-19 of the Supplemental RI will be revised to include this detail.

11. Comment: **<u>Page 7-19, Item 7.4.1</u>: The rationale used to disregard the high Lead HQ for Robin is faulty. It claims that studies done with Hawks are more representative for Robins than are studies done with Quail. Besides, Quail are more likely to use this habitat than Robins in the first place.**

Response: See the response to Igor Skaredoff Specific Comment 10.

12. Comment: **<u>Pages 7-28 and 7-29, Item 2.4.2</u>: The rationale of disregarding very high Lead HQ's for mice elk and foxes is suspect. Even if the claim that the form of lead is only absorbed at 67% of the form used in the reference studies is applied, the HQ's are still very high. Even if applying the 1/150 factor claimed in the difference between ingesting lead in feed rather in water, the HQ's still come out high. The statement that "Lead is not considered to be a significant risk" is not supported by the data.**

Response: The food chain models for mammals will be revised in the draft final supplemental RI, because new, more representative low lead TRV for mammals was published by DTSC in November 2002 (DTSC 2002). The previous low lead TRV of 0.0015 milligrams per kilogram per day (mg/kg-day) used in the draft Supplemental RI has been revised by the EPA Region IX Biological Technical Assistance Group (BTAG) to 1 mg/kg-day (DTSC 2002).

13. Comment: **<u>Page 7-32, Item 7.5.3.2</u>: Why is lead and arsenic dermal exposure ignored for mice? They burrow on the ground and would likely have dermal exposure.**

Response: Although dermal exposure through direct contact with soil can be considered a complete exposure pathway for birds and mammals, this exposure pathway is usually considered to be incidental because of low frequency or duration of exposure and the relative contribution to risk compared to the ingestion pathway (EPA 2000). Bird feathers and mammal fur are believed to generally reduce dermal exposure by limiting the surface contact of skin with contaminated soil.

The data needed to evaluate dermal exposures to wildlife are generally not available (EPA 2000). Although information on exposure to metals from dermal contact with contaminated soils is limited, most scientists consider the dermal exposure pathway to be minor in comparison with the ingestion pathway. This is based on the fact that: (1) most metals (including arsenic and lead) tend to bind to soils, thereby reducing the likelihood that they would dissociate from the soil and cross the skin; and (2) metals have a relatively low tendency to cross the skin, even when contact occurs (EPA 2000). For these reasons, dermal exposure to metals in soils was not evaluated.

14. Comment: **<u>Page 7-33, Item 7.5.3.8</u>: Discussion of uncertainty regarding estimation of toxicity assumes that all uncertainty overstates risk. The very same uncertainty arguments can be made to suggest that risk is understated. This is not a valid argument.**

Response: As explained in Section 7.5 and EPA guidance for SLERAs (1999a), many of the assumptions on the SLERA process are conservative and result in overestimates of site-specific parameters, but the assumptions are important to ensure that no contaminants of potential ecological concern are dismissed when they may potentially pose an adverse ecological risk. For that reason, most of the uncertainties associated with SLERAs are associated with overestimation of risk.

15. Comment: **<u>Page 7-34, Item 7.5.3.8</u>: This argument is backwards, it indicates that risk is underestimated rather than overestimated as claimed.**

Response: Section 7.5.3.8 will be revised for the draft final RI, as a new, more representative low lead TRV for mammals was published by DTSC in November 2002 (2002). The previous low lead TRV of 0.0015 mg/kg-day, used in the draft Supplemental RI, has been revised by BTAG to 1 mg/kg-day. The HQ values will be reduced significantly.

16. Comment: **<u>Page 7-35, Item 7.7</u>: The claim that risk refinement made using "more realistic assumptions" look like simply an attempt to make the numbers come out lower to justify a "no action" recommendation. The justifications appear to be forced, rather than logical.**

Response: EPA and Navy guidance directs risk assessors to perform a "baseline ecological risk assessment" (BERA) on chemicals that are identified to pose significant risk in the "screening-level ecological risk assessment" (SLERA). The only parameter adjusted in the food chain modeling between the SLERA and the BERA was the chemical concentration in the soil. While the maximum detected chemical concentration was used for the SLERA, the UCL_{95} was used to model risk for the BERA. The UCL_{95} value is considered to be more representative of actual exposure posed to individual receptors at Site 22, because the receptors modeled are mobile and therefore are not exposed to the maximum soil concentration at all times.

