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CLEAN II TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-92-D-4670 **Document Control No. CTO-0059/000226**

File Code: 0202

TO: Jason Ashman, RPM (3 copies)
Code 1831.JA
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA. 92132-5187

DATE: September 6, 1995
CTO #: 0059

FROM: J. W. Kluesener, Operations Manager; D. K. Cowser, Project Manager

DESCRIPTION: Response to Comments Document, Prepared in Conjunction with the Final Risk Assessment Work Plan, Phase II Remedial Investigation/Feasibility Study MCAS El Toro, California, CTO-0059

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CLEAN II Program
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IN REPLY REFERENCE: CTO-0059/000223

September 6, 1995

Department of the Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92131-5187

Attention: Jason Ashman, RPM
Code 1831.JA

Subject: Response to Comments Document, Final Risk Assessment Work Plan
Phase II Remedial Investigation/Feasibility Study,
MCAS El Toro California, CTO-059

Dear Mr. Ashman:

Enclosed are three (3) copies of the Response to Comments Document which was prepared in conjunction with the Final Risk Assessment Work Plan, Phase II RI/FS, MCAS El Toro, California, under CTO-059 for Contract No. N68711-92-D-4670.

We have submitted the appropriate number of copies of this plan to individuals on the attached transmittal. The Final Risk Assessment Work Plan is being delivered at the same time as the Response to Comments document but each will be delivered under separate transmittals.

If you have any questions, please contact Timothy Latas at (619) 687-8848, or me at (619) 687-8802.

Very truly yours,

David K. Cowser
Project Manager

DC/sp

Attachment: Response to Comment Document, Final Risk Assessment Work Plan, CTO-059

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Virginia Garelick/Chris Leadon SW Division **To:** Jason Ashman SW Division **Date:** April 18, 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
GENERAL COMMENTS - HUMAN HEALTH RISK ASSESSMENT	***GENERAL RESPONSES - HUMAN HEALTH RISK ASSESSMENT***
a. Page 2-3, Description of Operable Units: Please edit this description so it reflects the definition presented in the current BCP.	**RESPONSE a**: The plan has been revised to be consistent with the definition presented in the current BCP.
b. Page 4-1, Objective of the Human Health Risk Assessment: The work plan states "consideration was given to using the RBCs to calculate risk; however, the idea was rejected for the following reasons. . ." Please revise this section. As we discussed in the MCAS El Toro meeting of February 21, 1995 please use the RBCs that have already been developed for the station. Only minor modifications to these RBCs are needed. These modifications include (1) recalculation of the following chemicals using Cal/EPA cancer potency factors (cadmium, hexavalent chromium, nickel, benzo (a) pyrene, chrysene, benzo (k) fluoranthene, tetrachloroethene, and 1, 2, -dibromo-3 - choloropropane); (2) calculating RBCs for any new chemicals found during the Phase II RI/FS field investigations. The calculations of these RBCs should be based on U.S. EPA RAGs. U.S. EPA PRGs should be used only for risk screening purposes.	**RESPONSE b:** Since this comment was made the Navy has agreed to use U.S. EPA Region IX Preliminary Remedial Goals (PRGs) rather than the Phase I RF risk based concentrations (RBCs) when performing screening risk assessments. Cancer risk estimates based on U.S. EPA cancer potency factors supplemented by Cal/EPA cancer potency factors for the eight chemicals referenced in General Comment b. will be used for the Phase II RI/FS baseline risk assessment.
c. Page 4-4, Toxicity Assessment: The work plan states that "both U.S. EPA and Cal/EPA CPFs will be used in the baseline health risk assessment along with the RFDs developed by the U.S. EPA. Please note that "dual tracking" is no longer being used by DON. Please develop only one set of cancer risk estimates based on U.S. EPA cancer potency factors. The list should be supplemented by Cal/EPA cancer potency factors for the eight chemicals discussed in comment 3.b above. Additionally, please delete the second and third paragraphs on pages 4-13 to be consistent with this policy.	**RESPONSE c**: The Navy no longer requires dual tracking and the plan has been modified accordingly.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Virginia Garelick/Chris Leadon SW Division **To:** Jason Ashman SW Division **Date:** April 18, 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
GENERAL COMMENTS ON ECOLOGICAL RISK ASSESSMENT	***GENERAL RESPONSES ON ECOLOGICAL RISK ASSESSMENT***
a. Section 5.1: Please identify the stage of the IR process for which the Ecological Risk Assessment was written. The type of ecological risk assessment required for the specific stage in the IR process (such as whether it is a screening or baseline ecological risk assessment that is being planned) should also be identified.	**RESPONSE a**: The plan now identifies the type of ecological risk assessment will be the predictive modeling supplemented by limited biota sampling at Sites 2 and 17.
b. Section 5.4: Please include a flowchart showing the planned tiered approach for the ecological risk assessment. A table listing the levels of chemicals or ecological parameters that trigger new methods among the tiers would also be helpful.	**RESPONSE b**: A decision flowchart has been included in the plan showing the tiered (phased) approach. Parameters that will trigger additional methods/approaches in the predictive ecological risk assessment have also been identified.
c. Section 5.4, first paragraph sixth bullet: Please clarify the way "weak acid extractable versus total metals" relate to bioavailability.	**RESPONSE c**: Weak extractable metals versus total metals by plants can be related to bioavailability in the food web. In some instances, direct uptake of metals by plants can be correlated to weak acid extractable metals since the bioavailability of many metals can be mediated by the presence of organic material and clay particles in the soil. However, many factors control these processes. By using a food web approach, many organisms will be exposed to metals in a number of different media (i.e., soil, water, plant and animal food items) and the bioavailability will vary greatly based on exposure pathways (i.e. ingestion of soil, water). For the purposes of the predictive ecological risk assessment, bioavailability will not be assessed at this time. If results from the predictive ecological risk assessment indicate a need to conduct studies on the bioavailability of metals, regulatory agencies involved will be consulted with regard to test protocol development and interpretation.

