

**APPENDIX G**  
**RESPONSE TO AGENCY COMMENTS**

**Response to Agency Comments  
Draft Basewide Remedial Investigation/Feasibility Study  
Volume II - Site 39 Remedial Investigation  
Fort Ord, California**

The following are the Army's responses to the comments provided by the regulatory agencies on the Draft Basewide Remedial Investigation/Feasibility Study. All comments and the associated responses pertaining to this section of Volume II of the Basewide Remedial Investigation/Feasibility Study are provided below.

**I. U.S. ENVIRONMENTAL PROTECTION AGENCY TECHNICAL REVIEW COMMENTS**

**Analysis of Conclusions and Recommendations**

**Comment 1:** Although entitled "Summary and Conclusions," Section 6.0 [sic] is a summary only. Conclusions and recommendations are not presented in this document. In particular, no conclusions are summarized concerning the impact of contaminants found at Site 39. Also, no remedial action objectives are identified. No recommendations are presented for further action, either to improve site characterization, or for remedial design.

**Response:** Conclusions regarding the contaminants found at Site 39 and recommendations for further action have been added to Sections 4.1 through 4.6, as needed. One objective of this RI was to assess the nature and extent of the contaminants; such conclusions are manifested in the form of plates showing contaminant distribution and text describing the distribution of chemicals at the individual ranges. The potential human health and ecological impacts from Site 39 contaminants are discussed in the Baseline Human Health Risk Assessment (Volume III) and Baseline Ecological Risk Assessment (Volume IV), both of which use data from the RI. Remedial action objectives for Site 39 are presented in Section 6.2.1 of the Site 39 Feasibility Study.

**Comment 2:** The assumption that leach tests for lead performed for Site 3 indicate that there is little potential for contamination of groundwater may not be valid. See comments on the RI for Site 3 which suggest that the data provided do not support the conclusion that lead will not leach to groundwater at Site 3.

**Response:** As stated in the response to EPA specific comment 10b for the Site 3 RI, the results for the leach test should not be considered representative of actual field conditions because actual field data (soil and groundwater) and fate and transport properties of lead support the conclusion that lead is likely retained in soil and has not leached to groundwater. The discussion of the results from the small arms ranges (Section 3.5.3) has been revised, as appropriate.

**Comment 3:** The data presented in this report do not appear to support the conclusion that metals are not present above maximum background levels at Site 39.

**Response:** This report does not contain a conclusion stating that metals are not present above maximum background levels at Site 39. On the contrary, as stated in the report (Sections 3.1.3.3, 3.2.3.3, 3.3.3.3, and 3.4.3.3), several metals have been detected at concentrations above maximum background levels at various areas investigated. These sections have been revised to provide additional detail regarding the comparison of metals concentrations in soil with maximum background levels.

**Comment 4:** A recommendation for a more appropriate groundwater monitoring program should have been presented. Even the limited number of well samples indicated the presence of some parameters (antimony and nitrate) at elevated concentrations.

**Response:** A recommendation for future groundwater monitoring to further evaluate the presence of antimony and nitrate, as well as other parameters, in groundwater at Site 39 has been added to Section 4.6.

### **General Comments**

**Comment 1:** The EPA guidance for an RI report has not been followed for this document. First, results of investigations are included in the "Investigations" section rather than in separate "Physical Characteristics" and "Nature and Extent" sections. Second, there is no "Fate and Transport" section or even a conceptual model of the site. Finally, the summary and conclusions do not include "Recommendations for Future Work" or "Remedial Action Objectives."

**Response:** The format presented in the EPA guidance was modified in response to characteristics specific to Site 39 and areas within it. As stated in Section 2.1 of the RI report, Site 39 contains some areas that had previously been identified as individual sites, where investigations had already been completed. Because there are differing conditions and concerns regarding potential contamination at each of these areas, and because these areas are not necessarily contiguous, it was appropriate to discuss each area as completely as possible in one place rather than spread the discussions out over several sections. Discussions of conceptual site models have been added as Sections 3.1.3.5, 3.2.3.6, 3.3.3.6, 3.4.3.6, and 3.5.5. A discussion of contaminant fate and transport has been added as Section 3.8. Except for additional groundwater sampling at existing wells (see additions to Section 4.6), no future work is proposed for Site 39. Remedial action objectives for Site 39 are presented in Volume V, Site 39 Feasibility Study.