17. Comment: **<u>Page 8-2 and 9-1, Item 8.2 and 9.1</u>: The discussion covers use of lead arsenate as a common rodenticide, pre 1960. It appears that wherever Arsenic is suspected, that Lead would be a companion suspect. Therefore, the Station-wide Arsenic survey should also test for Lead.**

Response: Please refer to the response to RWQCB Specific Comment 17.

18. Comment: **<u>Page 9-2, Item 9.1</u>: The conclusion that chemicals, including arsenic, in soil at Site 22 do not pose unacceptable risk to ecological receptors is not supported by the data.**

Response: While the results of the SLERA suggest that arsenic and zinc pose unacceptable risk, the results of the BERA (Step 3a) refined the EPC (from the maximum concentration to the UCL_{95}) and show that arsenic and zinc do not pose unacceptable risk (HQs calculated with the high TRV less than 1.0).

19. Comment: **<u>Page 9-2, Item 9.2</u>: Agree with the first three Recommendations. Disagree with the fourth. See comments for pages 7-19, 7-28, 7-29**

Response: Comment noted.

20. Comment: **<u>Page 9-2, Item 9.2</u>: There should be another recommendation to survey the entire Station for Arsenic and Lead soil contamination, especially near the Contra Costa Canal.**

Response: Please refer to the response to Igor Skaredoff General Comment 1.

21. Comment: **<u>Figures 2-1 and 2-3</u>: Why was monitoring well (7SHMW003) placed upgradient of the leach field rather than in it or downgradient of it? Data from testing this well will tell nothing about the condition of the soil and groundwater associated with this leachfield. It should be sampled and tested for VOC's and SVOC's as these had been used in the building and would have likely been dumped down the drain as had been common practice in the times when these were used in the building.**

Response: Monitoring well 7SHMW003 was placed 20 feet northeast of the septic tank and leachfield in 1997. This well was installed before the groundwater flow direction in the vicinity was known. The well placement is consistent with what was proposed in the final Field Work Plan for the Phase II RI/Feasibility Study, which was reviewed and approved by the regulatory agencies (PRC 1996). Well 7SHMW003 was installed to (1) assess whether leakage from the tank or piping were migrating to the northeast, in the event that the groundwater flow direction was to the northwest, rather than to the north-northwest, and (2) to determine whether groundwater contamination was present near the septic system. Groundwater at the site was evaluated for VOCs and SVOCs in 1995 and 1997. 1,1,1-TCA and TCE were the only VOCs detected in groundwater at low levels; all detections of 1,1,1-TCA and TCE from the permanent monitoring wells were below the drinking water MCL. Future analysis of VOCs and SVOCs in groundwater is proposed.

22. Comment: **<u>Page 1-5</u>: Historically Acetone, Trichloroethane, Methyethylketone, and paint thinner were used in the building. It is likely that they were dumped into the sewer system that connected to the leachfield, as such practices were common.**

Response: Please refer to the response to Igor Skaredoff General Comment Number 21.

The sewer system and connected leachfield were investigated as part of the RFA and RFA Confirmation Study in 1995 (PRC 1997). Results from both the RFA and RFA Confirmation Study are presented in the Supplemental RI.

To assess releases to soil from the septic tank and leachfield, soil samples were collected from Locations S52-01 through S52-04 and analyzed for VOCs and SVOCs. None of the soil samples contained detectable VOCs or SVOCs, except for the SVOC phenol. As shown in Table 5-2, phenol was detected at concentrations of 0.92 and 1.2 mg/kg from RFA Samples S52-01 and S52-02, at depths of 5 to 6 feet bgs; the residential PRG for phenol is 37,000 mg/kg.