Originator: Virginia Garelick/Chris Leadon SW Division **To:** Jason Ashman SW Division **Date:** April 18, 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
d. Section 5.4: The Tier II activities in the Ecological Risk Assessment include some expensive bioassays. Additional trigger levels and tiers should be built into the study to insure that only those bioassays that are really triggered and needed are conducted. Some of the bioassays planned in the Tier II studies such as: root elongation with soil elutes bioassays, amphibian bioassays, and bacterial luminescence bioassays are unusual specialized bioassays that are probably unnecessary unless data and evidence from the Tier I studies specifically triggers one of them.	**RESPONSE d**: The discussion of the toxicity bioassay was intended to be generic. It was presented in the plan only to illustrate the types of assays that may be required to reduce uncertainty and/or validate data obtained in the Phase II RI/FS Predictive Ecological Risk Assessment stage. The plan was initially prepared only for the Predictive Ecological Risk Assessment as outlined in the Department of Toxic Substances Control (DTSC) guidance document (DTSC 1994). Any other bioassays that are deemed necessary from the results of Phase II RI/FS predictive ecological risk assessment would fall under a (Phase II RI/FS Ecological Risk Assessment) Validation Study (DTSC 1994). If other bioassays are required to adequately characterize impact to ecological receptors, a work plan will be prepared at an appropriate time in the future for discussion and approval by the appropriate regulatory agencies.
e. Section 5.5.1.2, second paragraph: Please rewrite this paragraph. Provide a clear explanation of how chemicals of potential ecological concern (COPECs) are determined in the risk assessment screening process. COPECs are kept in the risk assessment through the screening process if their maximum concentration at a site exceeds chemical-specific levels of published scientific data for acceptable bioassay parameters such as No Observed Adverse Effects Levels (NOAELs) or Lowest Observed Adverse Effects Levels (LOAELs) or Lowest Observed Adverse Effects Levels (LOAELs).	**RESPONSE e**: The paragraph in question has been rewritten to include criteria for the selection of COPECs.
f. Section 5.5.1.2: The relation of Chemicals of Potential Concern (COPCs) to COPECs should be defined in this section. COPCs are referred to in Sections 5.6, 5.6.2, and 5.6.3, but the acronym COPECs is used in most of the rest of the Work Plan.	**RESPONSE f**: The correct acronym is COPEC. The plan has been revised to only include the acronym COPEC.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Virginia Garelick/Chris Leadon SW Division **To:** Jason Ashman SW Division **Date:** 18 April 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
g. Section 5.5.2: The planned use of background data in determining COPECs should be explained. The work plan states that many metals were not screened relative to background concentrations in the Preliminary Assessment (PA) and that determining an appropriate background reference area for metals is an objective of the current ecological risk assessment work. Background data should be collected, and background concentration levels determined statistically for all COPECs. If the maximum concentration of a specific COPEC is below the statistical background level for it, the COPEC should be screened out of the ecological risk assessment.	**RESPONSE g**: Background data will used to evaluate COPECs based on methodology presented in the Final Work Plan for the Phase II RI/FS.
h. Section 5.6.1: If there are plans for modeling chemical contaminant transport through the soil, groundwater, and/or air at the El Toro sites, these should be discussed in this section. Otherwise, recommend deleting the work "transport" from the title of Section 5.6.1.	**RESPONSE h**: Modeling of chemical transport through soil, groundwater and/or air will not be performed for the Predictive Ecological Risk Assessment. A discussion of fate of chemicals will be included in the Risk Characterization : Ecological Significance Section (Section 5.8.2)
i. Section 5.6.2: Please identify which ecological receptors would ingest, inhale, or be in direct contact with COPECs. Please rewrite the second bullet of section 5.6.2 and identify which plant and animal "items" would be exposed to COPECs.	**RESPONSE i**: Figure 5-2 in the plan identifies the exposure pathways to which the ecological receptors will be exposed. In addition, the second bullet in Section 5.6.2 identifies the plant and animal food "items" that can potentially be exposed to COPECs.
j. Section 5.6.3: This section discusses plans for calculating bioconcentration factors (BCFs) and bioaccumulation factors (BAFs). Recommend that additional plans are made to calculate biomagnification factors (BMFs) in Sections 5.6.3 and 5.6.4.3 of the Work Plan. As discussed in ref. (e) above, the BMF of a terrestrial species has traditionally been estimated by measuring the concentrations in the whole body or fat of a species (or subgroup) and dividing this value by the concentration in the food of the species (or subgroup).	**RESPONSE j**: Site-specific bioaccumulation and biomagnification factors will be determined, in addition to those generated in the previous Phase I RI Screening Risk Assessment. These factors will be based on a focused sample collection and residue analysis of plant and animal food items which will include plant roots, shoots, leaves, and fruit, insects, and spiders, and small mammals.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Virginia Garelick/Chris Leadon **SW Division** **To:** Jason Ashman **SW Division** **Date:** 18 April 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
SPECIFIC COMMENT **a. Section 5.2: Please rewrite the third sentence of this section. The major ecological concerns at El Toro should be listed as numbered items in the third sentence of Section 5.2.**	***SPECIFIC RESPONSE*** **RESPONSE a:** The third sentence in this section is a summary statement of the seven ecological concerns that have been listed in Section 5.5.1.4.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Jeffrey M. Paull, Regional Toxicologist Superfund Technical Support Section U.S. Environmental Protection Agency (EPA) **To:** Bonnie Arthur, Remedial Project Manager Federal Facilities Cleanup Office U.S. Environmental Projection Agency (EPA) **Date:** 20 January 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
GENERAL COMMENTS **Risk-Based Concentrations: Risk-Based Concentrations (RBCs) were developed as part of a Preliminary Health Risk Assessment (PHRA) performed at 22 sites that compose OU-2 and OU-3. The PHRA, developed by CH2M Hill, was submitted to the U.S. EPA Region IX and Cal/EPA in 1993, and comments on it were submitted to CH2M Hill by the two agencies. At that time EPA Region IX made the recommendation to use the U.S. EPA PRG Tables for the health risk screening criteria, rather than independently developing RBCs.** **We reiterate that comment again here, for many of the same reasons that BNI has cited in the Risk Assessment Plan (p. 4-2) for not using the RBCs to calculate risk.**	***GENERAL RESPONSES***
1) Toxicity values, including cancer potency factors (CPFs), Reference Doses (RfDs), and Reference Concentrations (RfCs) have changed for many of the chemicals since the preliminary risk assessment was performed. The U.S. EPA Region IX PRGs reflect these changes, as well as incorporating Cal-Modified PRGs for those substances for which Cal/EPA toxicity values are required to be used, for sites within the State of California. **It is both more time-efficient and cost-effective to utilize U.S. EPA PRGs. There would be no time and cost savings to base contaminant screening levels on the CLEAN I RBCs, particularly since they would have to be modified to reflect changes in toxicity values, and the presence of different Cal/EPA cancer potency factors. By utilizing the PRGs, which have already been approved by both U.S. EPA Region IX, and Cal/EPA for the purpose of risk screening, further review of proposed risk-screening values may be avoided.**	**RESPONSE 1):** Since this comment was made the Navy has agreed to use Region IX Preliminary Remedial Goals (PRGs) for risk screening and streamlined risk assessments. A list of cancer risk estimates based on U.S. EPA cancer potency factors supplemented by Cal/EPA cancer potency factors for eight chemicals (cadmium, hexavalent chromium, nickel, benzo (a) pyrene, chrysene, benzo (k) fluoranthene, tetrachloroethene, and 1, 2, -dibromo-3 - choloropropane) will be used for the Phase II RI/FS baseline risk assessment.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: **Jeffrey M. Paull, Regional Toxicologist** **Superfund Technical Support Section** **U.S. Environmental Protection Agency (EPA)** **To:** **Bonnie Arthur, Remedial Project Manager** **Federal Facilities Cleanup Office** **U.S. Environmental Projection Agency (EPA)** **Date:** **20 January 1995**	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
Where the contaminants/exposure pathways being assessed are not included in the U.S. EPA PRG Tables, then site specific calculations may be performed, and included in the appropriate scenarios.	
2) **<u>Exposure Scenarios and Intake Routes</u>: The conceptual exposure model that was developed and used to establish human exposure scenarios and intake routes for soil sediment, and surface water in the PHRA should be briefly summarized and described in the Risk Assessment Plan. If any changes or modifications to the exposure model are anticipated, they should be documented in this section.**	**RESPONSE 2):** The preliminary health risk assessment performed during the Phase I RI on OU-2 and -3 sites was based on a residential and recreational setting. For the residential setting, the exposure routes evaluated were those related to soil contamination only and consisted of the usual soil ingestion, dermal contact with soil, and inhalation of vapors and particulates. With the recreational setting, the exposure routes were those related to sediment and surface water contamination. Exposure routes associated with sediment contamination were the same as the soil routes for the residential setting. Exposure routes associated with surface water contamination were water ingestion and dermal contact with the water. The Navy plans to add two more settings to those used in the Phase I RI. They are the office worker and the excavation worker. Both of these settings are associated with the industrial-commercial scenario. This scenario was not evaluated during the Phase I RI, but is very appropriate for a closing base that is already industrially utilized. The plan contains a conceptual exposure model, which is presented as a drawing. The work plan also describes the Phase I RI model and justifies the additional settings in the same manner presented above.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: **Jeffrey M. Paull, Regional Toxicologist** **Superfund Technical Support Section** **U.S. Environmental Protection Agency (EPA)** **To:** **Bonnie Arthur, Remedial Project Manager** **Federal Facilities Cleanup Office** **U.S. Environmental Projection Agency (EPA)** **Date:** **20 January 1995**	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
3) <u>Target Cleanup Levels</u>: It is unclear how target cleanup levels for contaminants in various media are to be determined. The document states that RBCs may be used as cleanup goals for removal actions, but does not address the question of how target cleanup goals will be established for contaminants which are not the subject of removal actions. As stated in the first comment above, we strongly recommend the use of U.S. EPA PRGs for preliminary risk screening criteria, and if applicable, to establish target cleanup goals.	**RESPONSE 3):** See response to General Comment 1.
4) <u>Chemicals of Potential Concern</u>: It would be very useful if a data table were presented summarizing the chemicals of potential concern for human health effects, much like the one presented in the Appendix for potential ecological concern. It would be even more useful if, instead of a check mark indicating detect/non-detect, the *range* of detected values in each media were presented.	**RESPONSE 4):** A table of chemicals of potential concern (COPC) and the sites they are associated with, as identified in the Final Work Plan Phase II RI/FS MCAS El Toro, has been included in the plan (Table 4-1). The number of COPCs may change after samples collected in Phase II have undergone chemical analysis.
5) <u>Site Conceptual Model</u>: We recommend including a site conceptual model, much like the block diagram shown in Figure 5-2 for the Ecological Risk Assessment, for the Human Health Risk Assessment as well. With 22 sites identified as chemical release sources, and potential exposure to over 100 chemicals through multiple routes of exposure, a conceptual model, drawn as a diagram or illustration, would greatly clarify and enhance the description and interpretation of the potential exposure pathways, transport mechanisms, and receptors.	**RESPONSE 5):** See response to General Comment 2 (Exposure scenarios and intake routes).
6) <u>Future Land Use</u>: Selection of appropriate receptors for a risk assessment is dependent on future land use, a description of which should be added to the document. If it has been previously described in the PHRA, it should be referenced, and summarized in the document.	**RESPONSE 6):** The future land use of MCAS El Toro has not yet been determined. The best possible information and current uses suggest future land use may be commercial and industrial.

