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N60211_000126
CROWS LANDING
SSIC NO. 5090.3.A

PRC

May 2, 1997

Mr. Hubert Chan
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive, Building 208
San Bruno, California 94066-5006

CLEAN Contract N62474-88-D-5086
Contract Task Order 0333

Subject: **Naval Auxiliary Landing Field Crows Landing**
Draft Final Remedial Investigation Report, Installation Restoration Program
Sites 10, 11, 12, 13, 14, 16, 17, and 18

Dear Mr. Chan:

Included with this letter are three copies of the draft final remedial investigation (RI) report for Installation Restoration Program (IRP) Sites 10, 11, 12, 13, 14, 16, 17, and 18. The RI report has been revised in response to technical review comments on the draft version of the report submitted by the U.S. Navy, the California Department of Toxic Substances Control (DTSC), and the Central Valley Regional Water Quality Control Board (RWQCB). A summary of the comment responses is attached to this letter.

A complete copy of the draft final RI report appendices has not been provided. Instead, included with this letter are soil and groundwater sample analytical results from the Site Investigation (SI) and a revised version of Appendix F. Please add these items to the appendices provided with the draft version of the RI report. New title pages have also been included with this letter and should be inserted into the report and appendix binder covers.

Please contact me at (303) 312-8815 with any questions you may have while reviewing the report.

Sincerely,

Keith Reamer
Project Manager

KAR/jem

cc: Kent Strong, California Department of Toxic Substances Control
Philip Isorena, Central Valley Regional Water Quality Control Board
Sandy Olliges, National Aeronautics and Space Administration
Candy Soles, Science Applications International Corporation
Don Chuck, Moffett Federal Airfield
Bob Azevedo, Stanislaus County Department of Environmental Resources
Neil Bingert, PRC
Information Repository (2 copies) → Draft Final RI Report
Admin Record (2 copies) → Response to Comments

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ENCLOSURES WERE INSERTED IN:

DRAFT FINAL
REMEDIAL INVESTIGATION REPORT
INSTALLATION RESTORATION PROGRAM
SITES 10, 11, 12, 13, 14, 16, 17, AND 18

DATED 12 DECEMBER 1996

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

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RESPONSE TO TECHNICAL REVIEW COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT
NAVAL AUXILIARY LANDING FIELD CROWS LANDING

1.0 INTRODUCTION

This document presents responses to technical review comments on the Naval Auxiliary Landing Field (NALF) Crows Landing draft remedial investigation (RI) report, installation restoration program (IRP) sites 10, 11, 12, 13, 14, 16, 17, and 18. The RI report, dated December 12, 1996, was prepared for the U.S. Navy by PRC Environmental Management, Inc. (PRC). The general and specific comments addressed below were received from the U.S. Navy (Section 2.0) and the Central Valley Regional Water Quality Control Board (RWQCB) (Section 3.0).

2.0 RESPONSES TO COMMENTS FROM THE U.S. NAVY

<u>General Comments</u>

(A) Cross-sections of sites, where the data is available, would be useful. This is especially so for Site 11, the excavation at Site 12, and the excavation at Site 16.

Response: These figures have been added to Section 4.0 of the draft final RI report. Figures 4-6 and 4-7 show the estimated boundary and depth of fill material under the surface depression at IRP Site 11. The locations of the Site 11 cross-sections are shown on Figure 4-3. Figure 4-9 shows cross-sections of the excavation at IRP Site 12 and shows the approximate location of contamination removed from around the previously unknown UST. The locations of the Site 12 cross-sections are shown on Figure 4-8. Figure 4-13 has been revised to include cross-sections of the excavation at IRP Site 16. The locations of the Site 16 cross-sections are also shown on Figure 4-13.

(B) A summary table of risks and recommendation for the various sites would be a useful addition to Chapter 7.

Response: Table 7-1 has been added to the end of Section 7.0 of the draft final RI report. The table summarizes the focus of the RI, ecological and human health risks, risk to beneficial use of groundwater, and recommendations for further action at each site.

<u>Specific Comments</u>

Comment 1: **Figures 4-2 - 4-5**

Add the location of the elongated depression discussed in the text to these figures.

Response: Figures 4-2 through 4-5 have been revised for the draft final RI report. They now show the location of the elongated surface depression at IRP Site 11.

