APPENDIX H

RESPONSES TO COMMENTS

Responses to
Cal-EPA DTSC
Comments on the
Draft 1996 Annual Groundwater Monitoring Report
Salton Sea Test Base, California
CTO-097

Brian K. Davis

Comment	Response
1. Comment I not provided.	
2. Lead: In our 8/29/96 memorandum, we pointed out that lead is not treated correctly in the 1995 Annual Groundwater Monitoring report. This report continues to make the same error. Footnote 7 of Table 2 in Appendix G of the 1996 report states that *"Lead is not included in HI because PRGfor lead is not based on toxic effects, but on an indicator (blood lead) of possible effects. " This is* incorrect. Blood lead levels are used as a measure of toxicity. Toxicity is precisely what the *"possible effects " are*. Therefore, the hazard quotient for lead should be added to the other haza d quotients for each site.	Comment noted. Lead should have been added to the other hazard quotients for calculation of hazard indices at each site. As indicated in DTSC comment 3, addition of lead would have resulted in higher hazard indices for each site. However, where the hazard index for a site exceeded one, the hazards were separated into groups according to their toxic effects (e.g., neurotoxicity), and the hazard quotients were summed to calculate a hazard index within each group. Although lead is known to exhibit neurotoxic effects, these effects are behavioral and are not additive to effects of other neurotoxins in the group, so a separate group would need to be added for lead. In each instance where the lead haza d quotient exceeded one, that occurrence was evaluated ftirther as part of the interpretation of risk screening results presented for that site. With the inclusion of lead toxicity, haza d indices would exceed one for all sites. However, the hazard index for neurotoxicity effects would not change. Therefore, neither the interpretation of risk screening results nor the conclusions and recommendations presented in the report would be affected by adding the hazard quotient for lead to the other hazard quotients for each site. Based upon the above rationale, the document has not been revised.
3. Hazard Indices:	Please see response to comment 2.

The document reports that hazard indices exceed one for Sites 1, 8, 13, 14, 15, 16,17, and 18, even when hazard is separated by target organ (Appendix G). Furthermore, hazard index is underestimated for several sites in the document because lead has been excluded (Comment #3). Including the hazard from lead, Site IOLA has a total hazard index of 2.8 and a hazard index for neurotoxicity of 1.8; Site 15 has a total hazard index of 4.5, and a hazard index for neurotoxicity of 2.7; Site 17 has a total ha7,nrd index of 6.9 and a hazard index for neurotoxicity of 1.9; Site 19 has a total hazard index of 1.7 and a hazard index for neurotoxicity greater than 1. 1; Site 23A has a total hazard index of 2.6 and a hazard index for neurotoxicity greater than 1.9; and Site 25 has a total hazard index of 1.8 and a hazard index for neurotoxicity greater than 0.4. Thus, with !he inclusion of lead toxicity hazard indices exceed one for all sites.

Marie T. McCrink

Comment	Response
1. Section 8.5.4, page 8-30: Anomalous concentrations of **metals in groundwater have** been detected in monitoring well, 13MWI. It is stated in the text that the highest concentrations of nearly half of the Title 22 metals, including arsenic, beryllium, antimony, copper, lead, selenium, and silver, reported in IRP wells were detected in 13MWI. The report explained that these elevated concentrations are likely associated with elevated Tota Dissolved Solids (TDS) concentrations caused by evaporation of ponded surface water and not a release. This section should discuss what evidence was found to conclude that evaporation of ponded surface water with high TDS concentrations resulted in the high metals concentrations detected in 13MWI. The discussion should also explain the geochernical relationship between high TDS and metals concentrations.	The conclusion is based on visual evidence and assumptions regarding the process by which TDS was concentrated in the groundwater. Ponded surface water and salt-encrusted marsh **areas are present** close to the shoreline immediately to the north and south of well 13MWI. Evaporation of the surface water causes concentration and crystallization of residues, and percolation of groundwater results in elevated TDS levels. It is assumed that the same process that causes the elevated TDS concentrations also causes individual dissolved constituents, such as metals, to be concentrated. The text has been revised to clarify this issue.
2. Section 5.6. 1, pg. 5-22: It is concluded in the text that no contaminant source existed at background conditions. I concur with the conclusion that no contaminant source existed at Site 13 to have produced the high metal concentrations detected in 13MWI. However, the statement that groundwater from 13MWI probably reflects background conditions should be qualified. The results from 13MWI are distinctly different from other exceedences over background that are believed to represent naturally occurring conditions. The geologic distinction between 13MWI and other background exceedences should be mentioned here in the text. The more detailed discussion, requested for Section 8.5.4 in comment No. 1, should be referenced in Section 5.6.1 also.	The statement has been qualified. Visual evidence and assumptions described in the response to comment I above Site 13 and groundwater from 13MWI probably reflects have been added to the text in this section for clarification. The conclusion is that metals concentrations are believed to be naturally occurring, although above background.

Responses to
California RWQCB
Comments on the
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Joan Stormo

Comment	Response
1. Why were lead analyses discontinued at tank site 2Q, which had an MCL exceedence for lead?	Samples from former UST locations were analyzed for lead only when records indicated that leaded gasoline was stored in the tank. Former tank 2Q was reported to contain fuel oil, and data from the UST Site Investigation did not identify gasoline at the site. Of the three samples collected from wells at Site 2Q, only one contained lead above the MCL. The result was within the range of background concentrations reported in groundwater at SSTI3 and is believed to reflect naturally occuning conditions. Therefore, no further monitoring for lead was conducted. The text in Section 8.13.7.2 has been revised to clarify this issue.

Comment	Response
4. Ecological Risk Assessment: The risk assessment in this document is limited to **human** receptors. Section 5.8 (page 5-29) **argues that there are** no exposure pathways for ecological receptors. Since groundwater flow is toward the Salton Sea, there clearly are potential exposure pathways for aquatic receptors. However, the Salton Sea water quality is so poor that the potential for harm from the chemicals reported in groundwater is insignificant.	Comment noted.
Conclusions: With the exception of the exclusion of lead from the estimates of hazard indices, the methods used for the screening risk assessment are **acceptable and the results appear to be accurate.** The estimated total excess cancer risk exceeds I x 10-6 for all sites (Figure 8-2), and the estimated hazard index exceeds one for all sites (Comment #3). The following points should be considered to put these results in context: 1) The screening was done with the maximum concentrations found in any sampling event for each site. Therefore, as more groundwater samples are taken over time, the risk and hazard estimates can only remain the same or increase. 2) This assessment assumes residential land use, which seems unlikely for this area. Other land use scenarios would yield lower risk and hazard estimates. 3) This assessment assumes domestic use of the groundwater. This seems unlikely given the groundwater quality. Regional Water Quality Control Board personnel can address this issue. 4) Much of the risk and hazard potential results from inorganic chemicals in the ground water. A document argues that most or all of these findings represent background rather than contamination. A Department of Toxic Substances Control geologist can address this issue. 5) The risk and hazard potential which results from organic chemicals in the ground water should be evaluated in light of the consistency of the findings. A Department of Toxic Substances Control geologist can address this issue.	Comment noted. L