Originator: Jeffrey M. Paull, Regional Toxicologist Superfund Technical Support Section U.S. Environmental Protection Agency (EPA) **To:** Bonnie Arthur, Remedial Project Manager Federal Facilities Cleanup Office U.S. Environmental Projection Agency (EPA) **Date:** 20 January 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
SPECIFIC COMMENTS	**SPECIFIC RESPONSES**
1) Objective of the Human Health Risk Assessment, Sec. 4.1, p. 4-1: The last paragraph states: "The exposure scenarios and routes as well as the default values used in the preliminary assessment will be adopted in the *baseline and streamlined* risk assessments. RBCs will also be used where applicable, particularly in the streamline risk assessment [emphasis added]. **Please explain the procedures or criteria that are to be used for determining which sites/contaminants are candidates for streamlined versus baseline risk assessments, and what criteria will be employed in the determination of applicable cleanup standards. As stated above, we discourage the use of RBCs for the streamlined risk assessments, and recommend the use of PRGs instead. If, as stated in Section 4.4.1, streamlined risk assessments are performed for only those sites/contaminants for which removal actions are to be performed, then please explain the procedures or criteria that to be used for determining which contaminants/sites are candidates for removal actions.**	**RESPONSE 1):** The intent of the risk assessment work plan is to describe the approaches that will be used to estimate risk. It describes procedures for performing baseline risk assessments that will be used with RI/FS sites and describes procedures for performing streamlined risk assessments that will be used with removal action sites. Although the results produced will be site-specific, based on the concentrations of the chemicals identified at each site and land use, the risk assessment procedures are not site-specific. The procedure used to classify sites as removal action on remedial actions are a consensus of the BCT.
2) Toxicity Assessment, Sec 4.3.2, p. 4-5: It is stated here, and in at least one other place in the document (p. 4-13) that, "Although the Department of the Navy has agreed to display the Cal/EPA Cancer potency factors (CPFs) it clearly and expressly reserves the right to reject their use at a later date if the CPFs are not *adequately supported" [emphasis added*]. Please explain the procedures or criteria that are to be used for making the scientific determination as to whether the Cal/EPA *CPFs are adequately supported.*	**RESPONSE 2):** See Response to General Comment 1 (RBCs).