Comment 2: **Sect. 4.3.2 1st Par. under "Initial Borehole and Monitoring Well Installation" 4th Sent. Pg. 4-8**

What is meant by "mandatory" samples? How are these different from other samples? Please explain.

Response: During the initial borehole and monitoring well installation phase of the investigation, soil samples were collected to identify the source and extent of potential vadose zone contamination at Site 11. To accomplish this task, mandatory and discretionary samples were planned for collection. To identify the presence of source areas, mandatory samples were collected from specified depth intervals. In addition, several mandatory samples were analyzed for the presence of leachable constituents. Discretionary samples were to be collected from intervals that were not specified but which were obviously contaminated based on visual observations (staining) and elevated photoionization detector (PID) readings. Discretionary samples were to be collected to evaluate the vertical extent of contamination if present. Since no staining or elevated PID readings were observed, no discretionary samples were collected.

For clarification, the text in Section 4.3.2, page 4-8 of the draft final RI report now states that discretionary samples were also intended for collection to aid in determining vertical extent of contamination if contamination had been found.

Comment 3: **Sect. 4.4.1 Par. 5 1st Sent. Pg. 4-14**

The sentence states that review of groundwater sample analytical results are found in Appendix A. This is incorrect. Appendix A contains borehole logs. Please correct.

Response: The reference to analytical results in Appendix A has been corrected. The first sentence in paragraph 5, Section 4.4.1,on page 4-16 of the draft final RI report now states that groundwater sample analytical results are contained in Appendix C.

Comment 4: **Appendix F**

(A) The predator column for the western spadefoot states "same as above" for adults. However the space above is blank. Please provide the missing information.

Response: The information to which the western spadefoot predator column refers was inadvertantly omitted from Appendix F. The following information has been added to the "above" column for the Tiger Salamander:

Adults: Reduced due to secretive behavior. Larva: herons, egrets, garter snakes.

(B) Before the names of some of the species listed in this appendix there is a square root symbol. What does that symbol stand for?

Response: The square root symbol in Appendix F refers to species that were observed by the biologist in the vicinity of NALF Crows Landing during the site reconnaissance. A reference to the meaning of this symbol has been added as a footnote to the Appendix F table.

3.0 RESPONSES TO COMMENTS FROM THE CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

General Comments

Comment 1: **References to background pesticide concentrations should be removed since the background concentrations for those chemicals is zero. Regardless of the source, if the concentrations of pesticides/PCBs pose a threat to human health and the environment, they should be remediated. For water quality purposes, the Navy must perform a water quality assessment to determine whether or not the leachable concentrations of these chemicals pose a threat to water quality.**

Response: Two types of chemicals related to background conditions are defined in EPA guidance (1989): (1) nonanthropogenic (naturally occurring) and (2) anthropogenic (man-made) but ubiquitous, representing ambient conditions. Both types are defined as not being related to site operations. Nonanthropogenic chemicals are naturally occurring, that is, inorganic chemicals that are present in soil or water as part of the geological or hydrogeological conditions of the area, and are not related to human activity. Anthropogenic (ambient) background chemicals are related to human activity in the region, but not to site operations. Examples of anthropogenic chemicals include pesticides common in agricultural areas; polycyclic aromatic hydrocarbons (PAHs) resulting from forest fires; lead from automobile exhaust; and industry-related chemicals from sources not related to base or site operations. Identification of both nonanthropogenic and anthropogenic chemical sources not related to base operations is imperative because of their effect on both background and site conditions.

Moreover, EPA (1989) requires that background comparisons be conducted as part of the chemical of concern (COC) selection process to identify site-related chemicals that require further evaluation. Generally, inorganic chemicals at naturally occurring concentrations are eliminated in background comparisons. Most organic chemicals do not occur naturally. However, if it can be determined that organic chemicals are pervasive in the area and are not the result of any site-related activities, ambient levels should be established and comparisons conducted. The identification of anthropogenic chemical sources not related to base operations is imperative because of the potential impacts on background and site conditions. Since NALF Crows Landing is surrounded by agricultural areas, pesticides were identified as ambient.