**Comment 2:** Criteria established for background levels of inorganics (metals) in soils are being used inappropriately or are being disregarded.

- a) First, a maximum value or threshold represents the upper limit of naturally occurring levels of a given parameter. This implies a normal distribution of concentrations around some lower value for the naturally occurring levels of this parameter. Any values greater than the threshold clearly represent contamination and should be addressed as such. Dismissal of values because they are not "significantly" greater than the background threshold is inappropriate.

Just as background values consist of a range of concentrations, contaminant values will consist of a range of concentrations such that all samples collected may represent contamination although some values are below the "threshold." Possible sources should be identified and fate and transport should be addressed any time analytical results exceed the background threshold value.

- b) Second, some parameters were not detected in background soil samples (e.g., antimony in shallow NQTP). This does not mean that there is no maximum concentration for that parameter in background soils, but, rather, that there is no detectable concentration in background soils. Therefore, if measurable levels of that parameter are detected, they must represent contamination. Possible sources should be identified and fate and transport should be addressed any time analytical results are above detection limits for parameters not detected in background soil.

Responses:

2a): A discussion clarifying the purpose of comparing maximum background metals concentrations to site concentrations has been added to Section 3.1.3.3 and is incorporated to the extent necessary in individual discussions of metals results (Sections 3.2.3.3, 3.3.3.3, and 3.4.3.3). In general, comparisons of soil metals concentrations to maximum background concentrations were performed as a screening process to evaluate whether there were exceedances above maximum background that appear to be related to known source areas. Potential sources are discussed in the metals results sections. A discussion of fate and transport properties of site-related contaminants has been added as Section 3.8 in the draft final report.

2b): The text has been revised as suggested (Sections 3.1.3.3, 3.2.3.3, 3.3.3.3, and 3.4.3.3). Discussion of contaminant fate and transport has been added as Section 3.8.

**Comment 3: The report should include a more thorough discussion of COPCs/COCs including fate and transport, and a summary of the Risk Assessment and Ecological Assessment as related to these chemicals.**

Response: The purpose of this RI report is to identify the chemicals that appear to have resulted from site activities and to delineate the extent relative to those impacts. The RI data are reviewed and COPCs are selected for the human health and ecological risk assessments (not necessarily the same COPCs for both assessments). The COPC selection processes consider factors such as frequency of detection and toxicity and are described in detail in the Baseline Human Health Risk Assessment (Volume III) and the Baseline Ecological Risk Assessment (Volume IV). It is not appropriate to include summaries of human health and ecological risk assessments in the RI text. Summaries of the RI, human health and ecological risk assessments, and the feasibility study are, however, provided in Volume I of the Basewide RI/FS. As stated in the response to General Comment 1, a discussion of fate and transport properties for the contaminants detected at Site 39 is presented in Section 3.8 of the draft final RI report.

### **Specific Comments**

**Comment 1: Table of Contents: An extraneous listing for Sections 3.0 and 4.0 is incorporated at the end of the Table of Contents.**

Response: The Table of Contents has been corrected.

**Comment 2: Section 1.6, Page 4: The information on hydrogeology provided in this site background section is not supported by a subsequent section with detailed physical characteristics based on site characterization. At a minimum, missing information needed to support the hydrogeological conditions described in this section include:**

- a) **Location of the wells used to determine groundwater flow direction and aquifer thickness.**
- b) **The "available water level data" referred to in the second paragraph on Page 4.**
- c) **An explanation of which wells monitor which aquifers. Specifically, of the seven wells sampled for the Site 39 RI, four have an "A" designation and three have an "180" designation. However, the text on page 4 does not relate any of the three water-bearing units in the Seaside basin to these designations.**

d) **What use, if any, is made of groundwater in the Seaside basin? If groundwater quality is impacted by Site 39, what human or environmental receptors are there?**

Responses:

2a, b, and c): The information presented in Section 1.6, including that mentioned in this comment, is summarized from the Basewide Hydrogeologic Characterization Report (HLA, 1994f). This citation has been added to Section 1.6 as has additional clarification regarding the well designations.