Originator: Jeffrey M. Paull, Regional Toxicologist Superfund Technical Support Section U.S. Environmental Protection Agency (EPA) **To:** Bonnie Arthur, Remedial Project Manager Federal Facilities Cleanup Office U.S. Environmental Projection Agency (EPA) **Date:** 20 January 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
3) <u>Calculation of Dose, Sec. 4.3.3.4, Values Assigned to Dose Equation Parameters, Table 4-2, p. 4-11</u>: We have the following questions/comments regarding several values in the table: **<u>Intake rate, water</u>: Please explain why water intake is only a factor for the resident receptor, and not the adult worker or recreational adult or child. This assumption does not appear realistic for the playing child, with an assumed whole-body exposure to water (through recreational swimming activities).** **<u>Intake rate, air</u>: 0.83 m^3/hr seems too high for the resident child, and too low for the adult worker. We recommend values of 0.42 m^3/hr and 1.2 m^3/hr for the child (0-6 years) and adult worker (light activity), respectively.** **<u>Exposure time</u>: There is no exposure time given for the audit worker.** **<u>Exposure duration, cancer effects</u>: Why is the exposure duration not applicable to the resident child, age 0-6 years?** **<u>Exposed skin area, water</u>: Why is the whole-body exposure of the playing child, age 9-16 years (5,800 cm^2) less than that of the resident child, age 0-6 years (7,195 cm^2)?** **<u>Exposed skin area, soil/sediment</u>: The exposed skin area for the adult worker should include the arms as well as the head and hands.** **<u>Body weight</u>: The average body weight for the resident child is between 10-16 kg, not 70 kg.**	**RESPONSE 3**): As agreed in the Navy/agency/contractor meeting of March 3, 1995, a revised table of parameter default values was developed and submitted for review by Region IX and Cal/EPA. The revised values were approved by both agencies and appear in the plan.

Originator: Jeffrey M. Paull, Regional Toxicologist Superfund Technical Support Section U.S. Environmental Protection Agency (EPA) **To:** Bonnie Arthur, Remedial Project Manager Federal Facilities Cleanup Office U.S. Environmental Projection Agency (EPA) **Date:** 20 January 1995	CLEAN II Program Contract No. N68-711-92-D-4670 CTO-0059 File Code: 0306
Calculation of Dose, Sec. 4.3.3.4, P. 4-12: Please provide an explanation for the assumption that the playing child is exposed to surface water and sediment, but not soil.	

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: Roxy Barnett, TSS Regional Biologist U.S. Environmental Protection Agency (U.S. EPA) **To:** Bonnie Arthur, Remedial Project Manager Federal Facilities Cleanup Office U.S. Environmental Projection Agency (EPA) **Date:** 5 January, 1995	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
GENERAL COMMENTS **I [R. Barnett] would recommend a technical meeting to address the following comments prior to finalization of the report.**	***GENERAL RESPONSES***
1) Throughout this document there is a continued reference to the CH2M Hill screening ecological risk assessment document (Pages 5-4 5.5.1, 5-12 5.5.1.4, 5.5.2, 5-18 5.6.3 and 5-15 5.5.4). This document has not been formally reviewed, therefore assumptions made by CH2M Hill may not concur with Region IX performance standards. The discussions regarding the receptor selection and COCs must be site specific. Please revise after discussions with Region IX Technical Support Staff.	**RESPONSE 1):** The screening ecological risk assessment performed during the Phase I RI will only be used as a source document for the Phase II ecological risk assessment. The Phase II predictive model risk is based on U.S. EPA Region IX and DTSC guidance. A habitat assessment was not performed last October 1994, by U.S. EPA Region IX, as initially scheduled for MCAS El Toro, and therefore site-specific information was not available for inclusion into the plan. A habitat assessment will be conducted as part of the predicative ecological risk assessment. Criteria for the selection of COPECs for each site has been included in the predicative ecological risk assessment work plan.
2) The methods used for the selection of receptors and COCs within the work plan are generic. The selection of receptors should be approved by U.S. EPA Region IX prior to initiation of the ERA.	**RESPONSE 2):** The selection of receptors and COPECs will be identified in a memorandum for approval prior to initiation of the ecological risk assessment.
3) The discussion of toxicity bioassay is very generic (page 5-22). The selection of bioassay should be site specific. The selection of bioassay methods should be approved prior to initiation of the studies.	**RESPONSE 3):** The discussion of the toxicity bioassay was intended to be generic. It was presented in the plan only to illustrate the types of assays that may be required to reduce uncertainty and/or validate data obtained in the predictive ecological risk assessment. The predictive ecological risk assessment plan was initially prepared only for the Phase I predictive ecological risk assessment as outlined in the Department of Toxic Substances Control (DTSC) guidance document (DTSC 1994). The predictive ecological risk assessment will be based mainly on comparisons of doses or concentrations of COPECs to chemical-specific criteria, using surrogate species when appropriate. If uncertainties are too high or if toxic effects may be occurring, then a confirmatory tier of analyses may be required using bioassays.