Because solvents were used in Building 7SH5, groundwater at the site was evaluated for VOCs and SVOCs in 1995 and 1997 (including acetone, TCA, and methyl ethyl ketone). 1,1,1-TCA and TCE were the only VOCs detected in groundwater at low levels; all detections of 1,1,1-TCA and TCE from permanent monitoring wells were below the drinking water MCL. Future analysis of VOCs and SVOCs in groundwater is proposed.

23. Comment: **<u>Appendix A – Photo 1969; Photo 1974; Photo 1976; Photo 1978; Photo 1980; Photo 1982; Photo 1984; Photo 1996</u>: All of the listed aerial photographs show a dark discoloration over the leach field. This looks like a body of water. This site should be investigated for possible contamination.**

Response: Please see the response to Igor Skaredoff General Comment 2.

24. Comment: **<u>Figure 2-3 and Table 5-4, Items S52-03, S52-02, S52-01</u>: Why were sample points not tested for VOCs or TPH?**

Response: As shown in Table 4-2, Samples S52-01, S52-02, and S52-03 were collected as part of the RFA, and were analyzed for SVOCs, VOCs, metals, and total O&G.

None of the soil samples contained detectable VOCs or SVOCs, except for the SVOC phenol. As shown in Table 5-2, phenol was detected at concentrations of 0.92 and 1.2 mg/kg from RFA Samples S52-01 and S52-02 at depths of 5 to 6 feet bgs; the residential PRG for phenol is 37,000 mg/kg.

TPH was not analyzed in Samples S52-01, S52-02, and S52-03 in accordance with the RFA Confirmation Study work plan, because there was no known source near those boring locations. TPH samples were analyzed near the former UST and fill pipe, as shown in Table 4-2; detected concentrations of TPH are shown on Table 5-3.

Total O&G was: (1) not detected in samples collected from S52-01, (2) detected in one subsurface sample from S52-02 (130 mg/kg at 16 feet bgs), and (3) detected in one surface sample at S52-03 (280 mg/kg from 0 to 0.5 foot bgs).

COMMENTS BY FORMER RAB MEMBER, EVELYN FRIETAS, AND NAVY RESPONSES

1. Comment: **According to copy of site Investigation Inland Area Sites N62474-88-D5086, Contract 0180 by Anderson Geotechnical Consultants Inc., In 1983 arsenic was at a level of 16.7 mg/kg, calcium at 23,500 mg/kg, copper at 332 mg/kg, lead at 60.7 mg/kg and mercury at 1-10. This came from the ditch area! Site 22 has a drainage ditch and 24 inch deep earthen pit that has been backfilled. The location of the pit determined by IT (89), is near the southwest corner of building 75H5, where a section of the pavement is missing.**

Response: The Navy has conducted several investigations at Site 22, with each subsequent investigation building on information gathered from previous investigations. The data referenced above were collected in 1992 as part of the SI (PRC 1993). All results from that investigation and other previous investigations were presented and evaluated in the draft supplemental RI report for Site 22.

The table below shows the concentrations mentioned above in relation to EPA residential PRGs (2002b):

Chemical	Soil Concentration (mg/kg)	Residential PRG (mg/kg)
Copper	332	3,100
Lead	60.7	150
Arsenic	16.7	0.4
Mercury	1.1	310
Calcium	23,500	None established

All chemicals are below residential PRGs, with the exception of arsenic and calcium. As explained in Section 6.1.2.2 of the supplemental RI, calcium is considered to be an essential human nutrient. As presented in Table 6-2 of the report, the range of ambient concentrations of calcium in California is 2,500 to 46,000 mg/kg in soils. Because the concentration of calcium in soil at Site 22 is within the range of ambient concentrations in soil for California, calcium was not evaluated in the human and ecological risk assessment, which is consistent with EPA and DTSC risk assessment guidance (EPA 1989; California Environmental Protection Agency 1992).

Because arsenic exceeds residential PRGs and is elevated above background levels for the site, arsenic was the primary focus of the Supplemental RI.