2d): Additional information regarding the use of groundwater in the Seaside basin has been added to Section 1.6. Evaluations of groundwater impacts, if any, to potential human or environmental receptors at Site 39 are presented in the Baseline Human Health Risk Assessment (Volume III) and Baseline Ecological Risk Assessment (Volume IV).

**Comment 3: Section 1.6, Page 4, last paragraph: Is the Santa Margarita Formation referred to in this paragraph the same as the Monterey Formation referred to in the Basewide Hydrogeological Characterization? If this is true, it should be clarified. If not, a more thorough discussion of the Seaside Basin is needed in both reports.**

Response: At Fort Ord, the Santa Margarita Formation is underlain by the Monterey Formation. Appropriate revisions to Section 1.6 of the RI were made to clarify the relation of these two geologic units.

**Comment 4: Section 3.1.3, Page 9, first paragraph: Contrary to the statement that "...the complete analytical data for HLA's investigation are presented in Appendix E..." Appendix E appears to be only a summary of analytical results for those parameters that were detected in at least one sample (See Tables E-1 and E-2). The reviewer is unable to examine detection limits and qualifiers attached to analytical results for parameters, such as antimony or the majority of explosive compounds, that were reported as not detected or rejected according to Table 7.**

Response: A complete set of analytical data for the Site 39 investigation was included on computer floppy discs in selected copies of the report that were submitted to the regulatory agencies. The appropriate sections in this report have been revised to indicate that the appendix includes only the data for detected analytes.

**Comment 5: Section 3.1.3.3, Page 10, first paragraph: Both the JMM PA/SI and the HLA RI sets of data should be discussed. Although the JMM data have not been validated, this does not mean that the data are not valid.**

Response: Additional discussion of the JMM data has been added to Section 3.1.3.3.

**Comment 6: Section 3.1.3.3, Pages 10 and 11: The qualitative terms "slightly exceeded" and "slightly above" maximum background concentrations are generally inappropriate. First, any analytical result above the threshold level for background concentrations represents contamination, by definition. There is no quantitative criteria given to differentiate between concentrations that are slightly above or significantly above background. The following examples demonstrate the inconsistent application of these terms:**

a) Beryllium concentration at 0.39 mg/kg is described as "slightly above" the background concentration of 0.35 mg/kg in shallow soil. This represents an increase of 0.04 mg/kg or approximately 11 percent.

- b) Beryllium concentrations at 0.52 to 0.76 mg/kg are described as concentrations that "slightly exceeded" the background concentration of 0.48 mg/kg in deep soil. This represents an increase of 0.04 to 0.28 mg/kg or approximately 8 to 58 percent.
- c) Chromium concentrations at 24.6 to 38.9 mg/kg are described as exceeding background of 22.7 mg/kg in deep soil; no qualifier of "slightly above" is used. This represents an increase of 1.9 to 16.2 mg/kg or approximately 8 to 71 percent.
- d) Lead concentration at 176 mg/kg is treated as significantly above the background concentration of 51.8 mg/kg in shallow soil. This represents an increase of 124.2 mg/kg or approximately 240 percent. However, lead concentration of 8.2 mg/kg representing an increase of approximately 120 percent over a background concentration of 3.7 mg/kg in deep soil is not treated as significant.

Response: Section 3.1.3.3 has been revised to delete use of qualitative terms such as those mentioned. Also, please see response to General Comment 2a.

