CLEAN II
Interoffice Memorandum

To: David Cowser Bechtel

Subject: **Meeting Minutes for the Progress Meeting Phase II RI/FS Workplans MCAS El Toro, CTO-059**

Date: 19 August 1994

From: Tim Latas

Of: Kleinfelder

Copies to:

Jason Ashman	SWDIV
John Kluesener	Bechtel
Bong Kown	Bechtel
Dante Teldaldi	Bechtel
Pat Brooks	Kleinfelder
Pat Wiegand	Brown and Caldwell
Katrina Lyons	Kleinfelder
Juan Jimenez	DTSC
John Hamill	EPA
John Broderick	RWQCB
Dave Crawley	El Toro

MEETING DATE: 12 August 1994
MEETING TIME: 0800-1500
ATTENDEES: See Attached Sheet

AGENDA: Provided in Handouts on August 12, 1994 from Tim Latas and Jason Ashman

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Introduction - Purpose and Objectives

Jason Ashman of SWDIV and Tim Latas of Kleinfelder presented an introduction to the Progress Meeting held on August 12, 1994 at Bechtel National (BNI) office in San Diego, California. The Progress Meeting was held to discuss the overall approach and specific sampling strategies to the implementation of four RI/FS activities at MCAS El Toro. The information presented and comments submitted during the meeting are to be used in preparing cost proposals that the Navy (SWDIV) has requested. These cost proposals will be submitted to SWDIV for negotiations and subsequently awarded to CLEAN II. These awards are to be made before the end of SWDIV fiscal year (September 30, 1994). 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.

The intent of the Meeting is to involve the Base Closure Team (BCT), Base Environmental Coordinator (BEC), and CLEAN II team in the sampling strategies for the RI/FS workplans for the Landfills (OU-2), OU-3 sites, VOC Source Area (Sites 24 and 25), and status of Removal Actions. The development of the sampling strategies is based on the CLEAN II team review of CLEAN I documents, site visits, and regulatory agency comments.

Jason Ashman continued the introduction with a short discussion of topics following up the Pre-Proposal Conferences (PPCs) in July 1994. These topics included:

- Approval of the progress made at the PPCs
- Definition of goals to clean up base as rapidly and efficiently as possible
- Team Building Seminar (Dates are tentatively schedule for October 12th and 13th, Attendee list will be distributed within next two weeks)

General Approach To Development of Sampling Strategy and Formulation of Workplans

Tim Latas presented a discussion of the general approach to be used to develop the sampling strategies and workplans. Handouts were distributed with an outline of the presentation and a timeline of the planned project illustrating the point in time at which the project is currently. The primary goal of developing the general approach is to define the processes used in formulating the sampling strategies and the workplans. Another defined goal was the urgency to address the human health and ecological risk concerns as soon as possible. The general approach was based on the following:

- Items considered in the general approach were previous data, professional judgment, meetings, cost proposals, schedules, and defining the ultimate goal as providing information for decision making.
- Assumptions utilized in defining the general approach were that all sites would require additional data to assess the status, the approach to the investigations would incorporate judgmental and systematic sampling, and investigations would incorporate data collection to evaluate remedial alternatives.
- Previous data was used to formulate "units" which will be the fundamental area targeted by investigations. A "unit" is equivalent to strata, or an area of sampling. "Unit" is used to avoid confusion with the statistical concept of "strata" as defined by CH2M Hill.
- The approach would incorporate flexibility while addressing specific concerns (e.g., are landfills "leakers").
- A variety of technologies will be used such as downhole geophysical logging, analytical field screening using immunoassay and mobile labs, soil gas probes and soil gas influx chambers, CPT (cone penetrometer), and geotechnical analysis.
  - A tiered approach would be used for all the sampling strategies. Tier I will emphasize field screening. Tier II will involve analyzing the data to define the nature and extent of contamination. Tier III will typically include pilot testing and treatability studies.

Discussion Points:

1. Document formats need to be considered and standardized.
2. Figure formats need to be considered and standardized.
3. The possibility of developing base-wide plans (programmatic plans) needs to be considered.
4. These programmatic plans can be updated by amendments and addendums.

Action Items:

1. A transition meeting is planned for the 23rd and 24th of August. A memo will be distributed within the next week.

Ecological Risk Assessment

Roxie Barnett of US EPA presented a brief discussion on the major concerns of the EPA. The primary goal of this process is to identify the risk at the subject site and to protect the resources. Ms. Barnett expressed an interest in doing joint reports with the CLEAN II Team, also using a phased approach, so that work would not be duplicated by either party.

Discussion Points:

1. Ms. Barnett stated that a major concern was to ensure that in attempts to protect resources, the habitat should not be destroyed.
2. The EPA needs to complete a habitat assessment to provide a foundation for the ERA.
3. The areas of critical concern were identified as primarily the foothills and wash areas.
4. Bong Kown defined the structure of the CLEAN II Team and stated that the CLEAN II Team moving to San Francisco should have minimal impact on the schedule. Also CLEAN II is a Bechtel contract and Kleinfelder, Inc. and Brown and Caldwell are subcontractors to Bechtel.

Action Items:

1. The EPA will be conducting a habitat assessment of the area in October.
2. The EPA needs to survey the resources around the base more thoroughly to identify other possible areas of critical concern.
3. Barbara Wilson stated the MCAS El Toro is producing a conservation plan which will be out in 60 days.
4. The EPA, the CLEAN II Team, and CH2M Hill need to meet to discuss risk assessment tasks already completed, responsibility of future tasks, and formulation of goals for the RA team.