The history of each sampling event is explained in Section 1.3.4 of the supplemental RI, and includes an Initial Assessment Study (IAS), RFA Confirmation Study, SI, Phase I RI, and Supplemental RI; sampling locations from all reports are shown on Figure 2-3 of the Supplemental RI, and sampling results are presented in Tables 5-1 through 5-4.

As shown on Figure 2-1 and as described in Section 2.1 of the draft supplemental RI report, a network of drainage ditches are present adjacent to Sixteenth Street, Seventeenth Street, and Building 7SH5. Soil samples collected from the drainage ditches have been analyzed for metals, SVOCs, VOCs, and TPH from various sampling events. The locations of all samples collected in the drainage ditches are presented in Figure 2-3. Samples collected from the ditches include RFA Soil Samples S52-03 and S52-04 and Composite Sample 7SH-SFC; Phase I RI Surface Soil Samples 7SHSB015, 7SHSB024, 7SHSB025, 7SHSB026, 7SHSB027; and Supplemental RI Soil Samples 7SHSB102, 7SHSB105, and 7SHSB112 (see Figure 2-3).

During the IAS, there was suspected disposal of paints, oil, and solvents generated from Building 7SH5 into a 24-inch-deep, earthen disposal pit or a nearby drainage ditch near Building 7SH5 (Ecology and Environment 1983); these site features are shown on Figure 2-1 of the draft supplemental RI. The location of the suspected disposal pit was determined by IT Corporation to be in the parking lot to the west of the south corner of Building 7SH5, where a section of pavement was missing. During the SI and RI soil samples were collected and analyzed for VOCs, SVOC, metals, and TPH within the suspected disposal pit. Results from these samples are presented and evaluated in the Supplemental RI report. All VOC, SVOC, and metals concentrations were below residential PRGs with the exception of arsenic; no PRGs are available for TPH.

2. **Comment:** **According to Supplemental Remedial Investigation Installation Restoration Site 22 Draft – dated February 12, 2003; Page ES-5, "Lack of statistical correlations of arsenic concentration with other metals, (antimony, iron, and manganese) indicate that the source of arsenic at the site is most likely anthropogenic." This is not true given the fact that the 1983 investigation gives evidence of its existence at that time along with others, as stated in the "1983" site investigation arsenic and other metals that was mentioned, were coming from the ditch area where dumping of materials had occurred. I disagree strongly with conclusions of Tetra Tech Page ES-5; "The most probable source of arsenic at the site is a surface application of an arsenic containing pesticide, herbicide or rodenticide to grassland area of the site"**

Response: A conclusion of the supplemental RI report is that the elevated concentrations of arsenic in surface soils are not of native origin; rather, they are a result of human activities at the site (anthropogenic). A study of the background concentrations of arsenic in soil in for Sites 22 and 27 was conducted in 1997 as part of the Phase I RI. All previous and newly collected soils data were compared with the ambient data set to determine whether arsenic concentrations could be naturally occurring.

As shown in Figure 5-1 of the draft supplemental RI, the most elevated concentrations of arsenic in soil from all previous investigations are not near Building 7SH5 or in the ditches, but are in an open grassland area on the southern side of 17th Street. The distribution of arsenic in surface soils indicates a surface release that is consistent with the surface application of a pesticide or herbicide.

3. **Comment:** **BEHP exceeds federal and state maximum concentrations limit for groundwater. COPC, (Chemicals of Potential Concern), Page ES-4, "only three groundwater COPC's were identified… However, sample results from the last two quarters of monitoring in 1997 showed no detection of BEHP and TCE, indicating that these chemicals may no longer be present in the groundwater at the site."**

Why has this groundwater monitoring not been done on a regular basis as required by law? We need to test for arsenic, calcium, copper, lead and mercury in that groundwater, and to be safe, Perchlorate.