**Comment 7:** Section 3.1.3.3, Pages 10 and 11, Section 3.2.3.3, Page 16: Dismissal of analytical results for beryllium, chromium, copper, nickel, silver, and zinc because they are "...not significantly above the maximum background concentration..." defeats the purpose of establishing a maximum background concentration. Once a criteria has been set for background, then higher concentrations must be given serious consideration as representative of contamination. What is the mobility of these metals in soils at Site 39? Have historical activities resulted in the presence of these metals in soil such that they now have been transported to the subsurface through long-term action of precipitation and infiltration?

Response: It was not the intent of the RI to dismiss metals analytical results because they slightly exceeded maximum background concentrations; all metals concentrations exceeding maximum background were retained for evaluation in the Site 39 risk assessments. The Site 39 risk assessments are presented in Volumes III and IV of this document. As previously mentioned, a discussion of fate and transport has been added as Section 3.8 of the Site 39 RI.

**Comment 8:** Section 3.1.3.3, Pages 10 and 11, Section 3.2.3.3, Page 16: No cadmium, mercury, and selenium maximum background concentration has been established because naturally occurring levels of these metals are either not present in shallow soils or are present at concentrations below detection limits. Therefore, concentrations detected in shallow soil samples must represent contamination.

Response: Please see response to General Comment 2b. Revisions were made to Sections 3.1.3.3 and 3.2.3.3.

**Comment 9:** Section 3.2.3.3, Page 16: Background criteria have been set up to address inorganics in soil based on depth and lithology. Therefore, comparison of analytical results for shallow soil samples to background levels for deep soil (i.e., cadmium and mercury results) is inappropriate.

Response: Revisions were made to Section 3.2.3.3 to discuss comparisons of metals concentrations only to their lithology- and depth-specific background concentrations. Also, please see response to General Comment 2b.

**Comment 10: Section 3.2.3.3, Page 16: Discussion of beryllium at Range 40A is not fully accurate and does not seem to address the presence of beryllium in an appropriate manner.**

- a) Examination of Table 13 and Table E4 shows that the highest beryllium concentration detected was 1.3 mg/kg , not 1.1 mg/kg.
- b) As any analytical results above maximum background must represent contamination by definition, whether or not concentrations of beryllium are "slightly" or "not significantly" above this maximum is irrelevant.
- c) Of the 60 soil samples analyzed (surface and subsurface), 51 samples had detectable concentrations of beryllium. Therefore, beryllium is widespread throughout range 40A and at concentrations above background levels in more than half of the samples analyzed.

Responses:

10a): The text has been corrected.

10b): Please see response to General Comment 2a.

10c): It should be noted that concentrations of beryllium greater than the maximum background level were found both above, within, and below an 8-foot-thick clay unit that appears to be locally continuous across Range 40A. The background values that were used for comparison were from the background soil investigation; that investigation assessed representative soil samples, mainly sandy soils, in and around Fort Ord. In general, clays tend to contain higher concentrations of metals than such sandy soils; therefore, it is likely that the elevated beryllium seen at Range 40A is naturally occurring. The absence of source area contaminants (e.g., hydrocarbons) and only occasional occurrence of elevated beryllium in surface soil (4 of 16 samples) support this interpretation. Therefore, although beryllium was present in a number of samples at concentrations apparently above background, the data for Range 40A suggest that this is a result of the differences in soil type between the samples from the background study and those from the Range 40A investigation. The discussions of elevated beryllium concentrations and the significance of the clay unit have been revised (Section 3.2.3.3).

**Comment 11: Section 3.2.3.3, Page 16: The fact that above background concentrations of chromium, copper, and zinc were detected in nearly half of the subsurface soil samples has not been given sufficient discussion.**

Response: Additional discussion of these metals has been added to the text.

**Comment 12: Section 3.2.3.3, Pages 16 and 17: Why is a special significance attached to concentrations which are less than two to three times the maximum background concentration? No fate and transport analysis is provided to indicate that contamination at these levels need not be addressed.**

Response: Please see response to General Comment 2a; revisions have been made to Sections 3.1.3.3, 3.2.3.3, 3.3.3.3, and 3.4.3.3.