Human and Ecological Risk Assessments

Richard Blanchet and David Liu presented a discussion on the CLEAN II approach to be used to conduct the human and ecological risk assessment. An ecological risk assessment was defined as "A qualitative and/or quantitative appraisal of the actual or potential effects of a hazardous waste site on plants and animals other than people or domesticated species". Mr. Blanchet illustrated a "tiered" approach that defined a primary goal of ensuring that only the necessary work will be done while all the necessary work will be done. Handouts were distributed utilizing a flow chart to depict the following proponents of the strategy:

- Problem Formulation was defined as qualitatively evaluating containment releases, identifying COPCs, Receptors, Exposure Pathways and selecting endpoints of concern.
- Exposure Assessment was defined as quantifying a release and its migration, characterizing receptors, and measuring or estimating exposure point concentrations.
- Ecological/Biological Effects Assessment was defined as being produced using literature, toxicity testing, and field studies.
- Risk Characterization was defined as identifying the current/future adverse effects, developing uncertainty analysis and assigning ecological significance.
- Tier 1 was defined as the qualitative screening for the habitat assessment. From this screening, a problem can be formulated to address the exposure assessment and the ecological effects assessment. A risk characterization will then be developed in order to apply risk management. The risk can then be assessed and classified as either an acceptable risk (for which no further action will be required) or an unacceptable risk which will move the process into Tier 2.
- Using quantitative analyses, Tier 2 follows the same process to characterize the risk as either acceptable or unacceptable. If the risk is acceptable, no further action will be required. If the risk is unacceptable, risk reduction will have to be addressed and remedial action taken.
- The quantitative analyses used in Tier 2 also addresses how bio-available the contaminants are and if there is a problem through the food chain.

Discussion Points:

1. Harry Ohlendorf stated the need for the risk managers and the risk assessors to find an agreement on defining the endpoint of the assessment.
2. The desire for the U.S. Fish and Wildlife to be contacted and have representation was discussed. It was stated that Linda Dawes of the El Toro Re-Use Committee would be a good contact for this.

3. Barbara Wilson stated that they are trying to assess which species are using the area through their conservation plan. They have identified at least 11 sensitive species and also found that the latest study on the black-tailed gnat catchers was done two years ago.
4. The U.S. Fish and Wildlife committee is doing a vegetation study for the conservation plan.
5. The possible involvement of California Fish and Game was discussed.
6. David Liu briefly discussed the human health issue. He stated that the majority of the assessment had already been completed by Liz Meisner of CH2M Hill using risk based concentrations. He stated that he would use this information to complete the assessment. If any additional chemicals were found, he would use the same procedure CH2M Hill had used in their Phase I report.
7. Dan Stralka questioned if the methodology had been transferred and a discussion resumed regarding the transfer of information among the risk assessment teams.
8. Tim Latas discussed the Tier 1 approach and explained how it would apply to all areas of the base and that Tier 2 would apply a quantitative study for the "hot-spots" which would require extra attention. It was decided that Tier 2 quantitative studies would be required for all areas with habitat questions to determine if there were any contaminants which were bio-available.
9. Barbara Wilson stated that many birds of prey live around the golf course and that they would be good receptors of chemicals.
10. It was discussed that most of Tier 1 had already been completed by CH2M Hill and that a meeting for all of the risk assessors would be beneficial to transfer information.
11. Roxie Barnett stated that the EPA had not reviewed receptors and contaminants but that it would build on the work already performed.

Action Items:

1. Barbara Wilson will contact Ms. Linda Dawes to see if the involvement of U.S. Fish and Wildlife is necessary.
2. Juan Jimenez of CAL-EPA will contact California Fish and Game to see if they will require representation.
3. Liz Meisner is to give reports and spreadsheet to David Liu.
4. A meeting for all of the risk assessors should be arranged so that the transfer of information is complete.

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 (Site 24). 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. 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 proposed strategy implemented the tiered approach and consisted of the following:

- Tier 1 efforts center around field screening. The instruments to be used in this tier include CPT to identify permeable strata and potential VOC traps to assist in designing the shallow soil gas survey;
- Drill eight mud rotary borings to 200 feet and continuously sample with 94 mm soil sample core barrel; perform downhole geophysical logging using resistivity, neutron, density, gamma, and caliper tools; correlate lithologic and geophysical logs to identify regional scale VOC traps and conduits, and the presence of pure-phase chlorinated hydrocarbons, if present;
- Collect and analyze shallow soil gas samples based on CPT analysis near Buildings 296, 297, Site 7, Site 8, Site 9, and North of Site 9 and 10;
- Collect and analyze soil gas samples from existing monitoring wells (MW-45, MW-47, MW-71, MW-74). Compare MW soil gas concentrations with the expected equilibrium concentrations (Henry's Law) to identify potential source areas;
- Excavate test pits and hand auger borings near degreasers, edge of tarmac, and storm drains;
- Locate abandoned water supply wells. Collect groundwater samples from abandoned wells 2, 3, 5, and 6;
- Collect surface water samples from major drainages coincident with rainfall event.
- Based on the information gathered in Tier 1, Tier 2 characterizes the nature and extent of VOCs by analyzing selected soil samples for VOCs from the continuous sampled borings;