Conventional statistical analyses were conducted at NALF Crows Landing to identify non-site-related inorganic chemicals and pesticides at each site. If the results of the statistical test indicated that the mean concentration of an inorganic chemical or pesticide detected on site exceeded the mean background or ambient concentration, the chemical was retained as a COC and further evaluated in the preliminary remediation goal (PRG) comparison. Inorganic chemicals and pesticides that are not significantly elevated above background or ambient concentrations were eliminated from additional evaluation.

To address this issue, the text in the draft RI report has been revised. The first paragraph of this comment response has become the second paragraph of Section 5.1.2 on page 5-3 of the draft final RI report. In addition, the first three paragraphs

of Section 5.1.2 and relevant discussions in Section 7.0 have been revised for the draft final RI report to distinguish between background and ambient chemicals.

Water quality assessments have been conducted to determine whether leachable concentrations of site contaminants pose a threat to groundwater quality. The water quality assessment evaluates the potential threat to groundwater quality posed by analytes detected in soil using the DI-WET method and follows RWQCB guidance contained in the Water Quality Site Assessment for Soils and Groundwater (RWQCB 1992). The text of the draft RI report has been revised for the draft final RI report to include the water quality assessment as a subsection to each site discussion in Section 4.0.

Comment 2: **Background data for metals were collected from the surface to five feet below ground surface (bgs). Therefore, site metals data from the same depth and from similar soil types should be compared with the background data. If the comparison of background and site data shows there is a significant difference, then the Navy should perform a water quality assessment to determine if the metals concentration at a site pose a threat to groundwater.**

Response: Metals comparisons in Section 4.0 were made using analytical data from all depths. The comparison was preliminary and intended as a general comparison between site and background concentrations. However, background and site soil data used in the background and PRG comparisons contained in Section 5.0 (baseline risk assessment) were from the same depth interval (0- to 5-feet below ground surface [bgs]) and of similar lithology.

In addition, as stated in the response to General Comment 1, water quality assessments have been conducted for each site at which concentrations of contaminants were detected at levels that may be significantly different from background concentrations. A water quality assessment has been added to each site description section for the draft final RI report.

Comment 3: **Table 4-2, which shows metal concentrations in background soil samples, should include leachable concentrations.**

Response: Table 4-2 has been updated to include metals concentrations in leachate sample analyses.

Comment 4: **Soil sample results should be shown on a convenient map for each site. Groundwater results should be represented by isoconcentration maps.**

Response: Figures 4-11, 4-12, and 4-14 have been revised for the draft final RI report to show soil sample analytical results discussed in the text.

Groundwater samples have been routinely collected from IRP Sites 11 and 17 only. The focus of the investigation at Site 11 is the presence of total extractable petroleum hydrocarbons (TPH-E) in groundwater. Groundwater samples collected using the HydroPunch (HP) system indicated widespread, random distribution of TPH-E. Quarterly groundwater monitoring analytical results indicate that detections of TPH-E are random, inconsistent, and have shown that HP samples were unreliable as

indicators of TPH-E contamination. Currently, no pattern or potential source area for TPH-E in groundwater can be discerned from sample analytical results. Therefore, an isocentration map of contamination at this site cannot be constructed .

The focus of the investigation at IRP Site 17 is carbon tetrachloride in groundwater. The distribution of carbon tetrachloride is shown on Figure 4-16 of the draft final RI report. Figure 4-16 illustrates the areal and vertical extent of carbon tetrachloride contamination in a single figure using three rounds of groundwater sample analysis data. Since the vertical distribution of carbon tetrachloride is shown on the figure, isoconcentration contours would cause confusion near the paired, closely spaced wells that monitor different aquifer zones. For example, carbon tetrachloride was detected at concentrations ranging from 210-330 (μg/L) at shallow monitoring well 17-MW-02 and from non-detect to 3 μg/L at deep monitoring well 17-MW-15. An isoconcentration contour drawn around 17-MW-02 would encompass 17-MW-15. Analytical results from 17-MW-15 would appear incongruous when shown inside this contour. Therefore, an isoconcentration map would be impractical for the purposes of the figure. Instead, two new figures have been added to the draft final RI report. Figures 4-18 and 4-19 show approximated isocontours of the carbon tetrachloride contamination in groundwater at IRP Site 17 in the shallow and mid-shallow aquifer zones, respectively. The text of the draft RI report has also been revised. The text in Section 4.8.2, page 4-35 of the draft final RI report states that concentrations of carbon tetrachloride detected in initial Site 17 groundwater samples are shown on Figure 4-16. References to the areal distribution have been deleted. In addition, the discussion of quarterly groundwater sampling at IRP Site 17 has been revised on page 4-38 of the draft final RI report to include references to quarterly analytical results shown on Figure 4-16 and to the isoconcentration contours on Figures 4-18 and 4-19.