**Comment 13: Section 3.3.2, Page 18: The fallacy of relying on TPHd and TPHg analysis to indicate the presence of hydrocarbons is shown by the results of analysis of samples for Range 33. Although these methods reported the absence of hydrocarbons meeting the gas chromatogram characteristics of either gasoline or diesel, hydrocarbons were clearly**

**present in the samples analyzed by Method 8270 (semivolatile organic compounds = hydrocarbons) as shown by the detection of from 5 to 18 TICs in each sample analyzed.**

Response: Because of differences in target analytes, analytical parameters, sensitivities, and methods of quantitation, EPA Test Method 8270 and TPHg and TPHd analyses are expected to provide different analytical results. For example, because of differences in analytical sensitivity and method of detection, hydrocarbon-related tentatively identified compounds (TICs) may be detected by EPA Test Method 8270, even when results are nondetect for TPHd. The Army does not agree that it is fallacious to rely on TPHd and TPHg analysis to indicate the presence of petroleum hydrocarbons. TPHd and TPHg analyses are designed to detect and quantify multicomponent mixtures of petroleum hydrocarbons with sufficient sensitivity to meet regulatory or site-specific action levels. EPA Test Method 8270 is designed to detect and quantify a specific list of semivolatile target analytes (e.g., PAHs), often for risk assessment purposes.

Using mass spectral library search and identification routines, EPA Test Method 8270 can also detect non-target analytes (i.e., TICs). It is important to note that accurate quantitation of TICs is not provided by the laboratory because representative reference material (i.e., calibration standards) are not used when generating estimated sample concentrations. Therefore, it is not appropriate to rely on the estimated concentrations reported for the TICs for quantitative assessment of potential site contamination. Furthermore, the Army is unaware of any regulatory or method guidance that specifies that EPA Test Method 8270 should be used in lieu of TPHg and TPHd analyses to detect and quantify petroleum hydrocarbon mixtures.

The following conclusions summarize the response to this comment:

- It is appropriate to rely on TPHg and TPHd analyses to assess the potential for petroleum hydrocarbon contamination.
- Individual constituents of petroleum hydrocarbon mixtures may be detected and reported as TICs using EPA Test Method 8270, even though TPHg and TPHd results indicate that samples are nondetect.
- TIC results should not be used for quantitative assessment of potential site contamination.

No changes to the text were made.

**Comment 14: Section 3.3.3.2, Page 19, last bullet: The significance of TICs in soil boring samples appears to have been obscured by the manner in which the results are presented.**

- a) **The term "Several TICs" is used to describe from five to 18 TICs in each sample.**
- b) **TICs were found in all of the surface soil samples analyzed by Method 8270, including that from boring SB-R33-13 which is not listed in the text.**
- c) **TICs were found in all samples analyzed by Method 8270.**
- d) **The concentrations for TICs are presented in mg/kg rather than  $\mu\text{g}/\text{kg}$  which makes less obvious the fact that TIC concentrations are generally much higher than concentrations for the routine parameters detected.**

Responses: As discussed in the response to Comment 13, because of the inherent unreliability of identification and quantitation of TICs, the Army does not believe that it is appropriate to place a great deal of significance on TIC data.

14a): The term "several" will be deleted from the text.

14b): Samples were analyzed using EPA Test Method 8270 in order to assess the presence and concentrations of PAHs. It is to be expected that at sites where petroleum hydrocarbons may have been released, individual hydrocarbon constituents may be detected and reported as TICs using EPA Test Method 8270, even when TPHg and TPHd are not deleted. Boring SB-R33-13 will be added to the text as requested. Please refer to response to Comment 13 for further discussion of TIC results.

14c): Please refer to response to Comment 13 for further discussion of TIC results.

14d): The text will be revised such that TIC concentrations are not reported. Please refer to response to Comment 13 for further discussion of quantitation of TIC results.

