

CTO-0059/000170

CLEAN II
Interoffice Memorandum

To: David Cowser Bechtel

Subject: Meeting Minutes for the Progress Meeting Date: 12-13 October 1994
Phase II RI/FS Work Plans
MCAS El Toro, CTO-059 From: Tim Latas

Of: Kleinfelder

Copies to: Jason Ashman SWDIV
John Kluesener Bechtel
Dante Tedaldi Bechtel
Pat Brooks Kleinfelder
Pat Wiegand Brown and Caldwell
Katrina Lyons Kleinfelder
Sherrill Beard CalEPA
Juan Jimenez DTSC
Bonnie Arthur EPA
Larry Vitale RWQCB
Dave Crawley SWDIV
Ginny Garelick SWDIV

MEETING DATE: 12-13 October 1994
MEETING TIME: 1000-1630, 0900-1430
ATTENDEES: See Attached Sheets

AGENDA: Provided in a FAX from Jason Ashman on October 4, 1994

Introduction - Purpose and Objectives

Jason Ashman of SWDIV presented a general introduction to the RI/FS Update Meetings held on October 12 and 13, 1994 at Marine Corps Air Station El Toro (MCAS El Toro) Officer's Club in Irvine, California. The October 12 Update Meeting was held to discuss the specific approaches and sampling strategies for the implementation of four RI/FS activities at MCAS El Toro. The October 13 Update Meeting was held to discuss the general approach for the Work Plan, Field Sampling Plan (FSP), and the Quality Assurance Project Plan (QAPP). The October 13 meeting was also held for an RFA update, to discuss the result of the CH2MHill Soil Gas Survey, and to schedule additional meetings. The information presented and comments submitted during the meetings are to be used in preparing the Work Plan, FSP, and QAPP. These plans are scheduled to be submitted to the reviewing agencies on December 9, 1994. On October 12, Pat Brooks of Kleinfelder, Katrina Lyons of Kleinfelder, and Pat Wiegand of Brown and Caldwell presented briefings on the RI/FS approaches for the VOC Source Areas (Sites 24 and 25), Landfills (OU-2 Sites), and OU-3 Sites, respectively. Karnig Ohannessian of Kleinfelder presented a briefing on Removal Actions and EE/CAs.

Jason Ashman opened the meeting on October 12 with introductions of all those present. An opening statement was presented focusing on the need for team collaboration. It was emphasized that many new representatives are now involved with the RI/FS efforts at MCAS El Toro, however, the goal of improving the quality of the project as well as improving cost and time efficiency should remain clear. Mr. Ashman also stated that a possible dilemma may develop by introducing new representatives and their ideas while simultaneously attempting to balance the emphasis put on past information and methods with the emphasis on future ideas. The problem of inconsistency among regulatory comments on past reports was briefly discussed and the need to decide which comments are significant was also addressed. Mr. Ashman concluded this introduction with the reiteration that the information provided by CH2MHill is significant, but the new representatives should continue striving for improvements.

Discussion Points

1. David Cowser stated that the Bechtel Team is currently working on the Work Plan, FSP, and QAPP and that we are incorporating the December 1993 comments from the regulatory agencies. Mr. Cowser stressed that the comments made by the agencies should represent the agencies' positions and these should not change despite personnel change.
2. Sherrill Beard questioned who was responsible for the Data Quality Objectives (DQOs), the BCT team or the contractors. Ms. Beard also questioned if there was enough time to discuss this issue at the meeting or if this meeting was for specifics only. Jason Ashman responded by requesting to keep discussion of more general things to a minimum due to time constraints.
3. Bonnie Arthur requested the opportunity to discuss more general issues and stated her intention for the meeting was to be more of working meeting. She expressed concern regarding the transition and questioned who was performing the day to day work on the project (ie. quarterly monitoring).
4. John Dolegowski reiterated CH2MHill's commitment to aid the project and requested the opportunity to review the DQOs and Work Plan. Mr. Dolegowski expressed concern that there was not enough time to incorporate enough detail into these two projects.

The meeting agendas were discussed and a few changes were made to the October 13 meeting agenda. These changes included:

- The Risk Assessment Comment Resolution was canceled
- David Cowser requested one hour in the morning to cover the general approach of the Workplan, FSP, and QAPP
- Jacques Lord's presentation of the RFA was condensed into one hour
- The Soil Gas Survey Comment Resolution was moved to the morning
- The El Toro Project Team Schedule was moved to the afternoon and condensed
- Time was spent in both the morning and the afternoon scheduling additional meetings for the CTO Leaders and the Agencies to discuss the specific sites

Additional items discussed during the introduction were the RAB meeting which was held October 12, 1994 from 1900-2100. It was also disclosed that the VOC source areas and the landfill projects were awarded by the Navy. The contract for the OU-3 sites has not yet been awarded, however Jason Ashman stated that this was due to lack of funding at the present time, but it should be assumed for scheduling purposes that the contract will be awarded.

EE/CAs and Removal Actions

Karnig Ohannessian gave a presentation on Early Removal Action Sites and EE/CAs. Handouts were distributed illustrating the EE/CA Outline, upcoming schedule, site characterization process, removal action objectives, and removal action alternatives. The following information was presented including a discussion explaining the difference between sites for which an EE/CA could be used and sites which would require RI/FS activities.

- The EE/CA proposed to be used for specific sites will include the following information:

- 1) A Site Characterization including site description and background, previous removal actions, source, nature, and extent of contamination, analytical data, and streamlined risk evaluation
 - 2) Identification of Removal Action Objectives containing statutory limits on removal actions, determination of removal scope, determination of removal schedule, and planned remedial activities
 - 3) Identification and Analysis of Removal Action Alternatives focusing on effectiveness, implementability, and cost
 - 4) Comparative Analysis of Removal Action Alternatives
 - 5) Recommended Removal Action Alternatives
- Site Characterizations to be included in the EE/CAs will involve the following:
 - 1) Investigation of a unit or strata in a systematic or judgmental manner
 - 2) Soil sampling/ field screening with explanations for using judgmental sampling or grid sampling. The sampling strategy will also make recommendations for confirmation sampling or further sampling in association with the RI/FS. The sampling process may redefine the boundaries of some of the sites.
 - 3) The implementation of an extended site investigation (ESI) or remedial investigation (RI) will include the following:
 - a) Use immunoassay and mobile lab for field screening
 - b) Attempt to determine lateral and vertical extent of contamination
 - c) Build uncertainties into the strategy for cost estimation and compare data to the assumptions
 - d) Define extent as excavation proceeds
 - e) Define scope and objective
 - Removal Action Objectives involves a streamline risk evaluation utilizing risk based concentrations (RBCs), modified RBCs, and Principal Remedial Goals (PRGs), as well as defining the removal scope to surface soil or shallow surface soil
 - Removal Action Alternatives presented include off-site thermal desorption, on-site thermal desorption, soil washing, bioremediation cells, in-situ bioremediation, soil vapor extraction, incineration, landfill, and treatment trains

Discussion Points:

1. One of the handouts presented by Karnig Ohannessian included a chart illustrating the different units associated with each site and what type of strategy would be used at each site. The chart showed that each site may have a different EE/CA due to insufficient data for some of the sites. Karnig also explained why the term strata had been changed to unit as some of the boundaries for the sites had changed. This was due to an assumption made that the sites were not homogeneous and the extent of contamination was not known for all sites.
2. Mr. Ohannessian stated that due to discrepancy of data, three different types of EE/CAs may be submitted: 1) one in which an ESI is necessary, 2) one in which an ESI is not necessary, and 3) one which suggests the site should be included in the RI/FS Work Plan and treated with the OU-3 sites.
3. The scope of work for several of the sites was discussed as excavating contaminated soil. It was presented that this process was the most inexpensive solution, but only possible if the Phase I data was sufficient.
4. A question was addressed as to why the list was smaller than in the original Phase I study. It was stated that some sites were eliminated from the early removal action list due to contractual reasons.
5. Mr. Ohannessian stated that the CLEAN II team is planning to submit 8 EE/CAs. Submittal will begin with two EE/CAs on November 4 and continue with two EE/CAs submitted every week following.
6. The question was raised and answered that each site will only have one EE/CA no matter how many units are associated with the site.
7. A discussion regarding the sampling ensued. Mr. Ohannessian stated that the majority of extended sampling will be performed through the use of a systematic grid with some judgmental sampling incorporated if necessary. It was also reiterated that some sites will be treated in the RI/FS OU-3 activities if such additional sampling was required.
8. Mr. Ohannessian initiated a discussion regarding confirmatory sampling. He stated that it would be used to define the extent of contamination during excavation through field screening methods. This confirmed a question that some sampling and excavating would be performed simultaneously.

9. It was stated that some contingencies would be included in the EE/CA in case of discovery of an unexpected or unknown contaminant. Mr. Ohannessian emphasized that if unexpected contamination appeared, it would be necessary to stop the process and re-asses the methods used in the removal action.
10. John Kluesener questioned that if the field screening methods were not searching for other contaminants, how would one identify additional contamination. Mr. Ohannessian answered him that this would not present a problem in areas where the data was sufficient. However, this may occur in the sites included with the OU-3 sites and additional testing or visual or odorous observation may detect other contaminants during field inspections.
11. Sherrill Beard questioned for which analyses would the additional samples be tested. Mr. Ohannessian answered that this would be outlined in the RI/FS Work Plan for OU-3 sites. The dichotomy of the sites was again discussed and it was explained that all the sites would be included in the RI/FS Work Plan under the OU-3 sites. However, if the EE/CA stated that there was sufficient information to perform an early removal action, and the EE/CA was approved by the agency, then the EE/CA would be followed. However, if the EE/CA recommended additional RI/FS work, or if the EE/CA was not approved by the agency, then the site would be included in the OU-3 sites and would be treated under the RI/FS Work Plan.
12. Bonnie Arthur expressed concern regarding the possibility of investigation by excavation. She questioned how information would be communicated to the regulators during the investigation. She requested that decisions regarding risk based concentrations involve the regulators and their risk assessors. Juan Jimenez concurred with this concern and requested a meeting with to discuss these issues after the EE/CAs were approved.
13. Dante Tedaldi stated that if RBCs were to be used, then PRGs would not be used.
14. A discussion began regarding the Removal Action Alternatives. Mr. Ohannessian stated that considerations were still being made regarding thermal desorption and/or bioremediation. The question was raised as to whether the thermal desorption unit used for Tustin could be used at El Toro. Chuck Elliott questioned the possibility of disposing the soil into the landfills at MCAS El Toro stating that it would be feasible if the landfills were going to capped irregardless. Sherrill Beard agreed that this option needed to be studied further.
15. Bonnie Arthur expressed concern regarding the RBC strategy. Ms. Arthur stated that she may request additional review time for a toxicologist reviews. Mr. Ohannessian said he did not anticipate any problems in this area as the information from CH2MHill on this subject was extensive.
16. Chuck Elliott initiated a discussion regarding the pesticides at Site 2. He cited a problem with the field detection limits as the detection limit is higher than the PAH concentrations. Dante Tedaldi replied that the laboratory will need to perform a few modified analyses to illustrate the concentrations.

Action Items:

1. Karnig Ohannessian will look into further possibilities of either landfilling the excavated soil or sharing the thermal desorption unit with MCAS Tustin.