Also, note that the discussion of quarterly groundwater sampling includes a reference to Figures 4-20, 4-21, and Plate 2. These references also graphically represent the lateral and vertical distribution of carbon tetrachloride at Site 17.

Comment 5: **A toxicologist should review the human health risk assessment in Section 5 and the phase 1 ecological risk assessment in Section 6.**

Response: A toxicologist prepared the Section 5.0 risk assessment. A biologist prepared the Section 6.0 ecological risk assessment. A Ph.D toxicologist reviewed sections 5.0 and 6.0 for technical accuracy prior to submittal of the report. In addition, a Ph.D toxicologist has reviewed all RI report comments submitted by regulatory agencies and the Navy. The toxicologist's responses relevant to Sections 5.0 and 6.0 have been included in the draft final RI report.

Comment 6: **The report should specify what "common laboratory contaminants" are and explain why and how their detection is attributed to laboratory contamination and not due to their actual presence.**

Response: Common laboratory contaminants (CLCs) are components of a sample or extract that originate from laboratory reagents, laboratory environment, or analytical instruments. Volatile CLCs include methylene chloride, acetone and 2-butanone. Semivolatile CLCs most often include the phthalate esters. If the compound is a CLC and its

concentration in a sample is greater than the contract required quantitation limit (CRQL) and less than 10 times the concentration in the analytical method blank, the concentration is considered as laboratory-derived and qualified as a "non-detect" due to its presence in the method blank. The CLC is considered "real" when the concentration of a compound in the sample is greater than 10 times its concentration in the method blank.

Comment 7: **As much as possible, analytical detection limits should be stated.**

Response: All relevant tables in Sections 4.0 and 5.0 have been revised to include analytical detection limits applicable to chemicals referred to as "not detected" in their respective analytical method. In addition, several figures in Section 4 have also been revised. Instead of indicating "ND" as a non-detected analyte, the analytical detection limits have been added where applicable. The analytical detection limit, followed by the "U" data qualifier, indicating that the analyte was not detected above analytical detection limits, replaces "ND" where applicable.

<u>Specific Comments</u>

Comment 1: **Page 4-14, Site 12 Remedial Investigation**

The approximate locations of UST 138 should be shown on Figure 4-6 or a similar map.

Response: Figure 4-6 has been revised to show the approximate location of the UST 138 excavation. Figure 4-6 of the draft RI report has become Figure 4-8 in the draft final RI report.

Comment 2: **Page 4-16, Site 12 Investigation by Excavation**

The report should explain why the initial soil samples along the outer boundary of the drains were terminated at two feet bgs.

Response: During the site investigation (SI), several soil samples were collected from various locations around the Site 12 area to determine whether a source of groundwater contamination was present. Analyses conducted on these samples indicated that the presence of TPH-E appeared to be restricted to the near-surface (less than approximately 2 feet bgs). As noted in Section 4.4.2, staining was observed along the vent piping trench leading from UST 138 to Building 138 . This staining was apparent at a depth of approximately 2 feet bgs. It was assumed that contaminants detected in SI samples and that staining in the piping trench was the result of oily runoff from the concrete washrack at the site.

The purpose of the investigation by excavation was to evaluate contamination beneath the wash rack and especially around drains and drain piping under the pad. Based on SI sampling results, 2 feet bgs was selected as the starting point for the investigation. Furthermore, it was assumed that if contamination were present around the drains and drain piping it would be restricted to the near surface. Excavation would have continued laterally and to greater depths until the limits of contamination had been

determined. However, leachate analyses indicated that contaminated soil to a depth of 2 feet bgs had been removed from the site and that soil remaining in place posed no threat to groundwater quality. It was therefore unnecessary to continue excavation to depths greater than 2 feet bgs.