Response: Groundwater was last sampled at Site 22 in 1997 as part of the Phase II RI. Results from this investigation showed that all concentrations of SVOCs and VOCs in groundwater were below MCLs for drinking water established by EPA, with the exception of BEHP. BEHP was detected above the drinking water MCL in two wells during the June 1997 sampling event, but it was not detected in any wells during the two preceding sampling events (1995 and March 1997) or two sampling events that followed (September and December 1997), as shown in the draft Supplemental RI. BEHP is a common laboratory contaminant (ATSDR 2003). Because BEHP was detected only once in 5 sampling events, it is likely that the observed concentration resulted from contamination introduced into the sample during laboratory analysis, rather than the presence of BEHP in site groundwater.

There are no state or federal laws governing the site that require annual or any other regular sampling and analysis of groundwater at this site. However, as explained in the response to EPA General Comment 8, the Navy is planning to conduct additional groundwater sampling at the site for analysis of metals (including arsenic, cadmium, copper, lead, and mercury), SVOCs, VOCs, pesticides, and perchlorate.

4. Comment: **Results of SLHHRA, (Screening Levels Human Health Risk Assessment), indicate that cancer risks from soils are within the upper limit of the target range for the current industrial worker, future worker, and "hypothetical future residential scenarios." We have residents living very close to Site 22 as well as a high school on its border. If arsenic is on the top levels, what keeps it from blowing onto other areas?**

Response: Please see the response to DTSC General Comment 1 for an evaluation of potential risks associated with windblown dust from the site. The unpaved areas of Site 22 are densely vegetated with grasses, which minimize the wind dispersion of dust to off-site areas.

5. Comment: **The soil and groundwater needs further testing around building 7SH5, the original study area, the ditch on Seventeenth Street and because of the high levels of arsenic and the fact that metals have not yet been evaluated at the site. When this is completed, we need further investigation into private wells and land on the residential areas and high school. I have contacted the Contra Costa Environmental Health Department and have been in touch with their Director, Ken Stewart.**

Response: The Navy is planning to conduct additional groundwater sampling at the site for analysis of metals (including arsenic, cadmium, copper, lead, and mercury), VOCs, perchlorate, pesticides, and SVOCs.

The closest known off-site well to Building 7SH5 is an irrigation well located at Concord High School, about 1,000 feet southeast of Building 7SH5. The localized direction of groundwater flow, based on the four existing monitoring wells at Site 22, is due west, indicating that the Concord High School well is not downgradient from Building 7SH5 nor is this well known to be used for drinking water. Please refer to the response to Igor Skaredoff General Comment 1 for a description of the drinking water for nearby areas and the Contra Costa Canal.

At this time, there is no evidence that groundwater quality at Site 22 is not acceptable for drinking water. The only chemical that exceeded drinking water levels of concern (MCLs) was BEHP, which was detected in only one of five rounds and is a common laboratory contaminant, as previously discussed.

Concentrations of metals, VOCs, SVOCs, and TPH have been evaluated in soil samples from the drainage ditches; sampling locations are indicated on Figure 2-3 of the draft supplemental RI. All detected chemical concentrations in ditch soils were well below residential PRGs, with the exception of arsenic in all samples, and lead in one sample.

6. Comment: **According to Page 1-6, Resource and Recovery Act…, *"one liquid sample from the septic tank and a surface water sample from the drainage ditch were collected. Arsenic exceeded residential PRG's and one sample of lead exceeded the residential PRG's."***

Please note again, that the report of (IT 1989) stated that a section of the pavement near the southwest corner of building 75H5 is missing!

Response: Please see the response to Evelyn Frietas General Comment 1.

Arsenic data collected as part of the RFA Confirmation Study were described in Section 1.3.4 of the supplemental RI report and presented in Table 5-4.

The area of missing pavement described in the IAS was considered to be a suspected disposal pit, and was investigated during both the SI and RI. The suspected disposal pit was backfilled and is currently paved. All detected chemicals in the suspected disposal pit were below residential PRGs, with the exception of arsenic. Please see the response to Evelyn Frietas General Comment 1 for a summary of the investigation of that area.