- Locate hollow-stem auger borings at potential source areas using data from CPT, shallow soil gas sampling, and stratigraphic analysis. Analyze selected soil samples for VOCs;
- Collect deep soil gas samples using hollow-stem auger borings to define nature and extent of VOCs in the soil gas. Use data from CPT and stratigraphic analyses to place soil gas samples in strata likely to collect soil gas. Complete borings as soil vapor extraction wells in impacted areas for future areas;
- Drill new monitoring wells to further define extent of VOCs in groundwater using data from CPT, stratigraphic analysis, soil gas survey, and hollow-stem auger borings;
- Analyze selected soil samples for geotechnical parameters to aid in the design of treatability pilot tests.
- Tier 3 addresses treatability pilot studies. The initial step is to complete hollow-stem auger borings as soil vapor extraction wells at identifies soil hot spots;
- Install soil gas piezometers near vapor extraction wells to further characterize extent of VOC soil impacts and to assess radius of influence during vapor extraction pilot tests;
- Perform soil vapor extraction pilot tests to assess VOC removal rate from soil, optimum well spacing and configuration, blower size and applied vacuum, and effluent gas treatment method;
- Drill two air sparging wells based on nature and extent of VOCs in groundwater;
- Drill two soil vapor extraction wells near air sparging wells to collect sparging off-gas and soil vapor;
- Perform air sparging pilot tests to assess VOC removal rate from groundwater, radius of influence of sparging wells, ability of vapor extraction wells to collect sparging off-gas, and changes in downgradient groundwater and soil gas VOC concentrations.

Discussion Points:

1. Mr. Brooks illustrated the areas containing high concentrations of TCE, but noted that the source in the soil has not yet been identified. Mr. Brooks identified three hypotheses explaining why the "hot spot" is in an unexpected location. The first hypothesis stated that a possible source north of the site (Buildings 296 and 297) may have been missed. The second hypothesis states that perhaps there was a major source near the hangar which is now depleted, but the contamination has moved downgradient in the groundwater. The third hypothesis addressed the possibility that the source of contamination was near Buildings 296 and 297 and was transported along the clay layer in unsaturated zone to the groundwater "hot spot". Mr. Brooks discussed the need to find the source because the source must be removed in order to clean the groundwater. The possibility of more than one source was also discussed.
2. The CPT will go down to approximately 50 to 75 feet as it is necessary to get to the permeable strata. John Dolegowski discussed how difficult drilling was in this area. The possibility of using a hydropunch was discussed, but it was decided that this would not be an efficient method of assessment due to the difficult drilling conditions, the tightness of the clay layer, and the depth from which the samples would be taken.
3. The use of mud rotary drilling was discussed. It was explained that drilling with mud is required to provide geophysical logs. The geophysical logging will also allow the capability to compare soil samples with geophysical logs and provide a consistent base for geologic interpretation. Mr. Brooks addressed the need to evaluate whether the clay layer is affecting transport of contaminants. The need to address the shallow aquifer system was also identified.
4. The tarmac was identified as the area at which the plane washing is performed. Mr. Brooks identified this as a possible source of contamination. Mr. Brooks interviewed a civilian contractor and two marines working in the crash area regarding practices used to wash the planes. These interviews have been documented and will be included in the RI/FS report.
5. There was a discussion regarding the use of air sparging. The controversy of utilizing air sparging due to the possibility that it may mobilize some free-phase TCE was discussed. Mr. Brooks stated that he did not expect free-phase TCE because the concentrations of the contaminant are not at the level to expect free-phase TCE. However, this possibility will be investigated.
6. The question was posed and answered if there was any vinyl chloride present. Mostly TCE is present and there is some breakdown showing 1,1-DCE and 1,2- DCE; however there were low concentrations of vinyl chloride detected during the CH2M Hill soil gas survey. .

7. There was a discussion on the VOC soil sampling method developed by Bechtel and proposed to be used during this process.

Action Items:

1. Pat Brooks and John Dolegowski will exchange information regarding the drilling conditions as the site to ensure the use of the information generated by CH2M Hill.

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 sampling strategy is based on the tiered approach and included information extracted from reviewing all previous documentation. The soil gas sampling plan for the landfills is consistent with the CH2M Hill plan. The major points of the strategy are highlighted below.

- The objective of Tier 1 is to assess the presence of contamination through field screening Tier I will consist of soil gas surveys, mud rotary borings, monitoring wells, and lysimeters with the primary objective of addressing whether the landfills are "leaking". In order to confirm previously documented information and to obtain a better resolution, soil gas sampling will be performed via a grid of a designated distance assigned to each unit. (The landfills do not consist of one large area; however they are composed of several separate units, each of which must be addressed individually. These units were identified through photographs, interviews, and review of the previous workplan.)
- Downhole geophysical logging will be performed at each of the sites. Information will also be obtained utilizing GPR, EM31 and EM61 also via a grid of a designated distance assigned to each unit.
- Potential source areas in each site will be assessed individually. Assessment of the groundwater and vadose zone for the source areas will be completed by installation of monitoring wells and lysimeters. The lysimeters will be permanent monitoring points to signal possible landfill leaking.
- Groundwater monitoring wells will be positioned downgradient and upgradient from the landfills to assess impacts to groundwater.
- Tie 2 will characterize the nature and extent of the contamination. This will performed through test pits in the stained areas, trenches in the fill areas, installation of deep soil borings, and gas migration probes.
- Groundwater monitoring wells will be positioned downgradient and upgradient from the landfills to assess impacts to groundwater
- A mobile laboratory will be used to provide real time analytical data and modify the sampling program as necessary to characterize the nature and extent of contamination. Ten percent of the field-screened samples sent to the off-site lab will be done randomly. Ten percent of the field-screened samples sent to the lab will be determined from the field screening results. The samples will be sent directly to the off-site laboratory for Level D (NEESA) analyses.
- Once the preliminary data has been collected, remediation techniques can be decided. If there is no leaking the sampling data can be given to the risk assessors. Capping is a "presumptive remedy" and will be most likely utilized if the landfills are "leakers".