Phase II RI/FS Sampling Strategy for the VOC Source Area

Pat Brooks presented a discussion on the proposed sampling strategy for the VOC Source Area (Sites 24 and 25). Handouts were distributed with an outline of the presentation and a map of the VOC Source Area soil gas survey information and groundwater concentration contours for TCE. A schedule for performing the field work was also included. The primary goals of the RI/FS strategy is to identify and characterize the nature and extent of the contamination and to collect sufficient data to support the remedial decision making. The presentation outlining the proposed strategy consisted of the following:

- Incorporating the regulatory comments into the VOC source area scope of work by utilizing the DQO process to streamline the scope of phase II RI and optimize the sampling strategy by:
 - 1) Identify criteria that would affect lateral stratification of contaminants
 - 2) Use Field screening techniques to reduce the number of “non detect” laboratory results

- 3) Incorporated previous data into work plan including aerial photographs, employee interviews, VOCs detected in soil samples, VOCs detected in soil gas, and VOCs detected in groundwater
 - 4) Extend the characterization of VOCs in soil and soil gas to the water table
- The stratigraphic investigation will focus on identifying regional stratigraphic traps and migration pathways and will include 8 mud rotary borings at a depth of 120 to 200 feet using continuous soil sampling and geophysical logging utilizing resistivity, spontaneous potential, and gamma
 - Identifying shallow and intermediate depth stratigraphic traps and migration pathways will focus on locating sampling points for soil gas characterization. This will utilize 75 cone penetrometer tests at depths of 0 to 50 feet and will include lithologic logging and identifying sand and clay lenses
 - Completing the soil gas characterization at an intermediate depth using CPT will be performed by obtaining 175 soil gas samples at depths from 0 to 50 feet. These will be taken from areas surrounding Buildings 296, 297, 312, 324, 655, the drop tank area, tarmac, near Site 8, and Agua Chinon
 - Completing the deep soil gas characterization using hollow-stem auger borings will include 60 soil gas samples at a depth of 50-120 feet. These locations will be placed to connect the shallow, intermediate, and deep soil gas plumes to the groundwater plume
 - Characterizing the nature and extent of VOC contamination in the subsurface soil will include the following:
 - 1) 8 mud rotary boring continuously sampled (for field screening and lithology only)
 - 2) 37 hollow-stem auger borings, 19 of which will be continuously sampled, 18 of which will be used to collect drive samples every 5 feet. These wells will be used to install vapor extraction wells or soil gas piezometers based on VOCs detected in the soil samples
 - 3) 12 air rotary borings from which drive samples will be collected every 5 feet. These will be used to install 10 monitoring wells and 2 sparging wells
 - 4) 20 backhoe test pits from which grab samples will be collected based on field screening
 - 5) 10 hand auger borings from which grab samples will be collected based on field screening
 - Completing the vertical characterization of VOC-impacted groundwater near wells 09_DBMW45, 22_DBMW47, and 08_DGMW74 will include:
 - 1) Drilling up to three wells to 250, 350, and 400 feet below ground surface. These wells will be installed using air-rotary/casing driver drilling method to reduce potential cross contamination between water table aquifer and deeper saturated zones. If VOCs are detected after developing and sampling the first well, the next deeper well will be drilled
 - 2) One deep well drilled near 22_DBMW47 using air-rotary/casing driver drilling method
 - 3) One deep well drilled near 08_DGMW74 using air-rotary/casing driver drilling method
 - Characterizing the horizontal extent of VOC-impacted groundwater will be performed by:
 - 1) Drilling two water table wells 400 feet northwest and 650 feet northeast of well 09_DBMW45 to delineate the horizontal extent of VOC-impacted groundwater
 - 2) Drilling one water table well approximately 250 feet southwest of Building 435
 - 3) Drilling one water table well approximately 400 feet north of well 18_DGMW03
 - 4) Drilling one water table well approximately 400 feet north of Building 297
 - Two sparging wells screened beneath the water table in the 09_DBMW45 area will be used for an air sparging pilot test
 - Field screening will be conducted at 5-foot intervals or at changes in lithology using a portable flame-ionization detector, a portable photo-ionization detector, and a field gas chromatograph
 - A mobile laboratory will be present during all drilling activities to analyze soil samples for VOCs by EPA Method 8010. An estimated 15 to 18 soil samples will be analyzed per day based on the results of field screening
 - Approximately 10 percent of the soil samples analyzed by the mobile lab will be submitted to a Level D Analytical Laboratory for analyses by EPA Methods 8010 and 8240 for confirmation
 - Groundwater samples from each new well will be sampled for the same analytes as the surrounding wells per the draft groundwater sampling plan
 - The vadose wells will be utilized to conduct soil vapor extraction (SVE) pilot tests. The SVE pilot tests data will be used to evaluate the following:
 - 1) Effective radius of influence
 - 2) Optimum SVE well spacing
 - 3) Concentration of VOCs in the soil gas

- 4) Soil gas VOC mass removal rate
- 5) Treatment method for effluent air
- 6) Expected time of cleanup
- The air sparging wells installed near 09_DBMW45 will be utilized to conduct air sparging pilot tests. The air sparging pilot test data will be used to evaluate the following:
 - 1) Effective radius of influence
 - 2) Effect on Desalter Project
 - 3) Optimum sparging well spacing and depth
 - 4) Groundwater VOC mass removal rate
 - 5) Spacing of SVE wells for sparging air capture
 - 6) Expected time of cleanup

Discussion Points:

1. Mr. Brooks emphasized the need for stratigraphic characterization in order to identify specific areas for soil gas and soil sampling.
2. Sherrill Beard asked how it was possible to calibrate the CPT to the borehole. John Turbeville responded that this could be done by correlating the soil samples collected from the CPT, hollow-stem auger, and mud rotary borings with the CPT logs.
3. Ginny Garelick initiated a discussion regarding the use of mud rotary borings versus hollow-stem auger borings. Sherrill Beard expressed a concern that perhaps not enough thought had been given to hollow-stem auger borings. She agreed that it was possible to read the lithology better with mud rotary borings, but she stated that one could actually see the lithology using a hollow-stem auger.
4. Chuck Elliott expressed a concern drilling to 200 feet stating that there was a danger of drilling into a DNAPL. Mr. Brooks responded by stating that was the purpose of continuous sampling so that it would be possible to exam the cores at any given time before continuing drilling.
5. Sherrill Beard stated that she would not accept a geochemistry sample from a mud rotary boring.
6. The depths of the shallow borings were discussed and Mr. Brooks did expand and state that not all of those borings would be drilled to 50 feet; some would be drilled from 0 to 30 feet, some would be drilled from 30 to 50 feet.
7. A discussion ensued regarding the regulatory comments made on the soil gas survey. Mr. Brooks stated that he had not seen the comments at this date. Dante Tedaldi stated that the comments had been received by Bechtel and that he would be forwarding them to Pat Brooks.
8. A question was raised regarding the need to sample every five feet. Mr. Brooks stated that these samples would be analyzed by field screening methods and then used for lithologic analyses. Submitting the samples for laboratory analyses will be based on the field screening.
9. Chuck Elliott asked if using methanol to preserve the samples had been considered. Mr. Brooks said that at this time they were leaning against it. Bonnie Arthur requested further discussion on this point before a decision is made.
10. John Dolegowski stated that CH2MHill had more cross sections that they could discuss with the Bechtel team. A discussion regarding the drilling conditions occurred and CH2MHill reiterated the existence of difficult drilling conditions.
11. A discussion regarding the proposed field screening method ensued. The paper prepared by Bechtel explaining this particular method for VOC screening was requested by everyone.

Action Items:

1. Pat Brooks and John Dolegowski will exchange information regarding the drilling conditions as the site to ensure the continued use of information generated by CH2MHill.
2. The concern of using mud rotary as opposed to hollow-stem auger drilling must be resolved.
3. Distribute the VOC screening paper prepared by Bechtel to all parties.
4. Decide if methanol will be used as a preservative for VOC analytical samples.

Phase II RI/FS Sampling Strategy for the Landfill Sites (OU-2)

Katrina Lyons gave a presentation on the sampling strategy for the Phase II RI/FS Landfill sites (OU-2). Handouts were distributed with an outline of the presentation, a map of one of the landfill sites, and tables illustrating sampling techniques to be utilized. The primary goals of the RI/FS strategy is to identify and characterize the nature and extent of the contamination and to collect data to support the remedial decision making. The major points of the strategy are highlighted below.

- The objectives of this strategy are to verify the boundaries of waste disposal areas, characterize the stratigraphy, estimate the vertical and horizontal extent of contamination (characterize contaminant migration through soil and groundwater), and to characterize contaminant migration through ambient air.
- The four landfill sites were divided into units of which some were actually parts of the landfill and the remaining were stains which had been recognized and need to be addressed.
- Verifying the boundaries of waste disposal areas will be performed by:
 - 1) Topography - aerial and land
 - 2) Use of surface geophysics (Ground Penetrating Radar, EM31 and EM61)
 - 3) Taking soil gas samples which will be divided into a designated number of initial sampling and then additional sampling for "Hot Spots"
- Characterizing the stratigraphy will include:
 - 1) Geophysical logging of 11 mud rotary borings using caliper, spontaneous potential, resistivity, and natural gamma
 - 2) Continuous sampling of 9 hollow-stem auger borings for the lithology
- Estimating the vertical and horizontal extent of contamination will be completed by trenches, test pits, exploratory borings, and cone penetrometer tests. This data will either be used to support risk assessments or to evaluate remedial alternatives
- Groundwater wells, lysimeters, perimeter gas probes, and exploratory borings will also be utilized to estimate the vertical and horizontal extent of contamination.
- Characterizing contaminant migration through ambient air will be completed by shallow and deep soil gas samples, perimeter probes, and use of meteorological data, a flux chamber, and ambient air. Flux chamber data will be used to calculate the gas emission rate (mass) used in air dispersion models. Perimeter probe data will be used to estimate lateral gas migration. This air data will be used to support the risk assessment.
- Additional investigations for this assessment include surface water, sediment, and mammal samples.
- Charts were included to illustrate the number of methods to be used at each site. A time schedule was also included.

Discussion Points:

1. Katrina Lyons began her presentation expressing the desire to have a meeting with all of the involved parties to discuss only landfills.
2. A concern was raised regarding the need for trenching. Ms. Lyons responded that limited trenching may be necessary to establish the boundaries of the waste disposal areas.
3. Chuck Elliott questioned the use of the lysimeters. Ms. Lyons responded that these would be placed outside the estimated waste boundaries and soil sample would be collected approximately every 10 feet. John Dolegowski expressed a concern stating that he has had difficulties with lysimeters getting enough material to sample for all the different analyses. Dante Tedaldi agreed with this stating that the variability with lysimeters is too great to make assumptions regarding water quality.
4. Dante Tedaldi questioned the types of analytes for soil gas samples. Ms. Lyons agreed that it would be for the constituents outlined by South Coast Air Quality Management District as well as those specified by the RWQCB. Ms. Lyons stated that this would be outlined in the QAPP or the Work Plan.
5. A discussion began regarding the definition of the units. Ms. Lyons stated that they included any stains seen on any aerial photos or any questionable area noted in previous investigations. The representatives for CH2MHill stated that these had often disappeared before any field work and suggested that Ms. Lyons should do a thorough field tour before assigning any units.
6. Sherrill Beard questioned if the soil gas data was enough information before trenching, borings, and test pits.

7. Chuck Elliott questioned if the soil gas would be used to locate one specific VOC source. Ms. Lyons stated that if it appeared, then it would be analyzed. However, she also stated that the purpose of a more specific meeting would be to solve these questions.
8. Questions were raised regarding the Ground Penetrating Radar. CH2MHill stated that they did not have much luck with GPR. Ms. Lyons responded that she thought the agencies were still interested in this data.
9. Ms. Lyons expanded on the five samples taken from the mud rotary borings stating that they would be analyzed for confirmation purposes. Ms. Lyons stated that these borings would be purposely placed out of contamination for this reason.
10. Chuck Elliott questioned the number of wells proposed stating it might be excessive.
11. Sherrill Beard questioned the total number of test pits proposed for Site 2 (56). Ms. Lyons responded stating that there were 17 stained areas and it was possible that more than one test pit would be necessary. Ms. Lyons also stated that all these test pits may not be used if it is not necessary. Ms. Lyons also stated that test pits were faster and less expensive than borings.
12. The representatives from CH2MHill stated that the entire investigation scope may be too much. Andy Piszkin responded that the Phase II Draft Work Plan for CH2MHill was not accepted so this may be what the regulators are requiring based on their comments.
13. Bonnie Arthur asked what decisions had been made in previous meetings. Ms. Lyons responded that the decisions from other meeting had focused primarily on the methodology for sampling to be used.
14. A discussion was held regarding sampling in the trenches. Ms. Lyons explained that the samples from the trenching activities would be taken from the back-hoe and that the Work Plan would provide more detailed information regarding the methodology for collecting samples.
15. John Dolegowski suggested studying the Air SWAT and that ambient air samples may not be required for all sites.
16. The question was raised regarding the benefit of dividing the sites into different units. It was suggested that it may not be necessary if the entire area is going to capped irregardless of some of the studies.
17. John Dolegowski reiterated the difficulties encountered with drilling and stated that the borings may not yield a good representation.
18. Bonnie Arthur suggested that the meeting to discuss landfills would be beneficial and stated she would like to hear more comments from CH2MHill. Andy Piszkin concurred asking what was necessary to receive closure. Katrina Lyons agreed stating that it would be helpful to receive some regulator guidance for Phase II to resolve these questions.