**Comment 15: Section 3.4.3.3, Page 24: The summary of metals detected at elevated concentrations in the explosive ordnance target areas should include antimony. Antimony, which was not detected in shallow soil in the background data set, was found at concentrations up to 100 mg/kg. This is a significant finding. These levels of antimony should be taken into consideration when reviewing groundwater data that indicates the presence of elevated levels of antimony.**

Response: A discussion of antimony was presented at the bottom of the first column of page 23 in the Draft report. Section 3.4.3.3 has been revised to provide more discussion regarding the occurrence of antimony at the ordnance target areas. Section 3.6.3, which discusses the results of groundwater analysis, has also been revised to provide more discussion regarding antimony.

**Comment 16: Section 3.5.1, Page 27, last bullet: The statement that "...there is little potential for contamination of the groundwater by lead..." is not supported by the information provided in the RI report for Site 3. The results of leachate analysis are reported to indicate that metals could be leached by rainwater. There is no information provided that would indicate that rainwater infiltrating through high lead concentrations at the surface will not recharge groundwater.**

Response: Extensive leaching of lead from soil has not occurred at Site 3 as evidenced by the vertical distribution of lead in the soil. In addition, an evaluation of the fate and transport properties of lead indicate that soil conditions (TOC, CEC, pH, and the presence of iron oxides) favor retention of lead in site soils. Therefore, although the leach tests indicated there was a potential for leaching of lead, site-specific data show that lead is limited to the surface and near-surface (i.e., above approximately 4 feet) soil and does not appear to have migrated to the groundwater. Based on these data, the results for the leach tests are not considered representative of actual field conditions at Site 3. Section 3.5.1 has been modified to clarify this interpretation.

**Comment 17: Section 3.6.1, Page 28, first paragraph: Well designation is inappropriate and confusing. Wells completed in the Upper Aquifer at this site should be labeled -U rather than -A and the wells completed in the Paso Robles Aquifer should be labeled -P rather than -180. This would clarify for the reader that they are completed in different aquifers (i.e., Seaside basin rather than Salinas basin aquifers) than the other wells at Fort Ord.**

Response: Although we agree that it would be more appropriate to name the wells as suggested, these well names are linked to numerous data bases as well as the original field documents. Renaming the wells would be time-consuming, expensive, and could result in some confusion in the future. Therefore, an explanation of the relationship of these wells to their corresponding aquifers has been added to Section 3.6.1.

**Comment 18: Section 3.6.1, Page 28, first paragraph: Are there no upgradient wells for the Paso Robles Aquifer?**

Response: Based on available geological and hydrogeologic data, Monitoring Well MW-05-02-A, although labelled as an "A" well, appears to be completed in the Paso Robles aquifer. It appears that the Seaside Clay, which usually separates the Uppermost aquifer from the Paso Robles aquifer, is not present at the location of Well MW-05-02-A. From a regional groundwater flow perspective, this well serves as an upgradient well; however, its relation to the other wells along the western boundary of the site is unknown.

**Comment 19: Section 3.6.2, Page 28, second paragraph: Although the text indicates that eight samples (including a duplicate) were analyzed, Table 25 and subsequent sections show a maximum of seven analyses for nitrate, five analyses for metals, and no clear indication of the total number of analyses for explosive compounds.**

Response: The text in the draft was intended to convey that eight samples (seven field samples and one duplicate) were collected and analyzed for one or more of the following parameters: explosive compounds, priority pollutant metals, and nitrates. The combination of the text and Tables 24 and 25 show that (including the duplicate): seven samples were analyzed for explosives, five samples for metals, and eight samples for nitrate. Table 25 shows only those analytes that were detected in field samples (i.e., excluding QC or duplicate samples); no explosives were detected in groundwater. Additional information was added to the text of Section 3.6.2 and to Table 24 to clarify the sampling program.