To state the rationale for terminating soil sample collection at a depth of 2 feet bgs, the first paragraph in Section 4.4.2 of the draft RI report has been updated to clarify that soil staining around the UST 138 vent piping was observed to a depth of approximately 2 feet bgs. The revision is found in Section 4.4.2, paragraph 1, page 4-16 of the draft final RI report. Also, the second paragraph of the section describing the investigation by excavation has been updated to clarify that the depth of sample collection was based on SI sample analyses and staining observed at the vent piping trench. This revision is found on page 4-18 of the draft final RI report.

Comment 3: **Page 4-19, Site 13 Remedial Investigation**

The report states that Table 4-10 includes alpha-chlordane results, but it does not. Table 4-10 should include the alpha-chlordane results. Furthermore, the Navy should perform a water quality assessment if the residual alpha-chlordane concentrations pose a water quality threat.

Response: Analytical results for alpha-chlordane were inadvertently omitted from the Table 4-10. Table 4-11 in the draft final RI report is the updated Table 4-10 in the draft version and includes these results. The draft RI report text has also been revised to include a discussion of the water quality assessment of chemicals detected in leachate from samples analyzed using the DI-WET method. The Site 13 water quality assessment is described in Section 4.5.3, page 4-23 of the draft final RI report. In addition, a new table, Table 4-6, has been added to the draft final RI report. This table summarizes the water quality assessment and shows that alpha-chlordane and metals detected in leachate samples pose no threat to groundwater quality.

The text on page 7-6 in Section 7.0 relevant to the IRP Site 13 investigation has also been revised to incorporate the conclusions of the water quality assessment test.

Comment 4: **Page 4-21, Site 14 Previous Investigations**

The first complete paragraph states that no detectable contaminants were found in soil beneath 10 feet bgs and in groundwater. The report should include these results.

Response: Analytical results from soil samples collected at IRP Site 14 during the two-phase investigation and thermal treatment evaluation activities have been added to Appendix C. In addition, relevant analytical results from these investigations have been posted on Figures 4-11 and 4-12 of the draft final RI report.

Comment 5: **Page 4-23, Site 16 Previous Investigation**

The last paragraph should specify how many sampling rounds were conducted at monitoring well 16-MW-01.

Response: One groundwater sample was collected from 16-MW-01 after it was installed in August 1991. No other groundwater samples have been collected from the well. The well did not contain sufficient water for sampling during either the SI or RI quarterly sampling events. The well was abandoned in April 1996. For clarification, this explanation has been added to the two paragraphs of Section 4.7.1 on page 4-27 of the draft final RI report.

Comment 6: **Page 4-26, Site 16 Investigation by Excavation**

The report should explain why the sample from three feet bgs at 16-EX-07, which contained arsenic at a total concentration of 65.1 milligrams per kilogram (mg/kg), and exceeds the maximum background concentration, was not removed from the excavation. The report also should compare the leachable concentration at 16-EX-07 with background leachable concentrations. In summary, the Navy must perform a water quality assessment to find out if the elevated levels of arsenic left in the soil will impact water quality. If the assessment shows there will be impact to water quality, then the elevated levels of arsenic must be removed.

Response: During the second phase of the investigation at IRP Site 16, all contaminated soil to a depth of 2 feet bgs was removed from the excavation and disposed of off site. One sample from three feet bgs was collected at location 16-EX-07. While the investigation was to continue excavating until concentrations of arsenic similar to background concentrations was reached, the Navy anticipated that the occurrence of a single sample with an elevated concentration of arsenic would not affect groundwater quality. To support that conclusion, the Designated Level Methodology for Waste Classification and Cleanup Level Determination (RWQCB 1989) was employed to evaluate the arsenic left in soil. Using a water quality goal of 0.05 mg/L (50 µg/L), an attenuation factor of 100, and a leachability factor of 100, the total designated level for a constituent of a solid waste becomes 500 mg/kg. This is well above the level detected in soil from 16-EX-07, indicating that arsenic in soil remaining in place posed no threat to groundwater beneficial uses. Excavation was therefore discontinued.