Discussion Points:

1. Need to minimize borings and monitoring wells in the landfill areas. There will be no trenching or drilling with the exception of the lysimeters and monitoring wells. One boring must also be installed in the landfill to determine the depth of waste.
2. Barbara Wilson requested that Katrina Lyons talk with her before beginning any sampling. El Toro is re-vegetating in the areas of the some of the landfills to restore habitats. Ms. Wilson stated that the habitats are very susceptible to damage inflicted by the presence of people. There was another discussion of involving

California Fish and Wildlife and permits may be necessary for this work. Ms. Wilson also stated that El Toro had begun grading in certain areas to prevent erosion caused by surface runoff and assured that these areas are not draining into the landfills.

3. A discussion ensued explaining the function of the lysimeters. It was stated that the lysimeters will be used to collect samples of the leachate without drilling through the landfill.
4. John Christopher initiated a discussion regarding Site 2, a site at which the groundwater has been rising to a level high enough into the landfill and the dropping back to the lower level. Ms. Lyons assured him that it would be addressed through the same process as the other landfills. John Broderick stated that the RWQCB would require any leaking landfill to be capped.
5. John Dolegowski stated that some of the stained areas identified may be water filled depressions. Katrina Lyons stated that they would be looking at a minimum of 18 sites, perhaps more, as she felt that the sites they had designated to be sample merited it.
6. Dante Tedaldi initiated a discussion regarding soil gas points versus the flux test.
7. John Dolegowski discussed the difficulties of drilling in the area. He stated that the wells were difficult to install due to the alluvium and bedrock.
8. Bonnie Arthur questioned the condition of the current monitoring well at Site 17 and was told that it is clean.
9. Roxie Barnett initiated a discussion regarding sampling. It was stated that surface samples were designated to be above ten feet. Sampling is planned to occur at 0, 5, and 10 feet, but samples may also be taken between 1 and 2 feet to supplement the ecological risk assessment.
10. Mobile labs will be used on site and all soil samples will be field screened. A discussion ensued regarding field screening and it was stated that no screening method for water, herbicides or pesticides is available. SVOCs will use immunoassays for field screening. It was also stated that PCBs have been detected and will be assessed.
11. Dante Tedaldi began a discussion regarding the sampling of surface waters. Katrina Lyons stated that these samples would be taken after the first heavy rainfall lasting at least three hours. John Broderick stated that the facility is a permitted NPDES facility and does have a storm water monitoring program.

Action Items:

1. Information regarding the re-vegetation, grading, and habitats need to be obtained from Barbara Wilson in order to refine sampling strategies.
2. California Fish and Wildlife need to be contacted to assess if permits are necessary to enter this area during breeding season.
3. Information regarding drilling and data from the existing monitoring wells needs to be transferred from CH2M Hill to the CLEAN II Team.
4. Efforts to associate surface water sampling with the existing monitoring program at the facility need to be made.

Phase II Sampling Strategy for OU-3 Sites

Pat Wiegand gave 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 sampling strategy was based on a review of historical data (SAIC aerial photograph review, CH2M Hill Phase I Sampling Plan Amendment aerial photographs, EPA aerial photograph review, RFA report, and recent interviews conducted by the BCT) and review the CH2M Hill Phase I Technical Memorandum and Phase II Work Plan. The sampling strategy is based on a phased approach where phase I is based on field screening, phase II focuses on refined areas for further investigation, and phase III will initiate clean-up actions. The following points were made during the presentation:

- Seventeen sites have been identified for assessment; seven of these are candidates for early removal action. Site 1 is the EOD Range (there may be chemical smoke or tear gas present). The rest of the sites are typified

by a common range of chemicals: fuels, oils, solvents. One site is contaminated with PCBs; one site was used for battery acid and solvent disposal. One active site is an area at which old munitions are burned (Site 1).

- The primary contaminants have been identified as VOCs, SVOCs, metals, and fuels.
- Most activities were direct surface disposal or spillage.
- The Phase I study showed that contamination at half of the sites is limited to shallow soils.
- The areas of the most historic disposal were not areas where most of the sampling was performed, requiring more sampling and assessment.
- The EPA or DTSC have identified a possible screening method to test for explosives.
- A stratigraphic investigation of soil borings, lithologic logging, and geophysical downhole surveys as well as use of aerial photos will be used in the Phase II RI/FS.
- The electromagnetic study by CH2M Hill does show trenches at Site 1, but sampling was limited during Phase I. There are only 2 monitoring wells existing.
- Two methods will be used to assess the sites. Only a few samples will be taken from the very small sites with surface stains.
- A comprehensive study will not be performed on each site; the CLEAN II Team plans to augment the previous work performed by CH2M Hill to get enough data for the risk assessors and provide information on nature and extent of contaminants.
- More detailed investigations will be performed at the larger sites such as Site 7 and Site 10. This will include a series of mud rotary borings to below the water table with geophysical logs.
- A systematic grid will be applied to Site 10 and sample locations will be systematically located on the grid. Samples will be selected at depths of 0, 5, or 10 feet or at 0, 2, 4, 10 feet. A mobile lab will be used for initial screening. The analytical tests will be run for contaminants that have been known historically to be present.
- Lab results will identify if no further action is required or if remediation is necessary.
- Additional work required for further assessment will occur in Phase II.
- Further assessment will require drilling in identified areas to determine if the contaminant is present at depth. Twenty percent of soil samples generated in Phase II will be analyzed to NEESA Level D requirement.
- The groundwater characterization strategy will use existing wells and new wells, as required. However, if the soil is found to be clean, groundwater will not be sampled.