7. Comment: **Note that the following: Table E-2 - Industrial Activities Requiring Annual Inspections, Drainage Area 13 – Above ground storage tanks (Building 7SH4, 7SH5 and 7SH14) diesel fuel, Industrial activity number B-24 – (Page A-2 of SFONavytex 21 final doc.)**

Industrial Activity – Industrial Activities are those operations, processes or activities that may have a potential to contaminate storm water during rainfall event. Industrial activities are specifically defined in part V11 of the appendix to the Draft General Permits, (Part 122 of Title 40 of the Code of Federal Regulations), typical examples include, industrial plant yards, material handling sites, reuse sites, shipping and receiving areas, manufacturing buildings and storage areas.

Response: Currently, an aboveground storage tank (AST) is located on the southern side of Building 7SH5. The AST was installed in 1997, after the former UST located near Building 7SH5 was removed. The AST was used to heat the building and has been empty since 2000, because the site is no longer actively used (TtEMI 2003c). USTs and ASTs are regulated under the Navy's UST program.

Currently, no industrial activities occur at Site 22. Historic industrial activities are described in Section 1.3.2 of the supplemental RI report.

8. Comment: **Storm water pollution plan, August 2001 page 6.4., Above ground storage tank Building 7SH5 – Industrial activity no (B-34).**

"This site includes an above ground storage tank used to store diesel fuel for a heater. Spillage can occur while filling tanks. Storm water from this area flows to a drainage ditch that discharges to outfall 13-1. Above ground storage tanks for buildings 7SH5 and 7SH14 also discharge into outfall 13-1"

Storm water from this area flows north to a low lying grassy area where it pools and goes into the ground. According to "List of Significant Materials", A-5 page T-2, typical quantity was 25,000 gallons bi-annual or annual.

(Outfall 10-1 and 13-1 are deleted from monitoring, refer to letter to the Regional Water Quality Board, dated June 22, 1994)

Drainage Area 13 comprised of 600 acres. Southwest of Seal Creek is a large zone of structures, such as storehouses for inert materials and magazines for fuse and detonators, special weapons, projectiles, fixed ammunition and other ordnance. Former outfall 13-1 originates on the northwest side of WP Road and exits the property into a ditch just south of WP Road.

Response: See the response to Evelyn Frietas General Comment 7 regarding the AST.

Storm water management is conducted under a separate Navy program outside of CERCLA. The last storm water management plan for the installation was submitted in 2001 (CH2M Hill 2001).

Use of the buildings and ammunition storage magazines located in the Inland Area for storage or other purposes was significantly reduced in the mid-1990s and completely ceased as of 1999. No industrial activities currently occur at Site 22 or the surrounding magazine area.

9. Comment: **According to "Initial Assessment Study of Naval Weapons Station, Concord, California NEESA 13-013 1983", Page 6-1 paragraph 6.2.1.2 Building 7SH5, which was an ammunition storage magazine prior to 1970.**

I think I have brought forward enough facts to warrant a more complete investigation. These past events should raise the question as to the impact on residence and schools near the site location.

Response: As stated in Section 1.3.2 of the draft supplemental RI, there have been several previous uses of Building 7SH5 since it was built in 1944. From 1944 through 1957, it was used as a storehouse for inert equipment. From 1957 through the early 1970s, it was used for missile component testing, including vibration and environment testing. From the early 1970 to 1999, it was used for maintenance operations such as paint stripping, cleaning, and painting of missile wings and fins. Currently, the site is not in active use by the Navy.

As stated in Section 9.2 of the supplemental RI report, additional investigations at Site 22 are recommended to analyze metals and SVOCs in groundwater and further delineate the lateral extent of arsenic in soils. In addition, the Navy is planning to analyze groundwater samples for VOCs, pesticides, and perchlorate.

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ATTACHMENT A

V. EARL WARREN

re CVP ndsAsked

HINGTON, May 10. (U.P.)—
rl Warren of California
ked the senate appropria-
bcommittee to restore to
000 the fiscal 1948 appro-
for California's Central
roject. The house has cut
int to $6,900,000.

re confronted by a crisis
state," Warren told the
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estern states. The future
economy depends on the
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ing that the Central Val-
ying out" for help, War-
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ers Rescue ng Boats

RANCISCO, May 10. (U.P.)
ard cutters today assisted

Phalanx Comes In Third

Courier Contra Costa 20 May 10 1947

HAY FEARED POISONED TO BE BURNED

CONCORD, May 10. — Seven hundred acres of hay will be burned in High Explosive area No. 3 of the Navy's inland storage area at Port Chicago and Concord, because it is feared that it might be contaminated by spray which accidentally caused the death of 11 cattle last week, Naval authorities announced today.