RESPONSE TO COMMENTS
Risk Assessment Work Plan
MCAS El Toro, California

Originator: **Roxy Barnett, TSS Regional Biologist** **U.S. Environmental Protection Agency (U.S. EPA)** **To:** **Bonnie Arthur, Remedial Project Manager** **Federal Facilities Cleanup Office** **U.S. Environmental Projection Agency (EPA)** **Date:** **5 January, 1995**	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0059** **File Code: 0306**
SPECIFIC COMMENTS	***SPECIFIC COMMENTS***
1) **Toxicity Data (Page 5-23): The use of the LD50 is not appropriate for assessing site risk. Loss of 50% of a population is not acceptable. This issue should be discussed with the EPA and State representatives.**	**RESPONSE 1):** The Navy agrees that the use of the dose that is lethal to 50 percent of the test organisms (LD_{50}) estimate is not appropriate for assessing chronic effects; however it is appropriate for assessing acute effects. The risk assessment will utilize No Observed Adverse Effect Levels (NOAELs) and Low Observed Adverse Effect Levels (LOAELs) with appropriate uncertainty factors and/or modifying factors to assure chronic effects. The selection of NOAELs and LOAELs will be presented to Region IX TSS in a technical memorandum for discussion and approval prior to the initiation of the risk assessment.
2) **Ecological Data (Page 5-23): The CNND data and WHR system must be used with care, as this data may not be site specific. An emphasis must be placed on the use of site specific data! This issue should be discussed with EPA and State representatives.**	**RESPONSE 2):** This comment has been noted.
3) **Risk Characterization (Page 5-25): Quote page 5-25 "Ecological surveys can establish that adverse ecological effects have occurred." Clarify how surveys define ecological effect. What is meant by "ecological effect?"**	**RESPONSE 3):** Ecological surveys can provide some initial information on whether ecological receptors have been impacted. For example an ecological survey may identify stressed vegetation or the absence of or avoidance of ecological receptors in area that has been historically been used by receptors. However, ecological surveys by themselves do not provide the definitive certainty that an ecological receptors is or has been impacted by a chemical stressor. Ecological surveys in combination with chemical and toxicological information can best describe whether an impact associated with chemical levels in media are occurring or not.
4) **Information Sources (Page 5-23): The information sources discussed are for the most part human health or aquatic based data. Terrestrial receptors dominate the site, therefore, further resources must be developed for this facet of the assessment, such as the Wildlife Society Data Base.**	**RESPONSE 4):** Additional information sources will be used, such as the Wildlife Society Data Base and Phototoxy, for dose response information.

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GENERAL COMMENTS	***GENERAL RESPONSE***
1) Human Health Risk Assessment: The work plan is acceptable with a few minor changes. We note, however, that the subject of basewide risk assessment is not addressed in this work plan. It will eventually be necessary to determine additive risk, if any across OUs.	**RESPONSE 1):** This comment has been addressed in the plan.
2) Ecological Risk Assessment: The work plan is not acceptable. The Department and U.S. EPA Region IX have agreed to recommend that predictive risk ecological risk assessments at military facilities in California be based mainly on comparisons of doses or concentrations of chemical of potential ecological concern (COPEC) to chemical-specific toxicity criteria, using surrogate species where appropriate. If this approach suggests that toxic effects may be occurring or if uncertainties are unacceptably high, the Department and U.S. EPA Region IX have agreed to recommend moving to another, confirmatory tier of analysis, sometimes including field measurements, bioassays for toxicity, or analyses of residues of contaminants in tissues. This toxicity-based approach is not used in the current work plan. A previous screening ecological risk assessment for this base used the recommended toxicity-based approach, but results from that assessment do not appear to have [been] used in designing this work plan. **The current work plan states that characterization of ecological risks will be based on an interpretation of "the ecological significance of the observed or predicted ecological effects resulting from chemical releases", such interpretation to be based on chemical analyses, ecological surveys, and toxicity tests. We understand the role of chemical analyses, but the work plan gives no specific information on which surveys will be conducted or where or for what purpose, which**	**RESPONSE 2):** The plan has been changed to reflect a toxicity-based approach using a hazard quotient method (DTSC 1994: Phase I Predictive ecological risk assessment). See response to General Comment 3 U.S. EPA.