**Comment 20: Section 3.6.2, Page 29 and Section 4.6, Page 38: There are several references to additional analytical data for groundwater for Site 39 from the 1992 basewide monitoring program, but the data is not provided or summarized in this report. Without this information, the reader cannot judge the validity of statements made in this section.**

- a) **Have analyses for explosive compounds been conducted as part of the basewide monitoring program?**
- b) **What analytical method was used for antimony in the 1992 sampling program? What was the detection limit? If ICP analysis rather than EPA Method 7041 was used, the detection limits would have been greater than the MCL.**
- c) **If "adequate data are available for metals" for wells MW-BW-05-180 and MW-BW-09-180 such that missing analytical data need not be replaced, why are this data not presented in this report?**
- d) **Are other monitoring wells available downgradient of Site 39 to support the limited sampling and analysis conducted for this site?**

Responses: A summary table (Table E10, Appendix E) has been added to the draft final RI report; this table presents a summary (detects only) of past groundwater chemistry data for those wells sampled during the Site 39 RI.

- 20a): No analyses were performed for explosive compounds during the basewide monitoring program. As discussed in Section 3.6.3, additional samples are to be collected from Wells MW-05-02-A, MW-BW-04-A, MW-BW-06-A, MW-BW-08-A, MW-BW-05-180, and MW-BW-09-180 and analyzed for metals. Well MW-BW-04-A will also be sampled for nitrate.
- 20b): Groundwater samples collected during the 1992 basewide sampling program were analyzed using EPA Test Method 6010 (ICP method). Therefore, the detection limits for the samples collected in 1992 were greater than the MCL. Samples collected for the Site 39 RI in 1994 were analyzed using EPA Test Method 7041, which has a detection limit of 2.2  $\mu\text{g/l}$ , which is below the MCL. Based on this information, it has been recommended that additional groundwater samples be collected from the wells sampled during the Site 39 RI. Section 3.6.3 has been revised.
- 20c): A summary table (Table E10) has been added to the draft final RI report (Appendix E) which presents past groundwater chemistry data for the wells sampled during the Site 39 RI. Further review of past groundwater monitoring data for these wells indicates that additional sampling at the seven wells at Site 39 is appropriate. Section 3.6.3 has been revised to include this recommendation.
- 20d): The only wells downgradient from Site 39 are supply wells located in the City of Seaside. These wells were not constructed for monitoring purposes and there are limited data regarding the construction details of these wells. Considering the construction of most supply wells, it is unlikely data collected from these wells would be representative of groundwater conditions at the site. No text changes have been made.

**Comment 21: Section 3.7.1, Page 30, second paragraph: The assumption that antimony and mercury are not contaminants of interest is in error. The rejected data may represent a serious data gap for antimony and mercury, since they do appear to be contaminants at other portions of Site 39 and antimony was found at elevated concentrations in groundwater.**

**Response:** The antimony and mercury data that were rejected were from one of eleven sample delivery groups (SDGs) collected at the site. Also, antimony was not detected in the other ten SDGs, which contain usable data. Within the ten SDGs with usable data, mercury was detected at a maximum concentration of 0.11 mg/kg in only two soil samples which were both collected at depths greater than 20 feet. The majority of data, except the one rejected SDG, indicate that antimony is not present above the background concentration at the site, and the two detections of mercury above the background value likely represent naturally occurring variations in soil chemistry. The identification of antimony as an above-background contaminant may be an artifact resulting from the following: 1) antimony was not detected in the shallow soil from the background soil investigation, and 2) the antimony detection limit in the background study was higher than most of the antimony detections from the Site 39 investigation. This indicates that there is not a significant data gap and also shows that antimony and mercury are not expected to be contaminants of interest. Additional information was added to the text of Section 3.7.1 to clarify the discussions.