Action Items:

1. Schedule a meeting to discuss specific landfill sites.

Phase II Sampling Strategy for OU-3 Sites

Pat Wiegand began a presentation on the sampling strategy for the Phase II RI/FS OU-3 Sites. The primary goals of the RI/FS strategy will be to characterize soil properties, delineate horizontal and vertical extent of soil contamination, assess impact of soil contamination on groundwater, collect data to support the remedial decision making, and determine appropriate remedial action, if needed. The changes which appeared in this presentation from the last presentation include: 1) completing the Work Plan for Site 1 RI activities, but defer implementation until final site closure as the site is still in active use for munitions disposal and military/law enforcement training exercises; 2) eliminate or reduce RI/FS scope of work at Sites 4, 7, 11, 13, 14, 19, and 20 as these may follow the early removal action path where feasible; 3) eliminate Site 23 from RI/FS scope of work as the industrial sewer lines were investigated as part of the RFA and the conclusion was no further action; and 4) incorporate the regulatory agency review comments pertaining to the first draft Phase II Work Plan into the revised OU-3 scope of work. The handouts included an outline of the presentation, maps of various sites, and a schedule for the field work. The following points were made during the presentation:

- Based on comments from the regulatory agencies, it was proposed to drop the statistically-based stratum concept in favor of mobile lab-supported field screening using tiered, systematic grid approach

- Expand investigative units at some sites based on regulatory agency comments, EPA, and SAIC aerial photo interpretation
- Use immunoassay kits for field screening of selected analytes
- Expand list of site specific analytes based on additions identified in regulatory review comments
- The major elements of OU-3 field activities will include:
 - 1) Basewide stratigraphic investigation including geophysical logging of mud rotary boreholes, CPT holes, and correlation with existing borehole data
 - 2) Three-tiered site-specific subsurface soil sampling investigation including initial grid sampling of shallow soils, secondary grid sampling of shallow soils, sampling of deeper soils, and judgmental soil sampling
 - 3) Assessment of site-specific groundwater quality impacts
- The basewide stratigraphic investigation will include:
 - 1) 18 mud rotary borings at depths of 120-200 feet including continuous soil sampling and geophysical logging using spontaneous potential, resistivity (long and short normal), and natural gamma
 - 2) 18 cone penetrometer tests at depths of 80-180 feet (if feasible) using lithologic logging
 - 3) Correlate with borehole data from phase I RI/FS regarding lithology and borehole geophysics
- Numbers were presented for the three-tiered site-specific subsurface soil sampling strategy. These numbers were generated for the cost proposal, but they may actually be different depending on site conditions
- The groundwater sampling strategy will include:
 - 1) Assessing the groundwater only if subsurface soil contamination extends to water table
 - 2) Evaluating the placement and screened intervals of existing monitoring wells
 - 3) Installing new wells only when upgradient/downgradient monitoring coverage is unsatisfactory or absent (3 new wells of depths of about 145-150 feet are estimated, one at site 8, two at site 10)
 - 4) Collecting a single round of groundwater samples as part of the RI/FS at an estimated 12 wells
- Presentation of the handouts was interrupted and was not completed due to discussions which consumed the remainder of the afternoon

Discussion Points:

1. Pat Wiegand discussed that he will prepare scopes of work for all of the OU-3 sites even though some may be handled by the EE/CA program. Mr. Wiegand also stated that he will not propose to implement the scope of work at Site 1 due to the fact that it is still active. He also stated that Site 23 could be eliminated as no further action was recommended in the RFA report and there was only one isolated detection of contamination in an area which will be covered by Site 24. Chuck Elliott concurred that this had been agreed upon in an earlier meeting. Juan Jimenez requested a confirmation of this agreement before Site 23 is completely disregarded.
2. Chuck Elliott voiced a concern regarding the change from a statistically-based stratum sampling concept to a systematic sampling approach executed in a tiered fashion. Andy Piszkin agreed with this concern and stated that the Navy was not going to “drop” the use of the statistically-based stratum, but rather refine it, possibly incorporating the use of fate and transport. Pat Wiegand responded by stating that a systematic grid will be used at the larger sites, however, at smaller sites where there may not be enough data to do a risk assessment at this time, additional statistical or judgmental sampling would be performed. Mr. Wiegand reiterated the use of judgmental sampling at the smaller sites.
3. Mr. Wiegand expanded on the groundwater sampling strategy stating that the groundwater would only be addressed if the site was suspected of being a source.
4. Chuck Elliott expressed a concern about the benzene plume adjacent to Site 13. Andy Piszkin stated that that plume was being handled under a different remedial investigation. Other concerns were voiced regarding the site in the VOC area - should soil samples be taken there. Andy Piszkin voiced serious concerns that several issues needed to be assessed (the use of the statistically-based stratum) before any further action was taken on the OU-3 sites.
5. Sherrill Beard stated that she thought several different sampling methods had been presented of which she had not previously been aware.
6. Mr. Wiegand discussed the issue of the analytes stating that those to be used were the same of those recommended by CH2MHill as well as some additional analytes requested by the regulatory agencies.

7. John Dolegowski questioned how the wells falling in different OU sites would be handled. He suggested that these may have been installed for regional coverage and that someone should research this issue.
8. Sherrill Beard suggested that a groundwater report generated by Argon National Labs interpreting this regional geology and its affects on groundwater should be consulted.
9. Sherrill Beard also expressed a concern regarding the Bechtel Standard Operating Procedures (SOPs). She stated that this was a program wide problem and that some type of decision needed to be made at a higher level regarding the approval of these SOPs. Dante Tedaldi replied that copies of the SOPs are controlled internally. The copies are updated as needed and for this reason they do not leave the office. It was stated that the state has looked at compiling a team to look at these SOPs.

Action Items:

1. The statistically-based stratum sampling versus systematic grid approach needs to be resolved.
2. The Bechtel SOPs need to be accepted in some manner by the regulators.

Miscellaneous Items

All cross-sections and miscellaneous notes generated by CH2MHill during the Phase I investigation need to be transitioned to the CLEAN II Team.

Bechtel's paper regarding a field screening technique for VOCs needs to be distributed to all associated parties.

Additional smaller site-specific technical meetings need to be scheduled.

The risk assessors need to meet to resolve those associated issues.

Juan Jimenez requested that some type of statistical-based sampling system be assessed for possible use.

The concern that Phase I data be used by the CLEAN II Team was reiterated.

Pat Brooks requested that some type of written comments be issued from the regulatory agencies regarding the meeting's proceedings. Sherrill Beard said this was not possible. Bonnie Arthur agreed stating that they could only comment on a submitted plan.

Ginny Garelick stated that she would speak to the Navy's geologist regarding some of the proposed plans.

Sherrill Beard stated that she would like the issue of the use of mud rotary borings be resolved. She stated that she thought a lot of major agreements made in the past had been disregarded.

Bonnie Arthur requested maps of the sites to be more accessible at the next meeting.

David Cowser expressed a wish to have more site-specific meetings to resolve the issues raised at the meeting. Bonnie Arthur agreed with this concept but stated that she thought there was not enough time for "breakout" meetings.

Andy Piszkin stated that the Navy is the lead agency on this project and that the Navy is asking for concurrence and not necessarily approval from the other agencies.

It was accepted that concepts had been agreed to previously, but there must have been some major breakdown in the original communication of these approaches.

Dates for the team building had been set but then canceled and will be re-addressed in the next day's meetings.

October 13, 1994

Scheduling

After general introduction by Jason Ashman, David Cowser began the October 13 meeting with a discussion on the proposed schedule to submit the plans associated with the Phase II Remedial Action.

- Comment Summary Document - The document which shows what regulatory comments were made on the plans and how the CLEAN II Team responded - Will be submitted December 9, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by February 8, 1995
The CLEAN II Team will have 30 days to review those comments and incorporate them into the plans
After three days allotted for copies and compilation, the final Comment Summary Document will be submitted March 10, 1995
- Health and Safety Plan - will be submitted on November 4, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by January 3, 1995
The CLEAN II Team will have 38 days to review and incorporate the comments into the plan
After three days allotted for copies and compilation, the final Health and Safety Plan will be submitted February 13, 1995
- The Quality Assurance Project Plan (QAPP) - will be submitted on December 9, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by February 7, 1995
The CLEAN II Team will have 24 days to review and incorporate the comments into the plan
After three days allotted for copies and compilation, the final QAPP will be submitted March 6, 1995
- The Field Sampling Plan (FSP) - will be submitted on December 9, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by February 7, 1995
The CLEAN II Team will have 24 days to review and incorporate the comments into the plan
After three days allotted for copies and compilation, the final FSP will be submitted March 6, 1995
- The Risk Assessment Work Plan - will be submitted on November 4, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by January 3, 1995
The CLEAN II Team will have 38 days to review and incorporate those comments into the plan
After three days allotted for copies and compilation, the final Risk Assessment Work Plan will be submitted on February 13, 1995
- The Data Management Plan - will be submitted on November 4, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by January 3, 1995
The CLEAN II Team will have 33 days to review and incorporate those comments into the plan
After three days allotted for copies and compilation, the final Data Management Plan will be submitted on February 8, 1995
- The Waste Management Plan - will be submitted on December 9, 1994
The Regulatory Agencies will have 60 days to make comments
The CLEAN II Team will receive comments by February 7, 1995
The CLEAN II Team will have 24 days to review and incorporate the comments into the plan

After three days allotted for copies and compilation, the final Waste Management Plan will be submitted March 6, 1995

- The CLEAN II Team will begin to submit EE/CAs on November 4, 1994.
On November 4, 1994, two EE/CAs will be submitted
Two EE/CAs will be submitted each week following until the final EE/CAs are submitted on November 25, 1994
The Regulatory Agencies will have 60 days to make comments for each EE/CA; this comes to a total of 81 days to review all of the EE/CAs submitted
The CLEAN II Team will receive the last EE/CA comments on January 24, 1995
The CLEAN II Team will have 30 days to review and incorporate the comments on each EE/CA; this comes to a total of 50 days for incorporation
The Final issue of the EE/CAs will be spread out over a 25 day period beginning of February 28, 1995
Thirty days of Public Comment will begin on the EE/CAs on February 28, 1995
The CLEAN II Team will receive Public Comments on March 30, 1995 and will then review and incorporate these into the EE/CAs
- The proposed date to begin fieldwork is April 1, 1995

Discussion Points

1. It was discussed that the RAB should be included on the distribution list for all draft and final plans so that it may complete its 60 day review period simultaneous with the regulatory agencies.
2. David Cowser explained that the period for review and incorporation of regulatory comments had a specific deadline and then three days would be added to allot for copying and compilation time before the finals of any plan were submitted.
3. David Cowser explained that in response to agency comments made during the August 12 meeting the review period for the regulatory agencies would be 60 days for all plans. He also stated that no days were skipped due to weekends or holidays. No agency voiced a concern with this assumption.
4. Sherrill Beard mentioned that she thought contractors were to receive a maximum of 30 days for review and incorporation of regulatory comments. David Cowser said he would confirm this and adjust the schedule for those plans which had been delegated more than 30 days for incorporation of comments.
5. In response to a question if this schedule appeared acceptable, Juan Jimenez commented that he thought it would be acceptable, but he would need to map it out on a calendar before he could confirm its acceptability.
6. David Cowser explained that it had been assumed that public comment would occur simultaneous with the regulatory agency review time on the EE/CAs. It was elucidated that the RAB had a simultaneous review period as the regulatory agencies, however the formal public comment period begins after the final draft is submitted.
7. Bonnie Arthur requested that perhaps the agencies receive extra time for review on the first EE/CAs. She would like to receive input from a toxicologist before all of the EE/CAs are submitted. It was proposed that there would be a two-week period between the submittal of the first and second EE/CAs and then the EE/CAs would be submitted each week following.
8. Bonnie Arthur requested a schedule for the EE/CAs illustrating which EE/CAs would be submitted when.

Action Items

1. Jason Ashman is to issue a distribution list (including the RAB) for all plans and provide a contract modification to grant approval for additional copies.
2. David Cowser is to confirm that contractors have only 30 days to review and incorporate comments from regulatory agencies and then adjust the schedule as necessary.
3. David Cowser is to incorporate the 30 day public comment on final drafts into the EE/CA schedule.
4. David Cowser is to adjust the EE/CA schedule incorporating the extra review time for the first set of EE/CAs as requested by Bonnie Arthur.
5. The Agencies are to receive a list stating which EE/CAs are being submitted when.

Review of Phase II Plan Format

David Cowser presented the proposed format for Phase II plans to be submitted to all agencies. In compliance with the agencies' desires not to have information duplicated, Mr. Cowser proposed a format in which one complete draft plan would be submitted for Operable Units 2 and 3, and then site specific information would be incorporated into the plans in the appendices. The following points were made in the presentation:

- The format for the Work Plan basically follows the format used by CH2MHill in Phase I. The idea of this format is to gain general concurrence with the overall Work Plan and then receive concurrence for each site specific section in the Appendix.
- There will be one general QAPP for the project.
- The FSP will be structured like the Work Plan with general information in the main body and site specific information in the individual appendices.
- The main purpose of this format is so that information is not often duplicated.

Discussion Points

1. Both Bonnie Arthur and Juan Jimenez like the idea of not duplicating information and having all site specific information together in one area as would be done in the appendices.
2. Ginny Garelick stated that this format was similar to that used for the General Operating Guidelines at MCAS Tustin.
3. Sherrill Beard was uncertain of the format stating that she would need approval from the agency to approve only parts of a plan.
4. David Cowser stated that the people working in the field were the same individuals writing the plans who are present at the meeting inferring that this meeting is a good forum to settle these differences.
5. The Regulators broke for 15 minutes and held a meeting in another room. Upon returning the regulators stated that the format of the plan was good for not duplicating information and having all site specific information together, however they would need to discuss the possibility of partial approval of a plan with their managers.
6. A discussion began regarding the scheduling of working meetings. It was generally agreed that working meetings would be beneficial. David Cowser and Sherrill Beard discussed the benefits of discussing site specific information versus general approaches. John Kluesener stated that it would be difficult to provide an overall general approach as it may not apply to all the various sites.
7. It was stated that there were conflicting comments from the Federal EPA and CAL EPA on draft plans. It was agreed that several problems which arose could not be resolved until these conflicts were resolved. Sherrill and Bonnie concurred with this and agreed to meet to resolve these issues.
8. An extended Base Closure Team meeting, to be held at El Toro, was scheduled for October 20. Bonnie Arthur requested a draft agenda of what issues the CLEAN II Team would like to see resolved. A list of recommendations and tasks were also requested so that progress can be followed.
9. A site specific meeting to address the VOC Source Area was scheduled for October 24 at the Kleinfelder office in San Diego.
9. Joseph Joyce attempted to schedule the BCP kick-off meeting, but a date could not be set due to the precedence of the other meetings. It was agreed to re-address the issue of meetings later in this meeting.