Undergrowth on top and within 50 feet of munition dumps in the H-E No. 3 area had been sprayed with an arsenite solution to kill the tall grass which was a serious fire hazard.

The day after the area had been sprayed cattle belonging to Jeff Claunch, Concord farmer, strayed through a fence gate, opened accidentally, and died after eating freshly sprayed grass.

Bids had been asked of local farmers by the Navy to have the hay cut, but as no bids were received at the deadline May 7, the Navy decided to dispose of the hay by burning. This decision was reached after Navy authorities had contacted local and state farm board authorities, whose assistance was asked to make certain that contaminated hay was not used as fodder.

In about three weeks the hay on two plots of 1,000 acres each, near Bailey road, separated by Willow Pass in Concord, will be auctioned to local farmers for cutting. As fences and other areas within these plots have been sprayed with sodium arsenite solution the Navy will have a toxologist from the University of California make tests of the hay in these areas to determine the hay which can be cut by farmers and used for fodder.

BULLETIN

BALTIMORE, May
(UP) — Faultless won
Preakness stakes today.
Trust was second and Phala
was third.

Faultless won by a leng
with On Trust two and a h
in front of Phalanx. Jet Pi
was fourth, a length and a h
behind Phalanx.

BALTIMORE, Md., May 10.
A crowd that was expected to a
proach a record of 45,000 bega
jamming Old Hilltop today for th
57th running of the $100,00
added Preakness stakes, one o
the world's richest horse races.

Eleven three-year-olds, heade
by the Kentucky derby winner, J
Pilot, and the two horses wh
chased him home in the dramati
blanket finish at Churchill Down
last Saturday, Phalanx and Faul
less, were scheduled to go to th
post.

In anticipation of seeing an en
core of that race, turf fans bega
going through the gates of th
Pimlico race track at 10 a. m. an
it appeared certain that the thron
would better last year's record at
tendance of 43,000 for the classi
—the second leg of horse racing'
triple crown.

Plum Traffic Is Banned In This Area

Contra Costa county is among six bay counties in which shipment of plums during the current marketing season is forbidden, according to the U. S. Department of Agriculture today.

Traffic into or through the area will be regarded as "directly bur-

partment workers and a sep-
settlement of a $4 increase
er conditions for 450 mem-
the San Francisco revenue
ting division.
decision in Washington, D.
return negotiations to a lo-
er than a nation-wide basis
t expected to have much in-
on Pacific coast develop-
Hoskins said.
el Johnston, NFTW spokes-
expressed hope that the
gton decision would tend to
ip Pacific coast negotia-

Brown, PT&T district
r, said 300 more telephone
in northern California
vada returned to their jobs
bringing the total to 1,200
e week. Unions disputed
im.

in Killed Feud

NTS PASS, Ore., May 7.
tate Police Sergeant C. R.
said here today that one
been killed and two others
ed with death in a moun-
d 50 miles west of here
try reached only by a cow

nan identified the slain
Robert Fox, 40, proprietor
nall fishing resort on the
river in the Mule Creek

of the slaying was re-
police by residents of the
ho said the killer left a
reatening to kill two other

nan said the mountain
of the district have a
good" idea who did it, but
e killer's identity has been
ly established, Borgman
to disclose his name.

man Hits At ants In versity Talk

SAS CITY, Mo., May 7.
resident Aleman of Mexico
ashed at the shackles that
impose on truth as he re-
an honorary doctorate of
om the University of Kan-
y.
a democracy," he said,
is broadcast on its own
and is not subservient to
poses of propaganda.

pair in 1945, the latter with Barbara Ziem of Martinez.

After the nationals he grew so fast that he developed a heart

back.