Discussion Points:

1. There was a discussion regarding the metal contaminants. Metals are not tested for in mobile labs. A concern was expressed that the metals will take too long to be analyzed. However, Pat Wiegand stated that he did not think these analyses would postpone the project.
2. A concern was expressed regarding the procedures used at these sites by the risk assessors.
3. John Broderick stated that there should be a monitoring plan for the groundwater monitoring wells, but he does not believe the wells have been sampled currently.
4. John Dolegowski of CH2M Hill stated that they should have a sampling plan returning to them from the agencies.

Action Items:

1. A risk assessment workplan needs to be generated for the activities to be performed at these sites.
2. A groundwater monitoring plan needs to be developed and approved before the wells are installed.

Removal Actions

Karnig Ohannessian gave a presentation on the NCP requirements for removal actions under CERLCA and SARA. Handouts were distributed illustrating the possible alternatives available for site cleanup. A site map of one of the sites and a table showing the associated contaminant data. The following information was presented in the discussion explaining the two different response types: removal action and remedial action.

- In order to initiate remedial action at a CERCLA/SARA site, the following steps are to be followed:
  1) A preliminary assessment/site investigation is performed
  2) Remedial investigation/feasibility study
  3) Record of decision
  4) Remedial Design/Remedial Action
  5) Operation and Maintenance
- In order to initiate a removal action at a CERCLA/SARA site, the following steps are to be followed:
  1) A preliminary assessment/site investigation is performed
  2) This may go straight to an action memo and then to remedial decision/removal action or:
  3) An extended site investigation may or may not be required; this will depend on how much information is available
  4) Perform an engineering evaluation and cost analysis
  5) This then moves to an action memo and then to a removal action.

Discussion Points:

1. There was a discussion on using risk based concentrations and PRGs defined by EPA Region 9 as removal action levels. For example, no contaminants were found above risk-based concentration levels for Unit 1 of Site 4.
2. Dante Tedaldi initiated a discussion regarding the problem with risk base levels being below detection limits for the laboratory.
3. John Broderick stated that the re-use plan would be able to define the detection limit level, however this will not be available for another 18 months. He did state that there was a need to have the clean-up levels tie in with the re-use plan.
4. It was discussed that a lower detection limit can not be utilized without EPA approval.
5. John Hamill suggested basing the clean-up levels on the diesel contaminant levels.
6. Currently there does not appear to be is not enough information to write the EE/CAs for all removal sites, however it may be too long to wait for the RI results. An Extended Site Inspection (ESI) was discussed as a possible contingency to expedite the removal process.
7. A meeting with the Navy will be held shortly to discuss the removal strategies.
8. John Broderick suggested writing mini-SAPs and attempt to fast-track them through the regulators using the petroleum exclusion under CERCLA. However this contingency has not been negotiated with the Navy. There was a discussion to possibly drop the sites off of the CERCLA list and base the removal on the diesel contamination so that an EE/CA will not have to be performed (under the petroleum exclusion clause). John Broderick then suggested a scoop and haul and then re-sample to show that the other contaminant is no longer present. However, this site is already on the CERCLA list and it is unknown how the site can be removed from the CERCLA list without showing that Benzo-pyrene is still present.

Action Items:

1. Goals for removal cleanup levels need to be identified.
2. A decision needs to be made on removal action strategies.

Miscellaneous Items

Joseph Joyce announced that the next RAB meeting is scheduled for August 25. He also suggested that community relations efforts be addressed in the next CLEAN I to CLEAN II transition meeting.

The human and ecological risk assessors adjourned to a separate meeting at 14:00. Attached is a memo on the ecological risk assessment meeting.

Juan Jimenez requested that Dante Tedaldi be included in all future meetings for this site.

John Dolegowski asked if the CLEAN II Team was including all the statements made by the regulators in the Phase II Workplans. Tim Latas answered that the comments were being incorporated.

On behalf of CH2M Hill, John Dolegowski offered their help on this project and would make an effort to transfer all of their information.

The next transition meeting is scheduled for August 22, 23, or 24, 1994. A memo was distributed with a list of topics to be discussed. All parties were to have their written comments to Tim Latas by August 16.

Juan Jimenez expressed a desire for the regulators to be a part of the transition meeting.

The next RPM meetings are coming up to discuss the evolution of the workplans.

Schedule

The proposed schedule for upcoming meetings is:

August 23/24/25	Transition Meeting with CH2M Hill (CLEAN I) and Bechtel (CLEAN II)
August 25	RAB Meeting

Memorandum

TO: Tim Latas, Kleinfelder San Diego

FROM: Richard Blanchet, Kleinfelder Seattle

RE: Ecological Risk Assessment Meeting, August 12, 1994

DATE August 16, 1994

The ecological risk assessment meeting covered the same topics that were discussed earlier in the day. Persons present for the informal meeting included Harry Ohlendorf (Ecological risk assessor for CH2MHill), Barbara Wilson (Environmental coordinator for MCAS El Toro), and myself.

First item up for discussion with all risk assessors (human health and ecological) was a thorough base-wide visit with Barbara Wilson. Supposedly, we are not allowed to go around the sensitive areas without her prior approval. Certain areas are identified as sensitive habitat and do not recover readily from destruction. A day-long/base-wide visit would include all interested risk assessors (human health and ecological) and is tentatively set for October. A specific date will be set later. The visit will probably coincide with Roxy Barnett's habitat assessment.