Action Items

1. The regulators need to confirm with their managers if the proposed plan formats is acceptable.
2. Representatives from the Federal EPA and CAL EPA need to reconcile the differences made in the comments on the draft plans.
3. Agendas and a list of recommendations and tasks for the regulator meeting need to be available to the regulators by Friday, October 14, so that these issues may be addressed in the meeting.
4. Pat Brooks is to prepare an agenda for the VOC Source Area meeting and distribute it to all associated parties.

Soil Gas Survey Comments

John Lovenburg presented information collected from the soil gas survey. The purpose was to illustrate the different facets of the soil gas survey, present their findings, and hold a discussion with the regulators about the comments made on the survey report. Handouts were provided outlining the presentation which focused on five specific areas: 1) transfer and use of information, data, and comments; 2) air knife non-destructive drilling; 3) soil preservation; 4) inclusion of new information; and 5) sites proposed for no further investigation. The handouts also provided a schedule of when the regulators would be receiving the final Soil Gas Survey Report. The following provides more detailed information given in the presentation:

- There are 19 areas with concentrations in the soil gas, 15 were recommended for further investigation
- The purpose of transfer and use of information, data, and comments is to ensure that the data is used for Phase II Work Planning and to include the soil data in future risk assessments
- The air knife non-destructive drilling was used beneath Buildings 296 and 297. The results of this method are mixed as fine soils and clays tended to clog the machinery
- The discussion on soil preservation regarding methanol preservation versus standard capped sleeve samples contained the following input:
 - 1) Methanol preservation was used in some areas in response to an agency request.
 - 2) In 11 locations, both methanol preservation and standard capped sleeve samples were used. In one set of samples, detection of VOCs was found in both samples and the concentration in the sample preserved with methanol was much higher. However, in another set of samples, the standard capped sleeve sample had detectable concentrations while the methanol preserved sample did not have detectable concentrations.
 - 3) The field effort required to use methanol preservation is much greater than for standard capped sleeve samples.
 - 4) The detection limits for methanol preserved samples are also much higher.
 - 5) Conclusions could not be made from this use of methanol preservation.
- New data to be included in the final report include soil gas performance evaluation results and waste soil analytical results
- The following information was reported for sites proposed for no further investigation:
 - 1) The locations proposed for no further action are Area 3-4 southwest of Building 295, Area 3-5 northeast of Building 800, Area 4-3 northwest of Building 295, and Area 4-4 east end of Building 359.
 - 2) The rationale for this recommendation is based on relatively low concentrations of VOCs in the soil gas in these areas and no VOCs detected in the soil samples
- The presentation was then open for discussion regarding the regulators' comments

Discussion Points

1. It was questioned why the regulators had requested methanol preservation. Sherrill Beard replied because they thought they had been losing volatile compounds from the samples and the agency wanted to try a new method to see if this could be reduced. John Broderick also added that there was a concern that such a large groundwater plume was associated with few detections of VOCs in the soil samples.
2. One comment made on the soil gas survey was by Bonnie Arthur who confirmed that her agency was unsure about Area 4-3 requiring no further action. John Lovenburg responded that this area did not have any detection of VOCs in the soil.
3. John Broderick questioned the need to discuss regulatory comments at this meeting. He stated that CH2MHill should make recommendations based on the results of its survey and wait to see what the Phase II Work Plan proposes. Pat Brooks replied that he was unsure if the Phase II Work Plan follows these no further action recommendations from CH2MHill. Some sampling points may be proposed for those areas.
4. A request was made from Bechtel to receive these comments on the soil gas survey.
5. It was decided that any outstanding issues regarding regulatory comments and the scope of work proposed in the Phase II Work Plan could be reconciled at the VOC-specific meeting, but that the CLEAN II Team should remember these comments while formulating the scope of work for Phase II.
6. John Broderick asked for an evaluation of the soil gas survey success. John Lovenburg replied that he thought the survey was successful in providing results and depicting a greater depth and trend of contamination.

Action Items

1. Bechtel needs to receive a copy of the regulatory comments on the soil gas survey.

RFA Work Plan Addendum and Follow-up

Jacques Lord made a presentation regarding a new CTO awarded to address the RFA Work Plan Addendum. This CTO is designed to address comments made by the DTSC on the original RFA. The following outlines the points of the presentation:

- More evaluation is required for the decommissioning of satellite accumulation areas
- The proposal is to submit a Work Plans as an addendum to the original RFA Work Plan and include as appendices the QAPP, SAP, FSP, and the DMP
- The purpose of this project is to satisfy DTSC's request for further evaluation so that sites which are designated with a "7" CERFA number now may receive a lower CERFA number

Discussion Points

1. Tim Smith suggested checking the list of satellite accumulation areas against the master list in the BCP. Jacques Lord agreed and said he'd check into it.
2. John Broderick stated that he did not think there were closure requirements for SAA.
3. Bonnie Arthur questioned if EE/CAs or RI/FS would be used if a removal action was required. Mr. Lord responded that EE/CAs would be used for small sites and RI/FS would be used for larger sites.
4. Bonnie Arthur requested pooled data for Site 24. Tim Smith stated that a full suite of analytes were investigated and most were non-detect. John Broderick stated that this sampling had to be done so the area could be deemed "clean" in the land re-use project. These analytes do not really need to be tested in order to have closure under RCRA.
5. It was not known if Mr. Lord would need to address decontamination procedures for this project. Joseph Joyce said he would check into the decontamination procedures used at Building 267 and if this information would be required for a property transfer.
6. The MCAS El Toro environmental office conducted soil sampling at the DRMO Storage Yard 3 at Building 264. It was agreed that Mr. Lord could use these results for his project.

Action Items

1. Jacques Lord will check the list of satellite accumulation areas against the master list in the BCP.
2. Joseph Joyce will check into the decontamination procedures used at Building 267 and if this information is required for a property transfer.

Meetings

The BCT meeting is scheduled for October 20, 1994 in trailer 2009 at El Toro.

The site-specific meetings for the VOC source area and landfills are scheduled to begin at 9:30 on October 24, 1994, at the Kleinfelder office in San Diego.

Team Building is scheduled for October 26 and 27. A possible location for the Team Building is Rancho Santa Fe.

The site-specific meetings for additional landfill topics and the OU-3 sites are schedule for October 28.

Tim Smith will hold a conference call regarding the BCP kick-off meeting on October 21. The BCP kick-off meeting is scheduled for November 10.

The Red-line meetings for the BCP are scheduled for December 5 and 6 and January 12, 1995.

The BCT meeting will be held December 20, 1994.

The Risk Assessment meeting is scheduled for November 8, 1994.

MEETING ATTENDEES - OCTOBER 12, 1994

David Cowser	Bechtel
Mustafa Elrashidi	Bechtel
John Kluesener	Bechtel
Dante Tedaldi	Bechtel
John Scholfield	Brown & Caldwell
Pat Wiegand	Brown & Caldwell
Sherrill Beard	CalEPA
Juan Jimenez	CalEPA/DTSC
John Dolegowski	CH2MHILL
Chuck Elliott	CH2MHILL
John Lovenburg	CH2MHILL
Hooshang Nezafati	CH2MHILL
Tim Smith	CH2MHILL
Pat Brooks	Kleinfelder
Scott Christopherson	Kleinfelder
Katrina Lyons	Kleinfelder
Homa Moaddel	Kleinfelder
Linda Nebiker	Kleinfelder
Karnig Ohannessian	Kleinfelder
John Turbeville	Kleinfelder
Stacie Wissler	Kleinfelder
Vish Parpiaui	MCAS El Toro
Larry Vitale	RWQCB
Jason Ashman	SWDIV
Ginny Garelick	SWDIV
Joseph Joyce	SWDIV
Andy Piszkin	SWDIV
Bonnie Arthur	USEPA

MEETING ATTENDEES - OCTOBER 13, 1994

David Cowser	Bechtel
John Kluesener	Bechtel
Dante Tedaldi	Bechtel
Pat Wiegand	Brown & Caldwell
Sherrill Beard	CalEPA
Alice Gimeno	CalEPA
Juan Jimenez	CalEPA/DTSC
John Dolegowski	CH2MHILL
John Lovenburg	CH2MHILL
Tim Smith	CH2MHILL
Pat Brooks	Kleinfelder
Linda Nebiker	Kleinfelder
John Turbeville	Kleinfelder
Stacie Wissler	Kleinfelder
Vish Parpiaui	MCAS El Toro
John Broderick	RWQCB
Larry Vitale	RWQCB
Jason Ashman	SWDIV
David Crawley	SWDIV
Ginny Garelick	SWDIV
Joseph Joyce	SWDIV
Bonnie Arthur	USEPA

SIGN-IN SHEET
OCTOBER 12, 1994

MCAAS EL TORO

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	Moustafa Elrashidi	Bechtel	
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EARLY REMOVAL ACTION SITES (EE/CAs)

MCAS EL TORO

EE/CA Outline

Executive Summary

Site Characterization

1. Site description and background
- Previous removal actions
- Source, nature, and extent of contamination
- Analytical data
- Streamlined risk evaluation

Identification of Removal Action Objectives

2. Statutory limits on removal actions
- Determination of removal scope
- Determination of removal schedule
- Planned remedial activities

Identification and Analysis of Removal Action Alternatives

- Effectiveness
- Implementability
- Cost

3. Comparative Analysis of Removal Action Alternatives

Recommended Removal Action Alternative

**MCAS EL TORO
SUMMARY OF PRELIMINARY EARLY ACTION SITE STRATEGIES**

SITE	UNIT	PROPOSED STRATEGIY	SCOPE OF WORK	IMMEDIATE ACTIVITY
Site 4	Unit 1	NFRAP	Three sample locations (0'/2'/4') to confirm no further action is warranted.	Modified ESI
	Unit 2	EE/CA	Three sample locations to provide additional characterization of nature and extent of contamination.	Incorporate modified RI into ESI
Site 7	Unit 1	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
	Units 2 thru 4	RI; EE/CA	Define nature and extent of contamination based on RI results.	RI
	Unit 5	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
Site 11	Sitewide	RI; EE/CA	Define nature and extent of contamination based on RI results.	RI
Site 13	Units 1 & 2	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
Site 14	Catch Basin	House Cleaning	Clean out.	Prepare EE/CA
	Unit 1	EE/CA	ESI (RI field screening).	Incorporate modified RI into ESI
Site 19	Units 1 thru 3	RI; EE/CA	Define nature and extent of contamination based on RI results.	RI
Site 20	Catch Basin	House Cleaning	Clean out.	Prepare EE/CA
	Unit 1	NFRAP	No additional work.	Prepare EE/CA
	Unit 2	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
	Unit 3	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
	Unit 4	EE/CA	Excavate contaminated soil, sample for contaminant.	Prepare EE/CA
Site 25	Agua Chinon	EE/CA	ESI; collect treatability parameters, characterize nature and extent of contamination.	ESI
	Bee Canyon	EE/CA	ESI; collect treatability parameters, characterize nature and extent of contamination.	ESI

Site Characterization

Units vs. strata

Investigate in a systematic or judgmental manner

Soil sampling/field screening

Rationale for judgmental sampling strategy (confirmation sampling)

Rationale for grid sampling strategy (RI)

May redefine boundaries of units

ESI/RI

Use immunoassay and mobile lab for field screening

Determine lateral and vertical extent of contamination

Observation method

Build uncertainties in strategy

Compare data to assumptions

Define extent as excavation proceeds

Define scope and objective - how far will excavation go?