The champ's mother is Mrs. Blanche Collins of 1601 Castro street. Contra Costa Gazette 1947

Eleven Cattle Die From Eating Poisoned Grass

PORT CHICAGO, May 7. — Navy and farm bureau officials will confer soon to determine the best method of disposing of grass and hay growing at the naval base's high explosive area which is feared contaminated because of spraying with poison to prevent undergrowth, Capt. John B. Taylor, base commanding officer, said today.

The conference was called when it was learned that 11 Hereford cattle owned by Jeff J. Claunch, Concord farmer, had died from eating the grass after they wandered through a gate into area which had been sprayed.

Farmers of the area expressed concern over plans to cut the grass for use as hay when they learned of the death of the cattle.

Last month the naval base had offered for bid the area for cutting for use as fodder. The navy wanted grass removed because it was a fire hazard.

The bids specified that certain parts of the area offered had been sprayed with poison and added that the sprayed areas were not included in the offer.

The bids further specified that the government would assume no responsibility for possible contaminated grass.

The cattle were pastured in a plot of approximately 350 acres leased from the navy by Claunch, which was adjacent to a larger plot under navy jurisdiction.

The cattle wandered into the area maintained by the navy and apparently ate contaminated grass in that area. According to the lease the leasee was responsible for construction and maintenance of a fence separating the two areas.

In addition to the 11 cattle which died several others were saved by treatment administered by Veterinarian Maurice Boervers of Lafayette.

Captain Taylor said that no grass would be cut pending the conference with farm bureau officials. He added that when deadline for bids expired yesterday, none had been received.

May Blitz Calls

Second Denial On Booten Permit Voted

For the second time a "no" recommendation of the county planning commission on the disputed Ralph Booten application for a permit to erect a store on Arlington Circle in Kensington Park today was scheduled to go to the board of supervisors Monday.

Commissioners voted five to three last night to recommend denial after an hour's discussion, to which 20 opponents from the area listened. Because of the contentious nature of the permit, Booten's application had previously been tabled until all eight members of the commission could be present.

Voting against the recommendation to deny the permit were G. F. McCormick of Antioch, Rene Narberes of Concord and J. P. Connors of Crockett.

The five who voted for denial based their stand on the belief that the Booten proposal would create a traffic problem.

Petitions from proponents and opponents provided no guide in making a decision because the former carried nearly 400 names and the latter, 420.

Booten's application was referred back to the planning commission by the board of supervisors after the first denial recommendation.

Double Sessions Are Studied At Rodeo School

RODEO, May 7.—School Superintendent John B. Vasconcellos today announced a special meeting to be held at the Rodeo school auditorium at 8 p. m. Friday so parents and taxpayers may express their wishes in connection with attempts to elliminate double session classes here.

Vasconcellos said the school

when 60 merchants vo
tion of the plan, disser
in the first ballot wh
the proposal for a
voluntary price cut. A
approved the program

According to the
commerce, most busi
take part in the anti-i
to be in effect May
chants who opposed
the Monday meeting
to have agreed to fol
of the majority.

Certain stores, it
out in interviews to
unable to place a fl
reduction on all good
the Fair Trade Act
profit margin. Of tho
ments, several will
reductions on part of

Richmond I On Shipyar To Be Acce

SAN FRANCISCO,
—The City of Richmo
bids for three parcels
shipyards one and tw
cepted, regional offic
War Assets Administ
today.

The decision was
Washington, D. C.

Richmond offered
"fair value" price of
parcel three which
acres bounded by Eigh
streets, Hermann and
avenues; $24,807 for
which includes the 4.
Hopeman Bros. prope
street and Hermann a
$364,664 for parcel si
cludes warehouse A an
of land.

The two shipyards v
into seven parcels fo
The WAA said the
board was offering c
posals to bids made f
remaining parcels.
submitted by the Par
Terminal Corp. and th
Land Development Co.

Oklahoma S Shot, Woun By Represen

OKLAHOMA CITY,
—State Sen. Tom Ang
shot and seriously wou
by a member of the
house of representative

Anglin was shot as
across the senate cham