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toxicity tests will be conducted on which media or organisms, or how the ultimate interpretation will be performed. Furthermore, no rationale is given for how decisions will be made for the necessity of these data. No work plan can be complete without much greater detail on the data to be collected and how the interpretation will proceed. **We agree that bioassays are most useful to characterize toxicity to invertebrates and plants, given the difficulties of applying what few data are available in the scientific literature to the species of interest at MCAS El Toro. However, the Department and U.S. EPA Region IX have concurred that potential toxicity to higher vertebrate species, i.e. birds and mammals, is best assessed in the predictive phase by estimating intakes for complete exposure pathways and comparing these to estimated no-observed-adverse-levels (NOAELs) derived from the scientific literature.**	
SPECIFIC COMMENTS **1) Sec. 3.2, p. 3-1: The comparative adjectives "thicker", thinner", and "lower" are used here. To what is this aquifer being compared?**	***SPECIFIC RESPONSES*** **RESPONSE 1):** This comment has been addressed in the plan.
2) Habitats and Wildlife, Sec. 3.5, p. 3-3: Western screech owls, great horned owls, and rufous-sided towhees are listed here as occurring at MCAS El Toro, but they are missing from the catalogue in Table 5-2, Please reconcile this.	**RESPONSE 2):** The Western screech owl, Great horned owl, and rufous-sided towhee will also be listed in Table 5-2 (which is now Table A-8 in the plan).
3) Exposure Setting, Sec. 4.3.3, p. 4-3: Because MCAS El Toro is a closing base, it is not appropriate to limit assessment to the industrial or occupational setting anywhere on the base. Risks and hazards in the residential setting need not be used as the basis for risk management decisions, but they must be presented in all cases.	**RESPONSE 3):** The purpose of Section 4.2.3 is to provide the reader with a brief overview of an exposure assessment. The actual procedures are described in Section 4.3.3. In Section 4.3.3 the Navy states that risk will be calculated for the residential, industrial, and recreational settings depending on potential reuse.

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4) Tentatively Identified Chemicals (TICs), Sec. 4.3.1, p. 4-4: We recommend two criteria for deciding whether to include TICs as chemicals of potential concern (COPC). First, if the TIC is a chemical that may reasonably be expected to occur at the site, it should be included. Second, if the total mass of detected TICs forms a large proportion of the total detected chemicals in a sample or at a site, then further analysis or further characterization is required to resolve the importance of the TICs with regard to risk.	**RESPONSE 4):** DTSC's recommendation for addressing TICs has been incorporated into the plan.
5) Blank Contamination, Sec. 4.3.1, p. 4-4: The first bullet should refer to commonly encountered laboratory contaminants only, such as acetone, dichloromethane, toluene, and phthalates.	**RESPONSE 5):** DTSC's recommendation based on EPA guidelines has been incorporated into the plan.
6) Cancer Potency Factors (CPFs), Sec. 4.3.2, p. 4.5 Please use the attached list of CPFs, recently updated by Cal/EPA. Regarding quantification of cancer risk (Sec. 4.3.4.1, p. 4-12), we encourage the Navy to use the higher of the CPFs published by Cal/EPA or U.S. EPA in those cases where the agencies have published differing values. Presenting just one set of estimates based on the more conservative values has been acceptable to the agencies at other bases in California and it will save time and resources.	**RESPONSE 6):** The plan was written before EPA and Cal/EPA agreed that cancer risk estimates should be based on Cal/EPA CPFs for eight chemicals and that EPA CPFs should be used for the other carcinogens. The plan has been revised to reflect this recent development. Cal/EPA CPFs will be used with cadmium, hexavalent chromium, tetrachloroethylene, benzo(a)pyrene, chrysene, dibromodichloropropane, lead and benzo(k)fluoranthene. This revised procedure will produce one set of risk estimates rather than two as originally planned.
7) Basewide Risk Assessment, Sec. 4.3.3, p. 4-6, and Table 4-1: We previously reviewed a baseline human health risk assessment for OU-1 at MCAS El Toro, in which risks and hazards were estimated for exposure to regional groundwater. These risks and hazards could be additive with those from other OUs for some receptors. Please prepare and submit an addendum to this work plan detailing how basewide risk will be addressed for human receptors, including risks and hazards which overlap OUs.	**RESPONSE 7):** As agreed in the BCT meeting of March 3, 1995. The Navy will obtain a copy of the basewide risk assessment report prepared by Kleinfelder for the Sacramento Army Depot, review it, and prepare a basewide risk assessment work plan based on the procedures used on the Depot. The plan will be submitted as an addendum to the risk assessment work plan.

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8) Table 4-2, p. 4-11: We assume that "TBD" in the columns for the recreational scenario means "to be determined." Consultation with the Department and U.S. EPA Region IX on this matter should be completed before the final draft of the work plan is prepared.	**RESPONSE 8):** As agreed during the above-mentioned meeting, a table of revised default values identifying the receptors the Navy plans to use to estimate risk was prepared and submitted to U.S. EPA Region IX and Cal/EPA for approval. The revised table of value was approved by both agencies.
9) Guidance Documents for Ecological Risk Assessment, Sec. 5.3, p. 5-2: In addition to the 15 referenced to U.S. EPA guidance for the conduct of ecological risk assessment, we recommend that the Navy use recently published guidance from this Department as well: • ***Draft Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview*, August 1994** • ***Draft Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part B: Scoping*, September 1994.** **Although these draft documents were produced for public comment, we encourage their use.**	**RESPONSE 9):** The two draft guidance documents Draft Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview and Part B: Scoping (DTSC 1994) will also be used to conduct the predictive ecological risk assessment for MCAS El Toro.
10) Assessment Approach, Sec. 5.4, pp. 5-3 ff.: This is not an approach. It is a list of techniques. An approach includes specific plans for where each technique will be applied. The work plan is the appropriate vehicle for presenting which such measurements will be made and how they will be used. Also, trapping of small animals is more properly a Tier III activity, not Tier II.	**RESPONSE 10):** This section has been be modified to include information regarding where the techniques will be applied and how they will be used to evaluate potential impacts to ecological receptors. Sample locations, sampling methodology, and sample analyses are fully described in the Final Field Sampling Plan (FSP) (Bechtel 1995). As discussed in August 1994, with U.S. EPA Region IX TSS, technical memoranda will be prepared to fully describe these activities prior to initiation of the risk assessment.
11) Selection of COPEC, Sec. 5.5.1.2, p. 5-5 and Table 5-1: In addition to listing all chemicals detected, as shown in Table 5-1, it is necessary to layout out criteria for deciding which COPEC will be included or excluded for sites, habitats, or pathways. The guidance shown in	**RESPONSE 11):** These section has been modified to include criteria for the selection of COPECs for MCAS El Toro on a site specific basis as outlined in DTSC (DTSC 1994) and U.S. EPA (U.S. EPA 1989) guidance documents. Although U.S. EPA guidance is designed for human health, the same guiding