Removal Action Objectives

Streamlined risk evaluation

RBCs

Modified RBCs

PRGs

Removal scope

Surface soil and shallow subsurface soil

Removal Action Alternatives

Off-site thermal desorption

On-site thermal desorption

Soil washing

Bioremediation cells

In-situ bioremediation

Soil vapor extraction

Incineration

Landfill

Treatment trains

Example - Site 4

Unit 1

Weed abatement

3 hand auger to 4 feet (0'2'4')

Unit 2

Estimate dark stain area

Estimate volume of impacted soil (based on TPH-diesel)

Estimate cost of excavation and treatment

REMOVAL ACTION

SITE 25 - MAJOR DRAINAGES

STRATEGY: Perform Extended Site Investigation (ESI)

OBJECTIVE: To further characterize the nature and extent of contamination necessary to perform an EE/CA

AGUA CHINON WASH

BEE CANYON WASH

location

Unlined area at SW boundary

Unlined area at SW boundary

contamination

high concentration TPH-gas & diesel @ 17' bgs
TPH-gas exceeds LUFT guidelines @ 17' & 52' bgs

TPH-gas exceeds LUFT guidelines @ 26' bgs

planned ESI activity

4 borings to 30' bgs
2 borings to 70' bgs
1 angle boring to 70' bgs

3 soil borings to 40' bgs

**MCAS EL TORO
REVISED PHASE
II
RI/FS WORK
PLAN**

**SUMMARY OF VOC
SOURCE AREA WORK
PLAN**

OCTOBER 12, 1994

HIGHLIGHTS OF REGULATORY COMMENTS INCORPORATED INTO VOC SOURCE AREA SCOPE OF WORK

**UTILIZE DQO PROCESS TO STREAMLINE
SCOPE OF PHASE II RI AND OPTIMIZE
SAMPLING STRATEGY**

**IDENTIFY CRITERIA THAT WOULD AFFECT
LATERAL STRATIFICATION OF CONTAMINANTS**

**USE FIELD SCREENING TECHNIQUES TO REDUCE
THE NUMBER OF “NON DETECT”
LABORATORY RESULTS**

**INCORPORATE PREVIOUS DATA INTO WORK
PLAN**

- AERIAL PHOTOGRAPHS**
- EMPLOYEE INTERVIEWS**
- VOCS DETECTED IN SOIL SAMPLES**
- VOCS DETECTED IN SOIL GAS**
- VOCS DETECTED IN GROUNDWATER**

**EXTEND THE CHARACTERIZATION OF VOCS IN
SOIL AND SOIL GAS TO THE WATER TABLE**

VOC SOURCE AREA STRATIGRAPHIC INVESTIGATION

IDENTIFY REGIONAL STRATIGRAPHIC TRAPS AND MIGRATION PATHWAYS.

- **8 mud rotary borings** **Depth: 120 - 200 feet**
 Continuous soil sampling
 Geophysical logging
 - Resistivity
 - Spontaneous potential
 - Gamma

IDENTIFY SHALLOW AND INTERMEDIATE DEPTH STRATIGRAPHIC TRAPS AND MIGRATION PATHWAYS. LOCATE SAMPLING POINTS FOR SOIL GAS CHARACTERIZATION.

- **75 cone penetrometer tests** **Depth: 0 - 50 feet**
 - Lithologic logging
 - Identify sand and clay lenses

VOC SOURCE AREA

SOIL GAS INVESTIGATION

COMPLETE SOIL GAS CHARACTERIZATION AT INTERMEDIATE DEPTH USING CPT.

- **175 soil gas samples Depth: 0 - 50 feet**
 - Building 296 (aircraft maintenance)
 - Building 297 (aircraft maintenance)
 - Building 312 (metal plating sewer line)
 - Building 324 (engine overhaul)
 - Building 359 (degreaser)
 - Building 655 (tarmac surface drainage)
 - Drop tank area (tarmac surface drainage)
 - Tarmac (aircraft washing)
 - Near Site 8 (miscellaneous storage)
 - Agua Chinon (downstream, unlined portion)

COMPLETE DEEP SOIL GAS CHARACTERIZATION USING HOLLOW-STEM AUGER BORINGS.

- **60 soil gas samples Depth: 50 - 120 feet**
 - Locations placed to connect the shallow, intermediate, and deep soil gas plumes to the groundwater plume.

VOC SOURCE AREA

SOIL INVESTIGATION

CHARACTERIZE THE NATURE AND EXTENT OF VOC CONTAMINATION IN SUBSURFACE SOIL.

- **8 Mud rotary borings**
 - Continuously sampled
- **37 Hollow-stem auger borings**
 - 19 to be continuously sampled
 - 18 to collect drive samples every 5 feet
 - Install vapor extraction wells or soil gas piezometers based on VOCs detected in soil samples.
- **12 Air rotary borings**
 - Drive samples to be collected every 5 feet
 - Install 10 monitoring and 2 sparging wells.
- **20 Backhoe test pits**
 - grab samples collected based on field screening
- **10 Hand auger borings**
 - grab samples collected based on field screening

VOC SOURCE AREA GROUNDWATER INVESTIGATION

**COMPLETE THE VERTICAL
CHARACTERIZATION OF VOC-IMPACTED
GROUNDWATER NEAR WELLS 09_DBMW45,
22_DBMW47, AND 08_DGMW74.**

- **Up to three deep wells drilled to 250, 350, and 400 feet below ground surface. Wells will be installed using air-rotary/casing driver drilling method to reduce potential cross contamination between water table aquifer and deeper saturated zones. If VOCS are detected after developing and sampling the first well, the next deeper well will be drilled.**
- **One deep well drilled near 22_DBMW47 using air-rotary/casing driver drilling method.**
- **One deep well drilled near 08_DGMW74 using air-rotary/casing driver drilling method.**

VOC SOURCE AREA GROUNDWATER INVESTIGATION

CHARACTERIZE HORIZONTAL EXTENT OF VOC-IMPACTED GROUNDWATER

- **Two water table wells drilled 400 feet northwest and 650 feet northeast of well 09_DBMW45 to delineate horizontal extent of VOC-impacted groundwater.**
- **One water table well drilled approximately 250 feet southwest of Building 435.**
- **One water table well drilled approximately 400 feet north of well 18_BGMW03.**
- **One water table well drilled approximately 400 feet north of Building 297.**

INSTALL WELLS TO CONDUCT AIR SPARGING PILOT TEST

- **Two sparging wells screened beneath the water table in the 09_DBMW45 area to be used for the air sparging pilot test.**

VOC SOURCE AREA SOIL SAMPLE ANALYSES

FIELD SCREENING CONDUCTED AT 5-FOOT INTERVALS OR CHANGES IN LITHOLOGY

- Portable flame-ionization detector**
- Portable photo-ionization detector**
- Field gas chromatograph**

MOBILE LABORATORY ANALYSES OF VOCS BASED ON RESULTS OF FIELD SCREENING

- A mobile laboratory will be present during all drilling activities to analyze soil samples for VOCs by EPA Method 8010. An estimated 15 to 18 soil samples will be analyzed per day.**

LEVEL D ANALYTICAL LABORATORY CONFIRMATION ANALYSES

- Approximately 10 percent of the soil samples analyzed by the mobile lab will be submitted to a Level D analytical Lab for analyses by EPA Methods 8010 and 8240.**

VOC SOURCE AREA

GROUNDWATER SAMPLE ANALYSES

GROUNDWATER SAMPLES FROM EACH NEW WELL WILL BE SAMPLED FOR THE SAME ANALYTES AS THE SURROUNDING WELLS PER THE DRAFT GROUNDWATER SAMPLING PLAN.

- 1 VOCs, metals, general chemistry, Eh**
- 2 VOCs, metals, general chemistry, Eh**
- 3 VOCs, metals, general chemistry, Eh**
- 4 VOCs, SVOCs, metals, general chemistry, Eh**
- 5 VOCs, SVOCs, metals, general chemistry, Eh**
- 6 VOCs, SVOCs, metals, general chemistry, Eh**
- 7 VOCs, SVOCs, metals, general chemistry, Eh**
- 8 VOCs, SVOCs, pesticides, metals, general chemistry, Eh**
- 9 VOCs, metals, general chemistry, Eh**
- 10 VOCs, metals, general chemistry, Eh**
- 11 (air sparging well) VOCs, general chemistry, Eh**
- 12 (air sparging well) VOCs, general chemistry, Eh**

VOC SOURCE AREA PILOT TESTING

UTILIZE VADOSE WELLS TO CONDUCT SOIL VAPOR EXTRACTION (SVE) PILOT TESTS. THE SVE PILOT TEST DATA WILL BE USED TO EVALUATE THE FOLLOWING:

- Effective radius of influence**
- Optimum SVE well spacing**
- Concentration of VOCs in the soil gas**
- Soil gas VOC mass removal rate**
- Treatment method for effluent air**
- Expected time of cleanup**

UTILIZE AIR SPARGING WELLS INSTALLED NEAR 09_DBMW45 TO CONDUCT AIR SPARGING PILOT TESTS. THE AIR SPARGING PILOT TEST DATA WILL BE USED TO EVALUATE THE FOLLOWING:

- Effective radius of influence**
- Effect on Desalter Project**
- Optimum sparging well spacing and depth**
- Groundwater VOC mass removal rate**
- Spacing of SVE wells for sparging air capture**
- Expected time of cleanup**

VOC SOURCE AREA

WORK SCHEDULE

START DATE APRIL 1, 1995

STRATIGRAPHIC INVESTIGATION

week 1 - 3

SOIL GAS INVESTIGATION

week 4 - 10

SOIL INVESTIGATION

week 1 - 14

GROUNDWATER INVESTIGATION

week 4 - 14

MAJOR DRAINAGES INVESTIGATION

week 4 - 14 (depending on precipitation)

SVE AND AIR SPARGING PILOT TESTS

week 8 - 17

RISK ASSESSMENT, AND REPORT PREPARATION

week 22 - 33

REGULATORY REVIEW OF RI REPORT

week 33 - 41

VOC SOURCE AREA

WORK SCHEDULE

START DATE APRIL 1, 1995

FINALIZE RI REPORT

week 41 - 45

DEVELOP ENVIRONMENTAL ALTERNATIVES

week 45 - 55

PREPARE FS REPORT

week 55 - 59

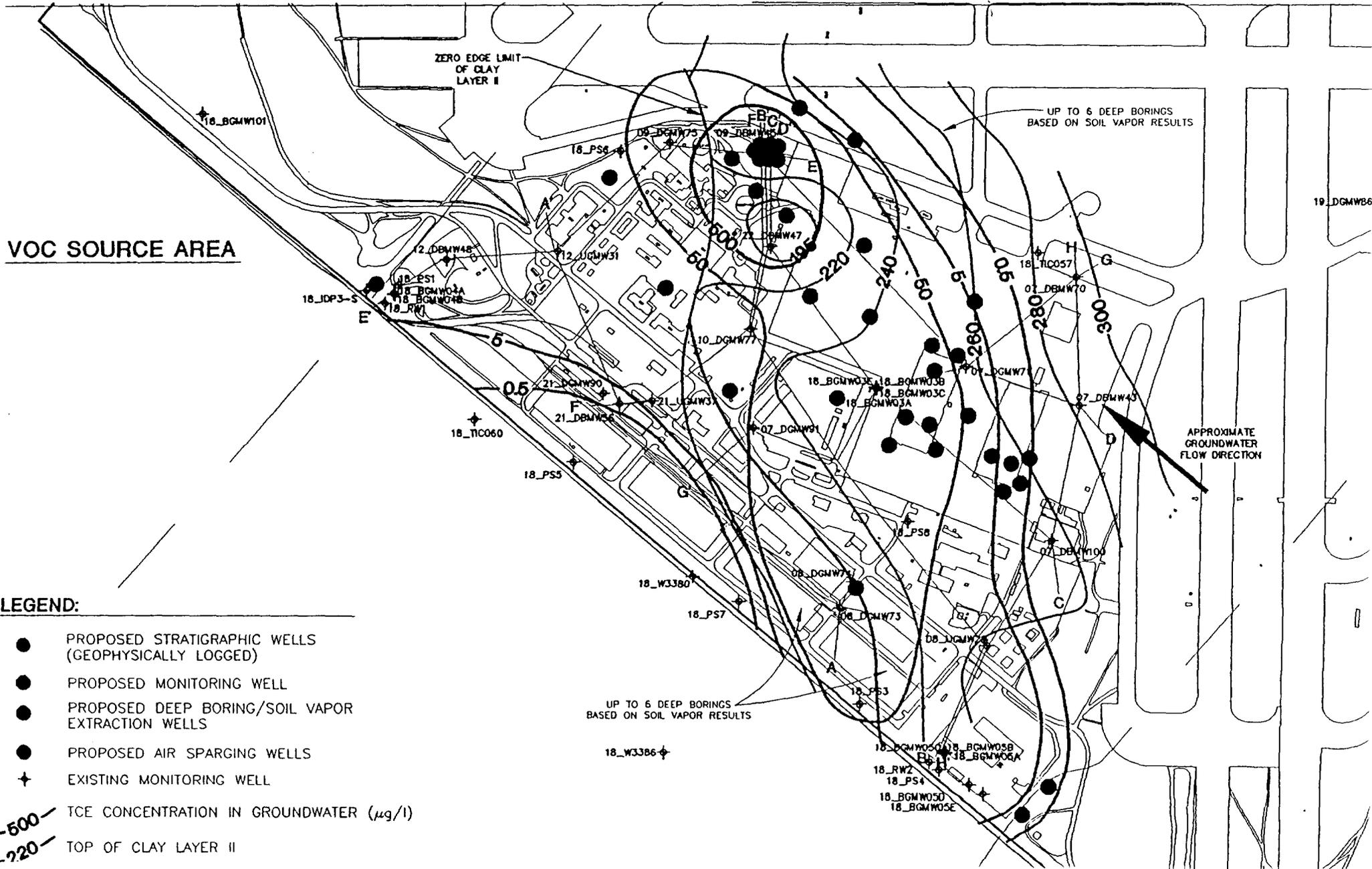
REGULATORY REVIEW OF FS REPORT

week 59 - 67

FINALIZE FS REPORT

week 67 - 70

VOC SOURCE AREA



LEGEND:

- PROPOSED STRATIGRAPHIC WELLS (GEOPHYSICALLY LOGGED)
- PROPOSED MONITORING WELL
- PROPOSED DEEP BORING/SOIL VAPOR EXTRACTION WELLS
- PROPOSED AIR SPARGING WELLS
- ✦ EXISTING MONITORING WELL

-500- TCE CONCENTRATION IN GROUNDWATER ($\mu\text{g/l}$)
 -220- TOP OF CLAY LAYER II

OU-2 LANDFILL SITES

OBJECTIVES

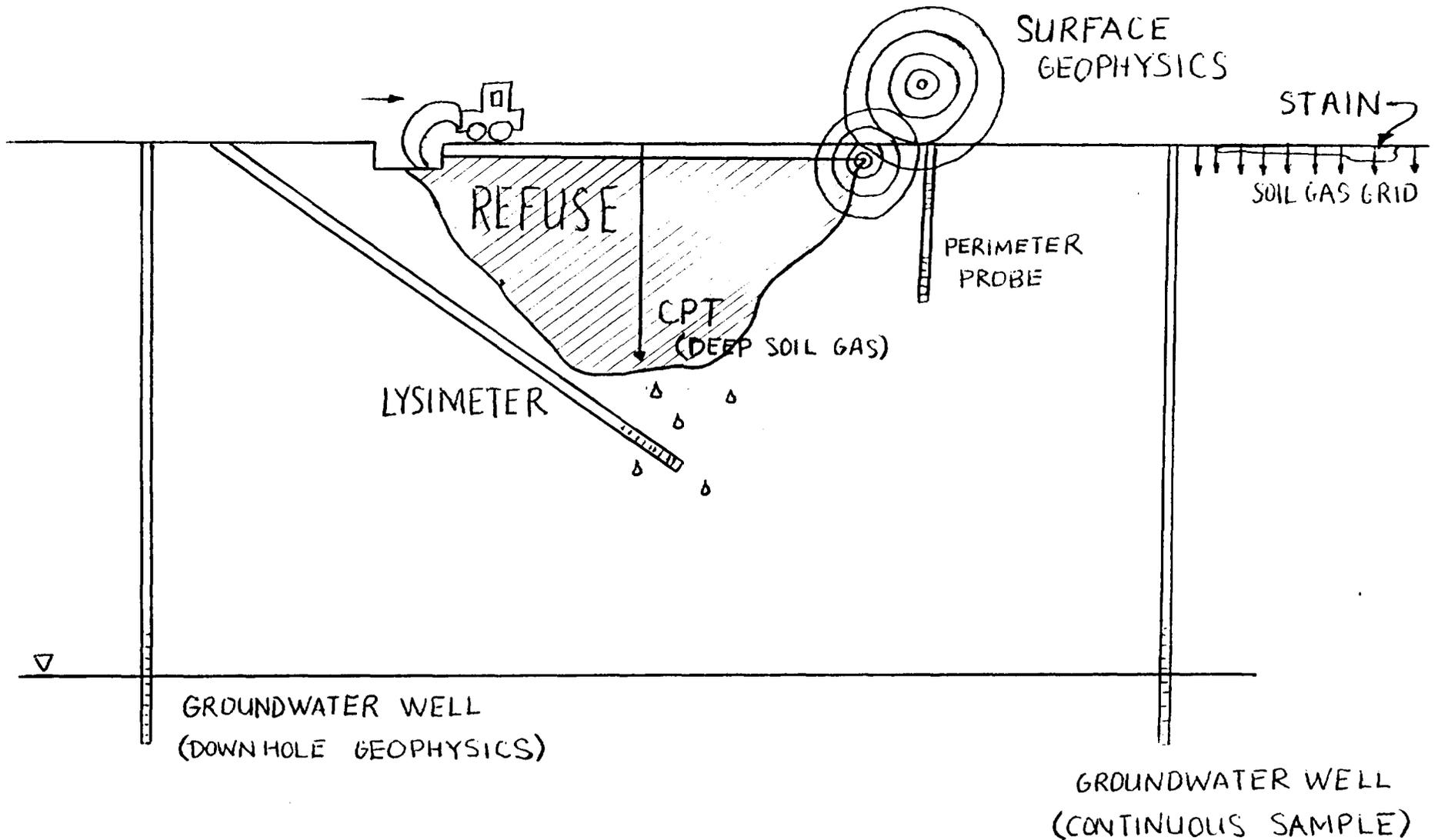
- Verify Boundary of Waste Disposal Areas
- Characterize Stratigraphy
- Estimate the Vertical and Horizontal Extent of Contamination

Characterize Contaminants Migration through
Soil

Characterize Contaminants Migration through
Groundwater

- Characterize Contaminants Migration through Ambient
Air

Sampling Rationale



OU-2 LANDFILL SITES

VERIFY BOUNDARY OF WASTE DISPOSAL AREA

DATA USAGE

Data will be used to focus remedial activities by obtaining higher resolution of the actual source areas

<u>Site Number</u>	<u>Units</u>	<u>Landfill</u>	<u>Stains</u>
Site 2	55	18	37
Site 3	11	7	4
Site 5	10	4	6
Site 17	18	11	7

TOPOGRAPHY

-Aerial and Land

SURFACE GEOPHYSICS

-Ground Penetrating Radar (GPR)

-EM31

-EM61

SOIL GAS

<u>Site Number</u>	<u>Initial Sampling</u>	<u>“Hot Spot”</u>
Site 2 (100')	432	374
Site 3 (75')	160	135
Site 5 (75')	124	99
Site 17 (100')	58	134

OU-2 LANDFILL SITES

CHARACTERIZE STRATIGRAPHY

DATA USAGE

Local and basewide stratigraphy

Fate and transport in soil

BOREHOLE GEOPHYSICAL LOGGING - 11 MUD ROTARY BORINGS

-Caliper

-Spontaneous Potential

-Resistivity

-Natural Gamma

CONTINUOUS SAMPLING - 9 HOLLOW STEM AUGER BORINGS

-Lithology

<u>Site Number</u>	<u>Hollow Stem Auger</u>	<u>Mud Rotary</u>	<u>GW Wells</u>
Site 2	4	4	8
Site 3	1	2	3
Site 5	1	2	3
Site 17	3	3	6

OU-2 LANDFILL SITES

ESTIMATE VERTICAL AND HORIZONTAL EXTENT OF CONTAMINATION

DATA USAGE

Surface soil data will support the risk assessment. Subsurface and groundwater data will be used to characterize the site, evaluate remedial alternatives and support the risk assessment.

TRENCHES, TEST PITS & EXPLORATORY BORINGS

<u>Site Number</u>	<u>Trenches</u>	<u>Test Pits</u>	<u>Total No. of Exploratory Borings</u>
Site 2	20	56	85
Site 3	8	4	36
Site 5	4	8	21
Site 17	11	7	40

CONE PENETROMETER TEST

<u>Site Number</u>	<u>Deep Gas</u>	<u>Groundwater</u>	<u>Lithology</u>
Site 2	4	4	4
Site 3	2	0	2
Site 5	2	0	2
Site 17	2	0	2

OU-2 LANDFILL SITES

ESTIMATE VERTICAL AND HORIZONTAL EXTENT OF CONTAMINATION

(Continued)

GROUNDWATER WELLS, LYSIMETERS AND PERIMETER GAS PROBES (PERMANENT ENVIRONMENTAL CONTROLS)

<u>Site Number</u>	<u>G.W. Wells</u>	<u>Lysimeters</u>	<u>Gas Probes</u>
Site 2	8	7	12
Site 3	3	4	10
Site 5	3	2	4
Site 17	6	3	10

EXPLORATORY BORINGS

<u>Site Number</u>	<u>Intermediate (0-40')</u>	<u>Deep (0-G.W.)</u>	<u>Total</u>
Site 2	66	19	85
Site 3	26	10	36
Site 5	14	7	21
Site 17	28	12	40

OU-2 LANDFILL SITES

CHARACTERIZE CONTAMINANTS MIGRATION THROUGH AMBIENT AIR

DATA USAGE

Flux chamber data will be used to calculate the gas emission rate (mass) used in air dispersion models. Perimeter probe data will be used to estimate lateral gas migration. Collectively, the air data will be used to support the risk assessment.

- **SHALLOW AND DEEP SOIL GAS**
- **PERIMETER PROBES**
- **METEOROLOGICAL DATA**
- **FLUX CHAMBER**
- **AMBIENT AIR**

OU-2 LANDFILL SITES

ADDITIONAL INVESTIGATIONS

<u>Sample</u>	<u>Site 2</u>	<u>Site 3</u>	<u>Site 5</u>	<u>Site 17</u>
Surface Water	2	4	0	2
Sediment	4	4	0	4
Mammal	24	12	12	16

TABLE 3D
 SITE 17, COMMUNICATION STATION LANDFILL
 FIELD INVESTIGATION STRATEGY MATRIX

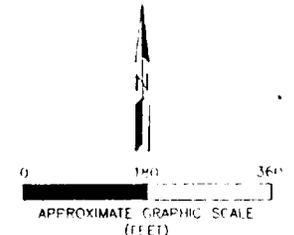
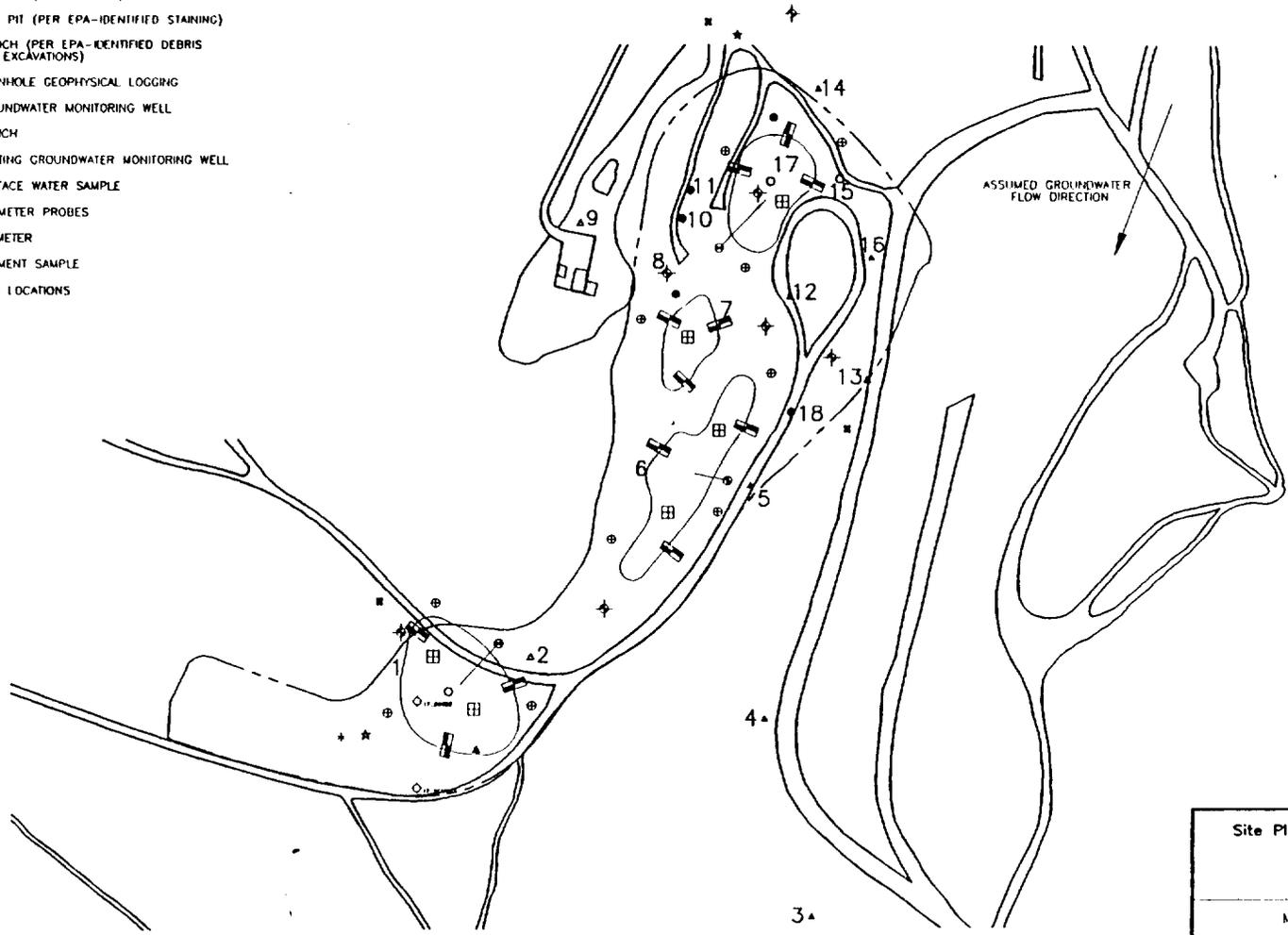
Feature Id	Unit No. (Cat.)	DTW (ft bgs)	Soil Vapor Points	Geophysical		Investigation Soil Boring(s)				Trenches (Lin. Ft.)	Groundwater Wells			Perimeter Gas Probes		Lysimeters		Additional			
				Grid Footage GPR/EM31/EM61	Logging Method	Number		Depth (ft. bgs)	Total Lin. Ft.		No.	Depth	Lin. Ft.	Probes		Number	Lin. Ft.	Borings		Wells	
						Test Pits	Borings							(No.)	Lin. Ft.			No.	Lin. Ft.	No.	Lin. Ft.
Fill, 1970, 1986	12 (3)	230	5	2000	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-
Stain, 1980	13 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-
Fill, 1980, 1986	14 (3)	230	5	3000	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-
Fill, 1980, 1970	15 (3)	230	5	4000	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-
Fill, 1970, 1980	16 (3)	230	5	3000	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-
Graded Fill Area 1981-86	17 (3)	230	15	15000	CPT	-	1	40	40	200	2	250	500	2	40	1	240	4	160	-	-
Stain, 1980	18 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-
Totals	19	N/A	180	123000	3 CPT	7	5	N/A	860	725	6	N/A	1500	10	200	3	670	16	640	0	0
Cat 1	1		58	46000		0	3		675									0	0	0	0
Cat 2	7		35	0		7	0		105									0	180	0	0
Cat 3	11		87	77000		0	2		80									16	640	0	0