This explanation has been added to paragraph 9, Section 4.7.2, page 4-30 of the draft final RI report. The draft final RI report also includes a table (Table 4-14) and discussion (Section 4.7.3) of the water quality assessment performed for arsenic detected in leachate samples collected from IRP Site 16. The assessment shows that arsenic remaining in soil at IRP Site 16 poses no threat to beneficial uses of groundwater.

Comment 7: **Page 4-29, Site 17 Sump Excavation**

The last sentence of the first paragraph states that all samples were analyzed for volatile organic compounds (VOCs), semi-VOCs, total petroleum hydrocarbons extractable (TPH-E), and total metals. All the sample results should be shown on a site map.

Response: The sixth paragraph of Section 4.8.2 states that neither carbon tetrachloride, TPH-E, nor elevated metals concentrations were detected in the soil samples, suggesting that no contaminants were released from the sump. With the exception of some common laboratory contaminants, no VOCs or SVOCs were detected in the soil samples. Furthermore, the only detected analyte was TPH-E in an excavated soil pile. The soil pile has been removed from the site and disposed of off-site. Therefore, there are no meaningful analytical detections to be shown on a site map. However, for clarification and illustrative purposes, a detail map has been added to Figure 4-14 showing the locations of samples collected from the sump excavation. Figure 4-11 in the draft RI report has become Figure 4-14 of the draft final RI report.

In addition, several figures were revised to show analytical detection limits of applicable contaminants. However, for simplicity, the detail map on Figure 4-14 does not show analytical detection limits. A figure depicting an extensive list of "non-detects" is of little value when the intent is to illustrate only that the sump is not a source of groundwater contamination at IRP Site 17.

Comment 8: **Page 4-30, Site 17 Initial Borehole and Monitoring Well Installation**

The first sentence of the first paragraph states that the areal distribution of carbon tetrachloride detected in initial groundwater samples is shown on Figure 4-13. The sample results are better represented graphically. Therefore, Figure 4-13 should present the carbon tetrachloride distribution via an isoconcentration map.

Response: Please see the response to RWQCB General Comment 4.

Comment 9: **Page 4-50, Table 4-12**

An explanation for the asterisk is not included in the footnotes.

Response: The asterisk is a data qualifier. Its use can cause confusion, since the asterisk is used in a variety of denotations. The confusion was compounded by the fact that the data qualifier definition page was placed in Appendix E, instead of Appendix C as stated in the footnotes. However, the asterisk data qualifier originates either from the analytical laboratory or with the data validator and therefore cannot be changed. It designates that the analytical result is estimated because the duplicate analysis precision is not within control limits. For clarification, the footnotes on all applicable tables have been changed to state that data qualifier definitions may be found in Appendix E. Also, Table 4-12 in the draft RI report has become Table 4-13 in the draft final RI report.

Comment 10: **Pages 5-2 and 5-3, Background comparison**

See General Comment Item 1.

Response: Please see response to General Comment 1.

Comment 11: Page 5-3, Background comparison

The second and third sentences of the last paragraph state that where there is an insufficient number of samples, the mean and maximum detected site concentrations were compared to the mean and maximum detected background concentrations. The report should provide the rationale for this procedure.

Response: Formal statistical analyses are conducted to compare the central tendency, or median, values of a site population to the background population. The following four phases comprise a typical statistical background analysis (Gilbert 1987):

1) Determine the underlying probability density function (PDF) for both background and site data sets

2) Evaluate statistical summary data and select the appropriate parametric or nonparametric test

3) Determine the level of significance and power of the statistical test based on the data set sizes

4) Conduct the statistical test, present the results, and provide rationale for background determination.

However, if an insufficient number of site or background samples are available, formal statistical tests cannot be conducted. If sample sizes are below the number required to determine the data distribution (at least five detections are necessary), an alternate method of comparing site and background populations should be applied. In most cases, the range of site concentrations is compared to the range of background concentrations. The range of concentrations includes the central tendency value (mean concentration) and the maximum detected concentration (tail of the distribution). Comparison of average and maximum concentrations provides an estimation of the population variability. If both mean and maximum site concentrations exceed the mean or maximum background concentrations, respectively, the chemical is retained as a COC. Conversely, if site concentrations do not exceed background mean and maximum concentrations, the chemical is not significantly different from background and may be eliminated from additional evaluation.

This explanation has been added to Section 5.1.2.