**Comment 22: Section 3.7.3, Page 31, third, fourth, sixth and seventh bullets; Page 32, first bullet: These bullets mention a very high number of qualified data. This should have raised a concern early in the field program when deficiencies in the sampling or analytical procedures could have been caught and corrected. To verify that the data is useable,**

**10 percent of the samples should be resampled and the results compared to the qualified data. This will verify the statement in the text that the qualification of this data is unlikely to affect its usability.**

Response:

Data that were affected by QA/QC exceedances, including those noted in Section 3.7.3, were qualified in accordance with EPA functional guidelines for inorganic and organic data review (EPA, 1988c, 1988d). The Army acknowledges that data validation performed on samples collected for the Site 39 investigation required the application of many data qualifiers. However, results that were qualified received estimated qualifiers (e.g., J qualifiers). No data were rejected during data validation. Estimated results are considered usable for the data quality objectives of the project. The following is a discussion of the specific data quality issues that have been raised in Comment 22. Section 3.7.3 has been revised to clarify these issues.

Explosive residue analyses; QA/QC control limit exceedances: At the beginning of the field program, QA/QC and method performance criteria had not been established by the laboratory performing the analyses. Furthermore, the EPA Test Methods used during analysis of samples collected at Site 39 (8330 and modified 8330) do not provide control limit criteria. Consequently, during data validation, default matrix spike recovery criteria of 65 to 135 percent and an RPD criteria of 30 percent were adopted. In retrospect, given the observed instability and poor extraction efficiency of certain explosive compounds (i.e., tetryl, 1,3,5-trinitrobenzene, picric acid, nitroguanidine), default control limits may not accurately represent method performance characteristics. Therefore, default QA/QC control criteria should be considered advisory, rather than definitive, indicators of data quality. It is important to note that because of the inherent instability or reactivity of energetic compounds, explosive analyses pose unique analytical challenges with respect to procedures that measure matrix spike or blank spike recoveries.

Metals analysis; blank spike, matrix spike, or GFAA post-digestion spike recovery exceedances: Potential overestimation or underestimation of field sample results as a consequence of high or low spike recovery is undesirable because it may lead to the reporting of false positive or false negative results. During data validation, data affected by the spike QC exceedances listed above were qualified as estimated. Estimated data are considered usable for the data quality objectives of the project.

Metals analysis; sample/duplicate relative percent difference (RPD) control limit exceedances: RPD exceedances are undesirable because they may lead to irregular characterization of site conditions. During data validation, data affected by RPD QC exceedances were qualified as estimated. Estimated data are considered usable for the data quality objectives of the project.

Because the nature and degree of the above-mentioned QC, exceedances did not justify rejection of the data, the Army does not believe that ten percent confirmation resampling is warranted.

**Comment 23: Section 3.7.3, Page 32, first and second bullets: These bullets summarize the impact of this qualified data is limited because it only results in a very low potential for false negatives or false positives. However, there is a more important impact resulting from these analytical deficiencies and that is the resulting lack of precision (inability to get the same result for duplicate or serial analyses of the same sample). The results then may appear to be much more variable than is the actual case and overall confidence in the validity of the results will be reduced.**

Response: Statements regarding usability of the data with respect to precision will be added to Section 3.7.3 of the RI/FS report.

**Comment 24: Table 9: This table is confusing. Specifically:**

- a) The locations with concentrations above background column should be the number above background out of the total number of samples (i.e. 3 of 10). The information would be much easier to understand if it was split into a table for shallow soils and one for deep soils.
- b) From this table, beryllium, lead, selenium, and silver appear to occur the most frequently in shallow soils, while beryllium, chromium, lead, nickel, and zinc appear to occur the most frequently in deep soils. This is inconsistent with the discussion in the text.
- c) It is not clear how the metals for which the report claims that background concentrations could not be determined were handled. All concentrations above the detection limits for these metals should have been reported as exceeding background.
- d) Mercury, which was not detected in shallow soils, has an 0 in the "Samples Above Background" column, whereas thallium, which also was not detected in shallow soils, has an NA. Why were they handled differently?

Responses:

24a): Table 9 and other similar tables have been revised as suggested.

24b): Additional information was added to the text of Section 3.1.3.3 which should clear up inconsistencies.

24c): For those metals which have no specified background concentration, all detections were expressed as exceedances of background. Additional information was added to the text of the appropriate sections which should clear up inconsistencies.

24d): The error in the table has been corrected to show "0" for samples with no concentrations above maximum background.