NOTES

1. Borings for Geophysical logging drilled by Mud Rotary, 6 in. borings. These borings are for downhole geophysics info. only. No chemical/analytical samples taken for "Feature ID SITE 0(1)".
2. Test Pits performed with a Backhoe.
3. Soil Borings drilled with CME 95 Rig, 8 in. diameter borings.
4. Groundwater monitoring wells drilled Air Rotary/ Casing Hammer, 10" diameter borings.
5. Perimeter probes drilled with CME 95 Rig, 8 in. diameter boring.
6. Lysimeters drilled with Hollow Stem Auger, CME 95 Rig, 10" diameter borings.

LEGEND:

- 14 UNIT NUMBER
- BORING (PER EXCAVATIONS, FILLS)
- TEST PIT (PER STAINING)
- ▲ TEST PIT (PER EPA-IDENTIFIED STAINING)
- △ TRENCH (PER EPA-IDENTIFIED DEBRIS AND EXCAVATIONS)
- DOWNHOLE GEOPHYSICAL LOGGING
- ⊕ GROUNDWATER MONITORING WELL
- ▭ TRENCH
- ◇ EXISTING GROUNDWATER MONITORING WELL
- ★ SURFACE WATER SAMPLE
- ⊗ PERIMETER PROBES
- ⊖ LYSIMETER
- ⊕ SEDIMENT SAMPLE
- ⊞ FLUX LOCATIONS



Site Plan - Communication Station Landfill Figure - Site 17	
MCAS El Toro, El Toro, California	
	Bechtel National, Inc. CLEAN II Program
Date: 8/10/94 File No: SITE 17 Job No: 22214	

TABLE 4D
SUMMARY OF SITES AND ANALYTICAL PARAMETERS FOR PHASE II RI
MCAS EL TORO PHASE II WORKPLAN
SITE 17 - COMMUNICATIONS STATIONS LANDFILL

Site	Approx. Area (sq. ft)	Potential Contaminants (# of Sites)	Site Name/ Investigation Type	Sample Media	No. Borings OR T.P.s	No. Perim. Gas Probes	No. Wells	No. Lysimeters	Lysimeter lin. Ft	Lin. Ft	ANALYTICAL METHODS(s)										
											SOIL	624 8240	625 8270	8015 M 8015 M	608 8080		200.7 6010	7196 7196 MOD	9310/9315 703	615 8150	NA TO-14
17	72000 Orig.	See Note 1	Comm. Station Landfill																		
-1	575000	See Note 1 (N/A)	100' x 100' Soil Gas Grid	Soil	3	-	-	-	-	675	-	-	-	-	-	-	-	-	-	-	
				GW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SG	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-2		See Note 1 (5 Cat 2 Sites)	Surface/Liquid Disposal Stain Areas	Soil	7	-	-	-	-	105	28/7	28/7	28/7	28/7	-	28/7	28/7	28/7	28	-	
				GW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SG	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-3		See Note 1 (4 Cat 3 Sites)	Subsurface / soil Displacement and Landfilling	Soil	18	-	-	3	670	720	266/59	266/59	266/59	266/59	-	266/59	266/59	266/59	266/59	-	
				GW	-	-	6	-	-	1500	9	9	9	9	9	9	9	9	9	-	
				SG	87	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99
				HYDROPUNCH	-	-	4	-	-	-	-	12	12	-	-	-	-	-	-	-	-
				SUR WATER	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2

FOOTNOTES:

- 1 WASTES INCLUDE: ANY WASTES FROM MCAS- DOMESTIC WASTE/RUBBLE, COOKING GREASE, OILS AND FUELS FROM SUMPS, EMPTY DRUMS, METALS AND OTHER WASTES. ALSO THERE IS POSSIBLY 36,000 GALLONS OF LIQUID WASTES.
- 2 PERIMETER PROBES INSTALLED IN EXISTING BORINGS.
- 3 LYSIMETERS DRILLED SEPARATE FROM OTHER BORINGS
- 4 FOR CATEGORY 2 SOURCE AREAS THE NUMBER OF SOIL SAMPLES ANALYZED IS CALCULATED AS FOLLOWS:
TOTAL = [CATEGORY 2 TEST PITS + CATEGORY 2 ADDITIONAL BORINGS] X 4 SAMPLES EACH
- 5 ADDITIONAL SOIL SAMPLES WILL BE COLLECTED DURING INSTALLATION OF GW MONITORING WELLS. SOIL SAMPLES WILL BE SUBMITTED TO LAB BASED UPON FIELD SCREENING AND/OR OBSERVATIONS. ASSUME 5 SAMPLES PER WELL BORING. THESE SAMPLES ARE INCLUDED IN CATEGORY 3 SOIL SAMPLE TOTALS.
- 6 THIS SUMMARY DOES NOT INCLUDE ANY QA/QC SAMPLES (I.E. TRIP BLANKS, DUPLICATES, MS/MSD, OR OTHER).
- 7 FOUR OF SIX WELLS WILL BE DRILLED USING HYDROPUNCH. THIS HYDROPUNCH WILL COLLECT SAMPLES AT THREE DEPTHS TO CHARACTERIZE THE AQUIFER, ONE TIME, TO ASSESS WATER QUALITY PRIOR TO CONSTRUCTION OF THE WELL.
- 8 FOR CATEGORY 3 SOURCE AREAS THE NUMBER OF SOIL SAMPLES ANALYZED IS CALCULATED AS FOLLOWS:
TOTAL = NO. BORINGS X 9 SAMPLES/BORING + TOTAL LENGTH OF LYSIMETER/10 FEET(SAMPLE EVERY 10')
- 9 FOR CATEGORY 3 SOURCE AREAS THE NUMBER OF GW SAMPLES ANALYZED IS CALCULATED AS FOLLOWS:
TOTAL = NO. WELLS + (NO. LYSIMETERS) X QUARTERLY SAMPLE
- 10 METALS ANALYSIS WILL INCLUDE LIST OF ANALYTES COVERED UNDER CLP CAS (24 ANALYTES).
- 11 FIELD SCREENING DONE FOR PCB'S USING AMINO ASSAY PROCEDURE.
- 12 THERE IS NO SPECIFIC FIELD SCREENING PROCEDURE FOR GENERAL CHEMISTRY OR HERBICIDES. THE NUMBERS SHOWN INDICATE: (THE NUMBER OF SAMPLES TAKEN AND THE NUMBER OF SAMPLES ANALYZED AT THE CLP LAB).
- 13 WHERE TWO NUMBERS APPEAR UNDER THE ANALYTICAL METHOD COLUMN- THE FIRST NUMBER REPRESENTS THE NUMBER OF SAMPLES TAKEN AND FIELD SCREENED. THE SECOND NUMBER REPRESENTS THE NUMBER OF SAMPLES ANALYZED BY A LABORATORY.
- 14 WHEN PARTIAL SAMPLES ARE CALCULATED, TOTALS ARE ROUNDED UP TO A WHOLE NUMBER.
- 15 CATEGORY 1 "TO-14" GAS SAMPLES ARE CALCULATED BY ADDING THE NUMBER OF CATEGORY 1 SG BORINGS WITH THE NUMBER OF CATEGORY 3 PERIMETER GAS PROBES + NUMBER OF BORINGS.

OU-2 LANDFILL SITES

WORK SCHEDULE

Mobilization

Week 3-7

Topography, Surface Geophysics and Soil Gas

Week 1-22

Soil Investigation

Week 8-24

Groundwater Investigation

Week 15-26

Air Investigation

Week 8-24

MCAS EL TORO REVISED PHASE II RI/FS WORK PLAN

SUMMARY OF OU-3 WORK PLAN MAJOR ELEMENTS

OCTOBER 12, 1994

OU-3 SITES INCLUDED IN FIRST DRAFT PHASE II SCOPE OF WORK

- **SITE 1 - EXPLOSIVE ORDNANCE DISPOSAL (EOD) RANGE**
- **SITE 4 - FERROCENE SPILL AREA**
- **SITE 6 - DROP TANK DRAINAGE AREA NO. 1**
- **SITE 7 - DROP TANK DRAINAGE AREA NO. 2**
- **SITE 8 - DRMO STORAGE YARD**
- **SITE 9 - CRASH CREW PIT NO. 1**
- **SITE 10 - PETROLEUM DISPOSAL AREA**
- **SITE 11 - TRANSFORMER STORAGE AREA**
- **SITE 12 - SLUDGE DRYING BEDS**
- **SITE 13 - OIL CHANGE AREA**
- **SITE 14 - BATTERY ACID DISPOSAL AREA**
- **SITE 15 - SUSPENDED FUEL TANKS**
- **SITE 16 - CRASH CREW PIT NO. 2**
- **SITE 19 - AIRCRAFT EXPEDITIONARY REFUELING
(ACER) SITE**
- **SITE 20 - HOBBY SHOP**
- **SITE 21 - MATERIALS MANAGEMENT GROUP,
BUILDING 320**
- **SITE 22 - TACTICAL AIR FUEL DISPENSING SYSTEM (TAFDS)**
- **SITE 23 - SEWER LINES**

PROPOSED CHANGES TO OU-3 SCOPE OF WORK

- COMPLETE WORK PLAN FOR SITE 1 RI ACTIVITIES, BUT DEFER IMPLEMENTATION UNTIL FINAL SITE CLOSURE
- ELIMINATE OR REDUCE RI/FS SCOPE OF WORK AT SITES 4, 7, 11, 13, 14, 19, AND 20 (NFRAP OR EE/CA)
- SITE 23 WAS INVESTIGATED AS PART OF RFA - CONCLUSION: NO FURTHER ACTION
- INCORPORATE REGULATORY AGENCY COMMENTS INTO REVISED OU-3 SCOPE OF WORK
 - » DROP STATISTICALLY-BASED STRATUM CONCEPT, CONDUCT FIELD SCREENING USING GRID LAYOUT
 - » EXPAND INVESTIGATIVE UNITS AT SOME SITES BASED ON AERIAL PHOTO ANALYSES, ETC.