Specific topics discussed among the ecological risk assessors included the sharing and transfer of information from CH2MHill and MCAS El Toro with the Phase II ecological risk assessors. I also requested to have the Phase I data generated by CH2MHill forwarded to me on disk. This will enable us to compile the existing information with that generated during the upcoming sampling effort. Barbara Wilson also informed me that numerous biological reconnaissance investigations were performed at the base. This information is available and would be useful to understand the complexity of the ecological habitats present on the base.

The second topic included a discussion of the proposed approach to be used when performing the ecological risk assessment for the base. I emphasized that the information generated by CH2MHill would be used to the fullest extent possible during Phase II. As outlined earlier in the morning, the ecological risk assessment would follow a tiered approach. The first tier would be a screening level risk assessment. Recognizing the extent of work done in this regard by CH2MHill, our objective is not to reinvent the wheel but to proceed from this work. In other words, use the data already available, identify data needs and gaps, and proceed from there to fully characterize the base with regard to ecological habitats and receptors (no habitat assessment was performed during Phase I by CH2MHill). From there, identify the critical habitats or receptors of concern that may require additional investigation (most likely the landfill sites and the EOD site). Under Tier 2, additional investigations may include small mammal trapping, collection of macroinvertebrates, and sampling of food items (i.e., plant

materials). Additional soil sampling may also be required to fully characterize potential sites of concern. Information generated during this Tier will be useful to evaluate the transfer of chemical of concern to higher trophic level organisms and give us an idea of the bioavailability of COCs. QAPPs and SAPs may be needed if we decide to go this far.

Third topic included the involvement of U.S. Fish and Wildlife Service (USFWS) during the ecological risk assessment and to find out what are the objectives of the agency in regard to the base. Barbara would contact someone at USFWS and get their input on whether they want to be involved in this process or not.

The fourth topic concerned the base closure and what will be done with the property. Specifically, the extension of the Alton Parkway right through Site 2 which includes some of the most complex and fragile habitat on the base; it is prime gnatcatcher (T&E species) habitat. Site 2 supports a gnatcatcher breeding population and other ecologically sensitive species.

The meeting was adjourned following this discussion.

Action Item: Roxy Barnett, David Liu and myself will be meeting next Tuesday August 23 in San Francisco at the Bechtel offices between nine and twelve noon. We will discuss how to proceed with the ecological risk assessment. The CH2MHill workplan should serve as a basis for the Phase II risk assessment workplan. The level of detail that the regulatory agency wishes to have included in the Phase II workplan will be discussed.

If you have any questions or comments on this, please do not hesitate to contact me.

August 19

CTO 059
MCAS El Toro
RI/FS Work Plans

✓ John Christopher
Cal EPA/DTSC 916 327 2491

✓ David Cosier 619-687-8200
Bechtel

Attendance List

✓ Andy Pisekin	Navy	619-5[illegible]
✓ Tim Latas	Kleinfelder	(619) 541-1145
✓ Richard Blanchet	Kleinfelder	(206) 562-4200
✓ PATRICK BROOKS	KLEINFELDER	619-541-1145
✓ JOSEPH JOYCE	SW DIV	(619) 532-3873
✓ [illegible] Wilson	MCAS ELTORO	(714) 726-6611
✓ CHRISA MITCHELL	MCAS ELTORO	714-726-3386
✓ KATRINA LYONS	KLEINFELDER	(909) 396 0335
✓ Bonnie Arthur	USEPA	(415) 744-2389
✓ JOHN HAMILL	EPA	(415) 744-2385
✓ Roxy Barnett	EPA	415-744-2308
✓ DAN STRALKA	EPA	415-744-2310
✓ Liz Morin	CH2M HILL	510-251-6333
✓ JOHN BRODERICK	RWQCB-8	909 782 4494
✓ JASON ASHMAN	SW DIV	619 532-1164
✓ DAVID LIU	BECHTEL	415-768-0373
✓ Albert A. Arellano, Jr	CalEPA/DTSC	(310) 590-4920
✓ Juan Jimenez	" "	(310) 590 4931
✓ Karnig Ohannessian	Kleinfelder	(619) 541-1145
✓ GREG CAMERON	BROWN & CALDWELL	619 528-9090
✓ Pat Wiegand	BROWN & CALDWELL	(619) 528-9090
✓ DANTE J. TEDALDI	BECHTEL NATIONAL INC.	(619) 687-8780
✓ Bong Kown	Bechtel	619) 687-8745
✓ Harry Ohlendorf	CH2M HILL	916/920-0300
✓ LINDA NEBIKER	Kleinfelder	619-541-1145
✓ John Dolegowski	CH2M Hill	714/250-1900
✓ Vish Parthasarathy	MCAS ELTORO	714-726-4432

STRATEGIES AND RISK ASSESSMENT
AUGUST 12, 1994
CTO 059
PHASE II RI/FS WORKPLAN
MCAS EL TORO
ORANGE COUNTY, CALIFORNIA

Session	Time
1. Introductions - Jason Ashman	8:00
2. General Approach - Tim Latas	8:15
3. Ecological Risk Assessment - Roxie Barnett	8:40
4. Human and Ecological Risk Assessments - David Liu, Richard Blanchet	
Break	10:00
5. VOC Source Area Sampling Strategy - Pat Brooks	10:10
6. Landfill (OU-2) Sampling Strategy - Katrina Lyons	11:00
Lunch	12:00
7. OU-3 Sampling Strategy - Pat Wiegand	1:00
8. Removal Actions - Karnig Ohannessian	2:00
Break	3:00
9. General Briefing Review Previous Concerns DQOs Transition Meeting Wrap up	3:15