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Comment 9 above is useful in this regard, but the method must be laid out in the work plan.	principles can be used to select COPECs for ecological receptors, keeping in mind specific differences that separate humans from ecological receptors.
12) Ecological Receptors, Table 5-2, pp. 5-8 ff.: We find it striking that burrowing owls are not included in Table 5-2. If this species is truly not present, then MCAS El Toro is the first instance known to us of a military aircraft facility where this species has not been observed.	**RESPONSE 12):** Burrowing owls will be added to the list of species.
13) Bioavailability, Sec. 5.5.2, p. 5-13: This topic is mentioned several times in the work plan, but no description is presented for how such measurements will be made or how they will be used. If any studies on bioavailability of metals from soils or sediment are undertaken, we strongly recommend that HERS be consulted with regard to test protocols and interpretation. We have sound data on bioavailability very difficult to use at other sites, principally because of variations from sample to sample in the anionic species associated with the metal(s) of interest.	**RESPONSE 13):** Bioavailability will not be qualitatively addressed in the predictive ecological risk assessment work plan. However, bioavailability may become more important if results from the predictive ecological risk assessment show ecological receptors have been impacted. If so, Human and Ecological Risk Section (HERS) will be consulted with regard to test protocols and interpretation for a potential validation study to reduce uncertainty and/or develop more site-specific information.
14) Soil Gas, Sec. 5.5.2, p. 5-13: We do not know what is meant by a "soil gas investigation." We agree that the air space of burrowing animals might contain volatile chemicals. We recommend direct sampling of that air space with probes as the best method for determining exposure point concentrations. Bagged samples could then be analyzed by conventional gas chromatography.	**RESPONSE 14):** Air space in burrows will sampled for VOCs at Landfill Sites 2 and 17. The analytical results will be used to determine exposure point concentrations. For site specific information on these surveys see the Field Sampling Plan for the Phase RI/FS, MCAS El Toro.
15) Assessment and Measurement Endpoints, Sec. 5.5.3, pp. 5-13 ff.: The lack of specificity in this section makes the work plan for the ecological risk assessment unacceptable. The specific measurement endpoints must be identified with a clear description of how each one is related to an assessment endpoint. Indicator or representative species should be explicitly identified, together with a discussion of how these species relate to any special status species of interest. The	**RESPONSE 15):** This section has been revised to be more site-specific with respect to assessment endpoints, and indicator or representative species following a review of the Conservation Plan (Dames and Moore, 1995).

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Department believes strongly that effects on individuals of special status species must be assessed, while populations are of greater interest for other, less threatened species.	
Please supply detailed information for each area of the base (or generically, by type of habitat): • **complete pathways,** • **COPEC for each complete pathway,** • **species exposed in those pathways,** • **toxicity predicted for that pathway and species in the screening assessment,** • **data gaps in the pathway, if any** • **measurements needed to fill data gaps, representative or surrogate species to be used for the measurement,** • **how the measurements will be made, and** • **how to interpret the measurements.** **By way of example, it is stated in Section 5.6.3.3 that chemical concentrations in surface water will be "more adequately characterized" than was the case in the screening risk assessment. This statement is unacceptable vague. An appropriate statement would include the "why, where, when, and how often" that constitutes proper characterization of contaminants in surface water.**	Because the habitat assessment has not been completed and the Phase I RI screening ecological risk assessment relied more on literature, many of these details can not be provided in this plan.

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16) Conceptual Site Model, Figure 5-2, p. 5-16: Burrowing species can come into contact with subsurface soils. Therefore, direct contact with subsurface soils represents another exposure point and should be shown in the diagram.	**RESPONSE 16):** Figure 5-2 Exposure Routes and Receptors has been modified to include direct contact with subsurface soils.
17) Chemical-Specific Toxicity, Sec. 5.6, p. 5-17: It is stated that the results "of the exposure assessment will be combined with chemical-specific toxicity information," but we could not find where this combination is described in the work plan. Similarly, mention is made in Section 5.7.3.2 of NOAELs and lowest-observed-adverse-levels (LOAELs), but we could not find a description of how these would be used in the sections on risk characterization. **We recommend that the chemical-specific toxicity for vertebrate species be characterized under the rubric of the hazard quotient. Intakes from all pathways should be summed and the total dose compared to the most appropriate NOAEL derived from searching the scientific literature. We strongly recommend that the Navy consult with HERS on the appropriateness of the toxicity criteria before they are applied.** **In Section 5.6.4 we find mention of modeling body burdens of contaminants through trophic levels ("food web analysis"). We strongly recommend against this technique for characterizing chemical-specific toxicity at this phase of the ecological assessment, because comparative data are extremely few. The toxicological literature contains few examples of chemicals for which data on body burdens are related to toxic effect. We know of only two, cadmium and DDT-like insecticides, with adequate data to describe a body-burden-to-toxic-effect curve, the counterpart to the dose-response curve.**	**RESPONSE 17):** The plan has been modified to show that toxicity will be characterized using a hazard quotient method where species-specific daily intakes are compared with appropriate toxicity information (NOAELs or LOAELs). Specifically: the exposure assessment section shows how the daily intakes are estimated using species-specific exposure assumptions; the biological effects section assessment section shows the derivation of dose-response criteria from data bases and/or scientific literature; and the risk characterization section shows how the information from the previous two sections are combined to produce hazard quotients. Intakes from all pathways will be summed and the total dose will be compared to the most appropriate toxicity information. A technical memorandum will be presented to HERS regarding the appropriateness of the toxicity criteria before initiation of the risk assessment.