MAJOR ELEMENTS OF OU-3 FIELD ACTIVITIES

- **BASEWIDE STRATIGRAPHIC INVESTIGATION**
 - » **GEOPHYSICAL LOGGING OF MUD ROTARY BOREHOLES**
 - » **CPT HOLES**
 - » **CORRELATION WITH EXISTING BOREHOLE DATA**
- **THREE-TIERED SITE-SPECIFIC SUBSURFACE SOIL SAMPLING INVESTIGATION**
 - » **INITIAL GRID SAMPLING OF SHALLOW SOILS**
 - » **SECONDARY GRID SAMPLING OF SHALLOW SOILS**
 - » **SAMPLING OF DEEPER SOILS**
 - » **JUDGEMENTAL SOIL**
- **ASSESSMENT OF SITE-SPECIFIC GROUNDWATER QUALITY IMPACTS**

BASEWIDE STRATIGRAPHIC INVESTIGATION

● 18 MUD ROTARY BORING

- » DEPTHS OF 120 - 200 FEET
- » CONTINUOUS SOIL SAMPLING
- » GEOPHYSICAL LOGGING
 - Caliper
 - Spontaneous Potential
 - Resistivity
 - Porosity
 - Natural Gamma
 - Neutron

● 18 CONE PENETROMETER TESTS

- » DEPTHS OF 80 - 180 FEET (IF FEASIBLE)
- » LITHOLOGIC LOGGING (SAND VS. CLAY)

● CORRELATE WITH BOREHOLE DATA FROM PHASE I RI/FS

- » LITHOLOGY, BOREHOLE GEOPHYSICS

THREE-TIERED SITE-SPECIFIC SUBSURFACE SOIL SAMPLING STRATEGY

- **SAMPLE SHALLOW SOILS USING INITIAL GRIDS**
 - » **704 HOLLOW STEM AUGER BORINGS TO 10 FEET**
 - » **2,231 SOIL SAMPLES COLLECTED AT DEPTHS OF 0, 5, AND 10 FEET OR 0, 2, 4, AND 10 FEET**
- **SAMPLING SHALLOW SOILS USING SECONDARY GRIDS**
 - » **BASED ON RESULTS OF INITIAL GRID DATA**
 - » **UP TO 527 HOLLOW STEM AUGER BORINGS TO 10 FEET**
 - » **UP TO 1,644 SOIL SAMPLES COLLECTED AT DEPTHS OF 0, 5, AND 10 FEET OR 0, 2, 4, AND 10 FEET**
- **SAMPLING OF DEEPER SOILS**
 - » **BASED ON RESULTS OF SECONDARY GRID DATA**
 - » **UP TO 49 HOLLOW STEM AUGER BORINGS TO DEPTHS BETWEEN 50 AND 120 FEET, PLUS UP TO 6 AIR ROTARY BORINGS TO 180 FEET DEPTH**
 - » **SAMPLE AT 5-FOOT INTERVALS BEGINNING AT 15 FEET DEPTH AND CONTINUE VERTICALLY TO 2 NDs AND LATERALLY TO 1 ND**
- **AT SEVERAL SITES, USE JUDGEMENTAL SAMPLING STRATEGY RATHER THAN GRIDS, TO SUPPLEMENT PHASE I RI/FS DATA**

GROUNDWATER SAMPLING STRATEGY

- SAMPLE GROUNDWATER ONLY IF SUBSURFACE SOIL CONTAMINATION EXTENDS TO WATER TABLE
- EVALUATE PLACEMENT AND SCREENED INTERVALS OF EXISTING MONITORING WELLS, THEN,
- INSTALL NEW WELLS ONLY WHEN UPGRADIENT/DOWNGRADIENT MONITORING COVERAGE IS UNSATISFACTORY OR ABSENT
 - » ESTIMATE 3 NEW WELLS, ONE AT SITE 8, TWO AT SITE 10
 - » WELL DEPTHS OF ABOUT 145 - 150 FEET
- COLLECT SINGLE ROUND OF GROUNDWATER SAMPLES AS PART OF RI/FS AT AN ESTIMATED 12 WELLS

SOIL SAMPLE ANALYSES

- **BOREHOLE FIELD SCREENING**
 - » AT EACH 5-FOOT SOIL SAMPLING INTERVAL
 - » SCREENING WITH PORTABLE FID and PID
- **FIELD SCREENING-MOBILE LAB**
 - » EPA METHODS 8010M, 8015M, AND 8020
 - » ALL GRID-BASED SHALLOW SOIL SAMPLES
 - » UP TO 50% OF DEEPER SOIL SAMPLES
- **FIELD SCREENING-IMMUNOASSAY KITS**
 - » EPA 4035 - PAHs AND EPA 4020 - PCBs
 - » ALL GRID-BASED SHALLOW SOIL SAMPLES
 - » 50% OF DEEPER SOIL SAMPLES
- **LEVEL D ANALYTICAL LAB**
 - » 10% OF INITIAL GRID SAMPLES
 - » 20% OF SECONDARY GRID SAMPLES
 - » 25% OF DEEPER SOIL SAMPLES
 - » ANALYSES FOR VOCs, SVOCs, PAHs, TFH, PCBs, Pesticides, Herbicides, Metals, Nitrate/Nitrite, Dioxins, Furans, Cyanide, pH, Phenols, Total Phosphate

FIELD AND LABORATORY QA SAMPLES

- **FIELD SCREENING**
 - » **INITIAL GRIDS**
 - 10% DUPLICATE SAMPLES
 - 10% RINSATE SAMPLES
 - » **SECONDARY GRIDS**
 - 20% DUPLICATE SAMPLES
 - 20% RINSATE SAMPLES
- **ANALYTICAL LABORATORY**
 - 20% TRAVEL BLANKS
 - 20% DUPLICATE SAMPLES
 - 20% RINSATE SAMPLES
 - STANDARD LEVEL D METHOD
BLANKS, SPIKES, ETC.

RATIONALE BEHIND OU-3 SOIL SAMPLING STRATEGY

- **GRID-BASED SAMPLE STRATEGY**
 - » ADDRESSES REGULATORY AGENCY CONCERNS AND COMMENTS
 - » PROVIDES COMPREHENSIVE SITE COVERAGE
 - » SPACING BETWEEN GRID NODES DEVELOPED TO REFLECT SIZE OF SITE AND TYPE OF HISTORIC WASTE DISPOSAL PRACTICES
 - » GENERATES SUFFICIENT NUMBER AND DISTRIBUTION OF SAMPLES TO SATISFY RISK ASSESSMENT REQUIREMENTS

- **MULTI-TIERED SAMPLING APPROACH**
 - » MINIMIZE REQUIRED FIELD ACTIVITIES, NUMBER OF SAMPLES, AND ANALYTICAL REQUIREMENTS THROUGH TIERED APPROACH CHARACTERIZED BY DATA EVALUATION AND REGULATORY AGENCY BUYOFF BEFORE PROCEEDING TO SUCCESSIVE STEPS
 - » COST CONTAINMENT

ACTIVITY ID	ACTIVITY DESCRIPTION	ORIG DUR	EARLY START	EARLY FINISH	PCT	1994					1995							
						MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
MILESTONES																		
DG 0000025	AWARD	0	31MAY94A		100	◆												
TASK 1 - PROJECT PLANNING																		
DG 0000030	BEGIN WORK	0	6JUN94A		100	◆												
DG 0101005	ISSUE WORK PLAN MEMORANDUM	9	18JUL94A	27JUL94A	100			■										
DG 0102005	MONTHLY REPORT AND CTO CLOSEOUT	347	15JUN94A	27MAY95	30		■	■	■	■	■	■	■	■	■	■	■	■
DG 0103005	PREP FOR KO MTG	7	6JUN94A	12JUN94A	100		■											
DG 0103010	KICKOFF MTG	3	13JUN94A	15JUN94A	100		■											
DG 0103100	SITE VISIT/MEETING/INTERVIEWS	14	25AUG94A	8SEP94A	100				■	■								
DG 0107005	REVIEW EXISTING DATA / RECORDS	7	26JUN94A	4AUG94A	100			■	■									
DG 0109005	ID DATA NEEDS & DQOS	21	12AUG94A	2SEP94A	100				■	■								
DG 0109010	ISSUE DQO POSITION PAPER	7	26AUG94A	2SEP94A	100				■									
DG 0112005	PREL ID OF ARARS / STANDARDS (UPDATE)	21	27JUN94A	17JUL94A	100			■										
DG 0113105	PREP WORK PLAN	117	15AUG94A	9DEC94	36				■	■	■	■	■	■	■	■	■	■
DG 0113106	COMMENT SUMMARY DOCUMENT	75	6JUN94A	9DEC94	0													
DG 0113110	REVIEW AND COMMENT ON W P's BY BASE CLOSURE TEAM	60	10DEC94	7FEB95	0													
DG 0113115	INCORPORATE BASE CLOSURE TEAM COMMENTS	30	8FEB95	9MAR95	0													
DG 0113120	ISSUE FINAL WORK PLANS	3	10MAR95	12MAR95	0													
DG 0113205	DRAFT ADDENDUM TO H&S PLAN	40	20SEP94A	4NOV94	0													
DG 0113210	REVIEW/COMMENT ON H&S PLAN BY BASE CLOSURE TEAM	60	5NOV94	3JAN95	0													
DG 0113215	INCORPORATE BASE CLOSURE TEAM COMMENTS H&S PLAN	30	4JAN95	2FEB95	0													
DG 0113220	ISSUE H&S PLAN	3	3FEB95	5FEB95	0													
DG 0113305	REVISE QA PLAN	75	20SEP94A	9DEC94	0													
DG 0113310	REVIEW AND COMMENT ON QAPP	60	10DEC94	7FEB95	0													
DG 0113315	INCORPORATE BASE CLOSURE TEAM COMMENTS QA PLAN	24	8FEB95	3MAR95	0													
DG 0113320	ISSUE FINAL QAPP	3	4MAR95	6MAR95	0													
DG 0113405	REVISE FIELD SAMPLING PLAN	75	1SEP94A	9DEC94	0													
DG 0113410	REVIEW & COMMENT BY BASE CLOSURE TEAM F S PLAN	60	10DEC94	7FEB95	0													
DG 0113415	INCORPORATE BASE CLOSURE TEAM COMMENTS F S PLAN	24	8FEB95	3MAR95	0													
DG 0113420	ISSUE FINAL FIELD SAMPLING PLAN	3	4MAR95	6MAR95	0													
DG 0113605	REVISE RISK ASSESSMENT WORK PLAN	40	1SEP94A	4NOV94	0													
DG 0113610	REVIEW & COMMENT ON RA PLAN BY BASE CLOSURE TEAM	60	5NOV94	3JAN95	0													
DG 0113615	INCORPORATE BASE CLOSURE TEAM COMMENTS RA PLAN	30	4JAN95	2FEB95	0													
DG 0113620	ISSUE FINAL RISK ASSESSMENT PLAN	3	3FEB95	5FEB95	0													
DG 0113705	DEVELOPE AND ISSUE DATA MGT PLAN	40	10SEP94A	4NOV94	0													
DG 0113710	REVIEW & COMMENT ON DATA MANAGEMENT PLAN	60	5NOV94	3JAN95	0													
DG 0113715	INCORPORATE BASE CLOSURE TEAM COMMENTS D M PLAN	30	4JAN95	2FEB95	0													
DG 0113720	ISSUE FINAL DATA MANAGEMENT PLAN	3	3FEB95	5FEB95	0													
DG 0113805	DEVELOPE AND ISSUE WASTE MANAGEMENT PLAN	75	20SEP94A	9DEC94	0													
DG 0113810	REVIEW AND COMMENT ON WASTE MANAGEMENT PLAN	60	10DEC94	7FEB95	0													
DG 0113815	INCORPORATE BASE CLOSURE TEAM COMMENTS ON WMP	24	8FEB95	3MAR95	0													
DG 0113820	ISSUE WASTE MANAGEMENT PLAN	3	4MAR95	6MAR95	0													
DG 0118005	TASK MANAGEMENT AND QUALITY CONTROL	356	6JUN94A	27MAY95	32		■	■	■	■	■	■	■	■	■	■	■	■
TASK 15 - REMOVAL ACTION																		
DG 1500005	BEGIN TASK 15	0	6JUN94A		100	◆												
DG 1501005	ENG EVAL / COST ANALYSES (EECA)	59	6JUN94A	23NOV94	0													

Plot Date 19OCT94
 Data Date 26SEP94
 Project Start 1JAN93
 Project Finish 27MAY95

Activity Bar/Early Dates
 Critical Activity
 Progress Bar
 Milestone/Flag activity

A059

NAVY CLEAN II PROGRAM
 CTO 059
 SCHEDULE FOR UPDATING STATUS

Sheet 1 of 2

BECHTEL NATIONAL, INC.

Date	Revision	Checked	Approved

ACTIVITY ID	ACTIVITY DESCRIPTION	ORIG DUR	EARLY START	EARLY FINISH	PCT	1994							1995						
						MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	
TASK 15 - REMOVAL ACTION																			
DG 1501010	ISSUE COST ANALYSES (EECA)	22	4NOV94	25NOV94	0														
DG 1501015	REVIEW EECA BY BASE CLOSURE TEAM & RAB	81	7NOV94	26JAN95	0														
DG 1502005	INCORPORATE BASE CLOSURE TEAM & RAB COMMENTS EEC	50	6JAN95	24FEB95	0														
DG 1502010	ISSUE EECAs	25	3FEB95	27FEB95	0														
DG 1502015	PUBLIC COMMENT ON EECAs	30	28FEB95	29MAR95	0														
DG 1505005	INCORPORATE PUBLIC COMMENTS	30	30MAR95	28APR95	0														
DG 1505010	PREPARE COMMENT SUMMARY	50	30MAR95	18MAY95	0														
DG 1505015	ISSUE FINAL EECA	5	29APR95	3MAY95	0														
CARRIER ACTIVITY																			
DG 2000005	CARRIER ACTIVITY	362	31MAY94A	27MAY95	33														