GENERAL APPROACH

1. CONSIDERATIONS

- Previous Data
- Professional Judgment
- Meetings
- Cost Proposals
- Ultimate goal to provide information for decision making
- Schedules

2. GENERAL APPROACH

- Assumptions:
  - All sites require additional data to assess status (NFA, RI/FS, EE/CA)
  - Used more judgmental and systematic approach to investigations
  - Investigations incorporate data collection to evaluate remedial alternatives
- Previous data used to formulate "units" which will be the fundamental area targeted by investigations
- Approach includes flexibility
- Approaches at individual must address specific concerns (e.g., are landfills "leakers")
- Using a variety of technologies
  - Downhole geophysical logging
  - Analytical field screening (immunoassay and mobile labs)
  - Soil gas extraction probes and soil gas influx chambers
  - CPT (cone penetrometer)
  - Geotechnical analyses

3. TIER APPROACH

- Tier I. Field Screening
- Tier II. Nature and Extent
- Tier III. Pilot Testing and Treatability Studies

DOCUMENTS

Basewide Plans

Health and Safety Plan
QA Project Plan
Data Management
Waste Management Plan
Risk Assessment Work Plans
Sampling and Analysis Plan

Specific Work Plans

VOC Source Area RI/FS
Landfills (OU-2) RI/FS
OU-3 RI/FS

Removal Actions

EE/CAs
Work Plans for ESI with EE/CA

TABLE 2

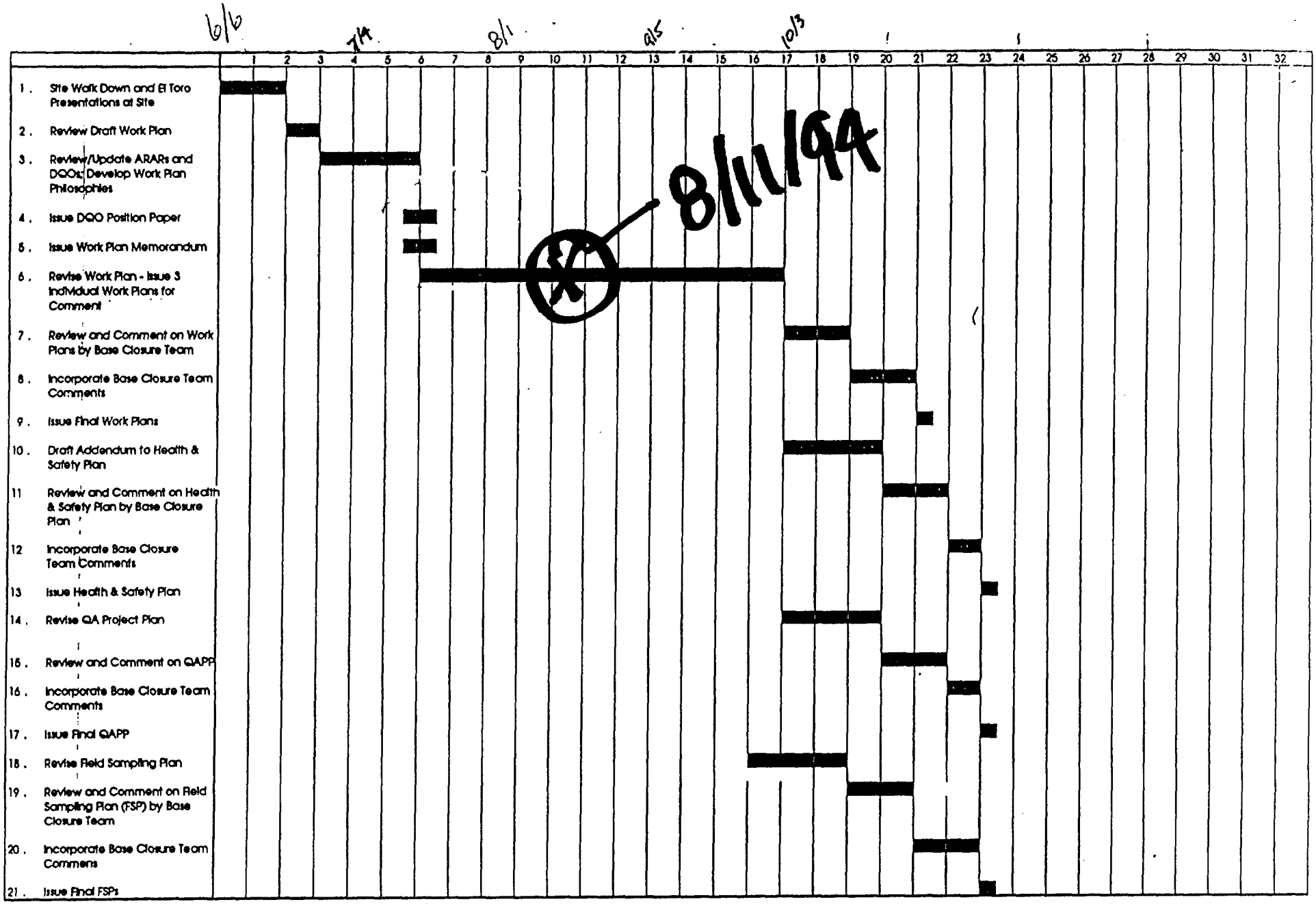
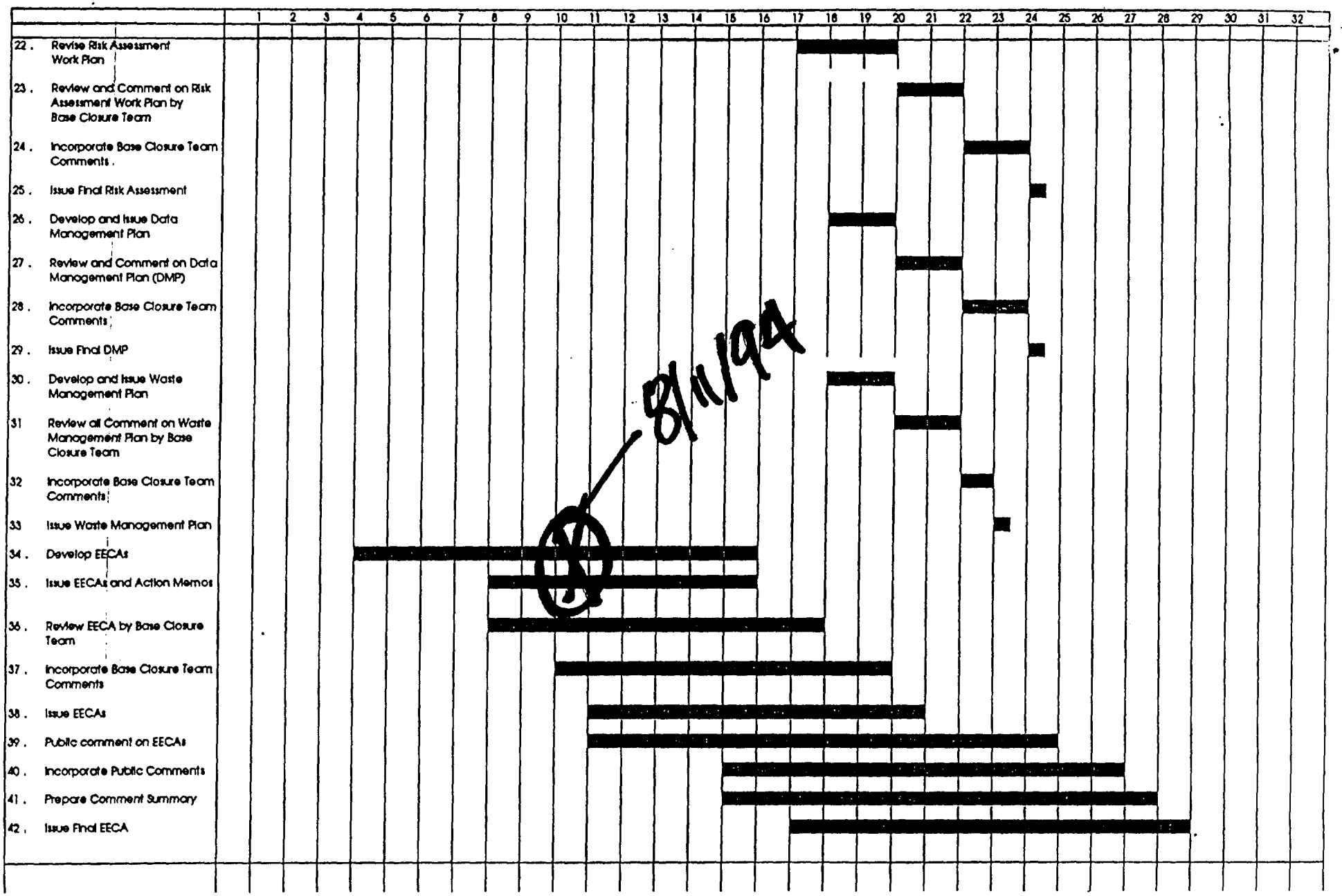