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18) (There is not a COMMENT 18.)	**RESPONSE 18):** No response.
19) Indicator Organisms, Sec. 5.6.4.2, p. 5-20: The work plan should name the representative or indicator species to be assessed. If special status species are present or potentially present in the pathway, the rationale for the selection of the indicator species should be clearly delineated.	**RESPONSE 19):** The plan will designate the representative or indicator species that will be assessed in risk assessment for each site on MCAS El Toro, including special-status species.
20) Exposure Equation, Sec. 5.6.4.3, p. 5-20: The equation shown for estimating body burden is not acceptable. The construction shown is a calculation of rate of intake, with a single factor ("AE") to account for the combination of absorption and depuration. We have never seen these latter two processes reduced to a single constant. We are extremely doubtful that such a construct is accurate or useful. In fact, we believe it to be an oversimplification which masks biological processes and introduced large uncertainties.	**RESPONSE 20):** This equation will not be used in the ecological risk assessment. The equation presented in the DTSC guidance document (DTSC 1994) will be used to estimate species-specific daily intakes.
21) Bioassays vs. Literature Values, Sec. 5.7.1, pp. 5-21 ff.: The Department and U.S. EPA Region IX reached agreement in January 1994 on how to approach this difficult subject. In general, the approved approach is to use chemical-specific toxicity derived from the literature as denominators in the hazard quotient. Bioassays and field measurements have their greatest value when toxicity is predicted and risk managers require verification or when uncertainties are so large that even the predicted absence of toxicity cannot be readily be accepted. Note well that the purpose of field measurements is to resolve uncertainties remaining after the application of predictive techniques. Three examples are illustrative: • **Literature values are available for most common contaminants to predict toxicity in mammals and birds, so hazard quotients**	**RESPONSE 21):** Since the risk assessment will utilize the hazard quotient method, chemical-specific toxicity criteria derived from literature (using appropriate uncertainty factors to modify NOAELs and LOAELs if required) will be used as the denominator in the hazard quotient. Bioassays (other those already proposed at Sites 2 and 17) will only be used to verify predicted toxicity resolve uncertainties remaining after the use of predictive techniques with the approval of the regulatory agencies and only with a validation study.

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predict adequately in most cases. • **Data are scanty on toxic effects of specific chemicals in invertebrates. Therefore, toxicity bioassays are indicated when invertebrate species are potentially exposed.** **Estimates of intake through trophic levels might suggest potential toxicity to predator species. Tissues of either prey items or the predators themselves could be analyzed in an attempt to verify the threat.**	
22) <u>Toxicity Bioassays, Sec. 5.7.2, p. 5-22</u>: While some of the assays listed in this section could indeed be ideal for illuminating assessment endpoints at MCAS El Toro, we are unable to comment on the appropriateness of any of them without more specific information, such as the relationship of a particular test to an identified assessment endpoint. The application of any bioassay can only be understood and evaluated in the context of the data gap one is trying to fill. Data gaps are nowhere identified in this plan. In general, we think it likely that bioassays are best applied to those areas there the literature is least informative, that is for predicting toxicity to plans and invertebrates. **This section seems to emphasize the food chain pathway to the exclusion of all others, which is not acceptable. Organisms in each exposed trophic level could experience direct toxicity and this must not be overlooked.**	**RESPONSE 22):** Toxicity bioassays will only be used for verification/validation purposes under a validation study with the approval of regulatory agencies. All exposure pathways, including direct exposure to chemicals in media, will be evaluated in the predictive ecological risk assessment.
23) <u>Sources of Toxicity Information, p. 5-23</u>: We recommend a source of information in addition to those shown in this section. The Agency for Toxic Substances Disease Registry has produced a large number of monographs for individual chemicals, classes of chemicals, or mixture.	**RESPONSE 23):** The Agency for Toxic Substances Disease Registry (ATSDR) documents will also be consulted in addition to the other sources of information for pertinent toxicity information.

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These monographs often contain information organized exactly according to what the risk assessor seeks for developing allowable exposure criteria.	
24) <u>Ecological Surveys, Sec. 5.8.1, pp. 5-24 ff.</u>: The authors state that three types of information will be used to identify "ecological threats": chemical analyses, ecological surveys, and toxicity tests. Ecological threats are causes, while ecotoxicities are effects. Chemical analyses identify the presence or absence of substances which might be causes of ecotoxicity. Ecological surveys attempt to identify effects. Toxicity tests can only establish the critical link between cause and effect if they use samples of environmental media representative for the putative causes (contaminants) and if they test appropriate endpoints (species) for the ecotoxicity of interest. With the exception of the need to analyze soils in the surficial 12 inches for volatile chemicals, this work plan presents no specific recommendations for chemical measurements. No methods or locations are described for ecological surveys. No instances are noted in which data from toxicity tests will answer critical questions. Thus, the work plan cannot achieve its stated goal of characterizing ecological risks using a weight-of-evidence approach as described in this section.	**RESPONSE 24):** Three types of information will be used to characterize potential impacts to ecological receptors at MCAS El Toro using a hazard quotient method: chemical; ecological; and toxicological. Chemical analyses will provide information whether chemical substances associated with activities at MCAS El Toro are present in environmental media that may be contacted by ecological receptors. Ecological surveys will provide information whether receptors are present that may be exposed to chemicals of concern in environmental media either directly (i.e. soil ingestion) or indirectly (i.e. ingestion of chemicals in food items), or a combination of both. Toxicological information will provide dose-response information for the development of chemical toxicity criteria. By using the general daily uptake equation presented in the DTSC guidance document (DTSC 1994), chemicals levels in media of interest will be combined with species-specific uptake assumption to estimate daily intake. The daily uptake will be compared to chemical-specific toxicity criteria using a hazard quotient method to determine potential hazard. The plan provides the necessary information for site-specific chemical, ecological, and toxicological data required for the predictive ecological risk assessment. For details on field sampling methods, locations, and chemical analyses see the Field Sampling Plan for the Phase II RI/FS MCAS El Toro.