Comment 12: Page 5-9, Conclusions and Discussions

The first paragraph states that at Sites 11, 12, 17, and 18, the carcinogenic risk is mainly due to beryllium, which occurs naturally in soils at Crows Landing. The fact that beryllium is naturally occurring is immaterial. The analysis shows there is a risk and the Navy should address this issue. Furthermore, since the U.S. EPA is not involved at this facility, the Navy is required to comply with State requirements. Thus, the Department of Toxic Substances Control point of departure of $1x10^{-6}$ for screening applies.

Response: EPA (1989) regards an excess lifetime cancer risk range between 1E-06 and 1E-04 as the target risk level for exposure to carcinogens. California EPA considers a risk of 1E-06 as the point of departure. Likewise, both EPA and California EPA consider a hazard index of 1.0 to be protective of human health. Furthermore, a directive from the EPA Office of Solid Waste and Emergency Response (OSWER) states: "Where the cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future exposures is less than 1E-04, and the non-carcinogenic hazard index (HI) is less than 1.0, action generally is not warranted unless there are adverse environmental impacts." To be consistent with EPA guidance, a carcinogenic risk of 1E-06 and a noncarcinogenic hazard index of 1.0 were considered as the points of departure for the PRG screening evaluations at NALF Crows Landing.

The carcinogenic risk at Sites 11, 12, 17, and 18 are due mainly to the presence of beryllium. However, beryllium was only detected in the leachate sample from Site 12. Therefore, beryllium poses no threat to groundwater quality at IRP Sites 11 and 18. The water quality assessment conducted for metals detected in the Site 12 leachate samples shows that beryllium poses no threat to groundwater quality. The Site 12 water quality assessment is contained in Section 4.4.3 of the draft final RI report.

Also, the text in section 7.0 of the draft RI report has been revised to include an evaluation of the presence of beryllium in soil at Site 17 using the RWQCB Designated Level Methodology for Waste Classification and Cleanup Determination (RWQCB 1989). The revision is contained in Section 7.0, page 7-9 of the draft final RI report.

Comment 13: **Page 7-3, Summary and Recommendations, Site 12**

The Navy must perform a water quality assessment to determine whether or not the pesticides pose a threat to water quality.

Response: The draft RI report text has been revised to include a discussion of the water quality assessment of chemicals detected in leachate from samples analyzed using the DI-WET method. The Site 12 water quality assessment is described in Section 4.4.3 of the draft final RI report. In addition, a new table, Table 4-6, has been added to the draft final RI report. This table summarizes the water quality assessment and shows that alpha-chlordane and beryllium detected in leachate samples pose no threat to groundwater quality at Site 12.

The text in Section 7.0 on page 7-5 relevant to the IRP Site 12 investigation has also been revised for the draft final RI report to incorporate the conclusions of the water quality assessment test.

Comment 14: **Page 7-4, Summary and Recommendations, Site 13**

The Navy must perform a water quality assessment to determine if the leachable alpha-chlordane poses a water quality threat. Information such as the no pesticide leachable concentrations, except for alpha-chlordane, were detected should be included in this section.

Response: The water quality assessment test was performed for chemicals detected in leachate from samples collected at IRP Site 13. Please see the response to Specific Comment 3.
The revised text in Section 7.0, page 7-6 of the draft final RI report relevant to the investigation at IRP Site 13 incorporates the conclusions of the water quality assessment test. The following sentence has also been added to the second paragraph of the IRP Site 13 discussion on page 7-5 of the draft final RI report:

"Except for alpha-chlordane, no pesticides were detected in the leachate analyses."

Comment 15: **Page 7-6, Summary and Recommendations, Site 16**

See Specific Comment 6.

Response: Please see the response to Specific Comment 6.

The text in Section 7.0, page 7-7 of the draft final RI report relevant to the investigation at IRP Site 16 has been revised to incorporate the conclusions of the water quality assessment test.

4.0 REFERENCES

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, New York.

Regional Water Quality Control Board (RWQCB). 1989. The Designated Level Methodology for Waste Classification and Cleanup Determination. June.

RWQCB. 1992. Water Quality Site Assessment for Soils and Groundwater. November 5.

U.S. Environmental Protection Agency (EPA). 1989, Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual (Part A), Interim Final. EPA/540/1-89/002. December 1989.