6/6
7/4
8/1
9/5
10/3
8/11/94
1 Site Walk Down and El Toro Presentations at Site
2 Review Draft Work Plan
3 Review/Update ARARs and DQOs; Develop Work Plan Philosophies
4 Issue DQO Position Paper
5 Issue Work Plan Memorandum
6 Revise Work Plan - Issue 3 Individual Work Plans for Comment
7 Review and Comment on Work Plans by Base Closure Team
8 Incorporate Base Closure Team Comments
9 Issue Final Work Plans
10 Draft Addendum to Health & Safety Plan
11 Review and Comment on Health & Safety Plan by Base Closure Plan
12 Incorporate Base Closure Team Comments
13 Issue Health & Safety Plan
14 Revise QA Project Plan
15 Review and Comment on QAPP
16 Incorporate Base Closure Team Comments
17 Issue Final QAPP
18 Revise Field Sampling Plan
19 Review and Comment on Field Sampling Plan (FSP) by Base Closure Team
20 Incorporate Base Closure Team Comments
21 Issue Final FSPs

TABLE 2


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
22. Revise Risk Assessment Work Plan
23. Review and Comment on Risk Assessment Work Plan by Base Closure Team
24. Incorporate Base Closure Team Comments.
25. Issue Final Risk Assessment
26. Develop and Issue Data Management Plan
27. Review and Comment on Data Management Plan (DMP)
28. Incorporate Base Closure Team Comments
29. Issue Final DMP
30. Develop and Issue Waste Management Plan
31 Review all Comment on Waste Management Plan by Base Closure Team
32 Incorporate Base Closure Team Comments
33 Issue Waste Management Plan
34. Develop EECAs
35. Issue EECAs and Action Memos
36. Review EECA by Base Closure Team
37. Incorporate Base Closure Team Comments
38. Issue EECAs
39. Public comment on EECAs
40. Incorporate Public Comments
41. Prepare Comment Summary
42. Issue Final EECA
8/11/94

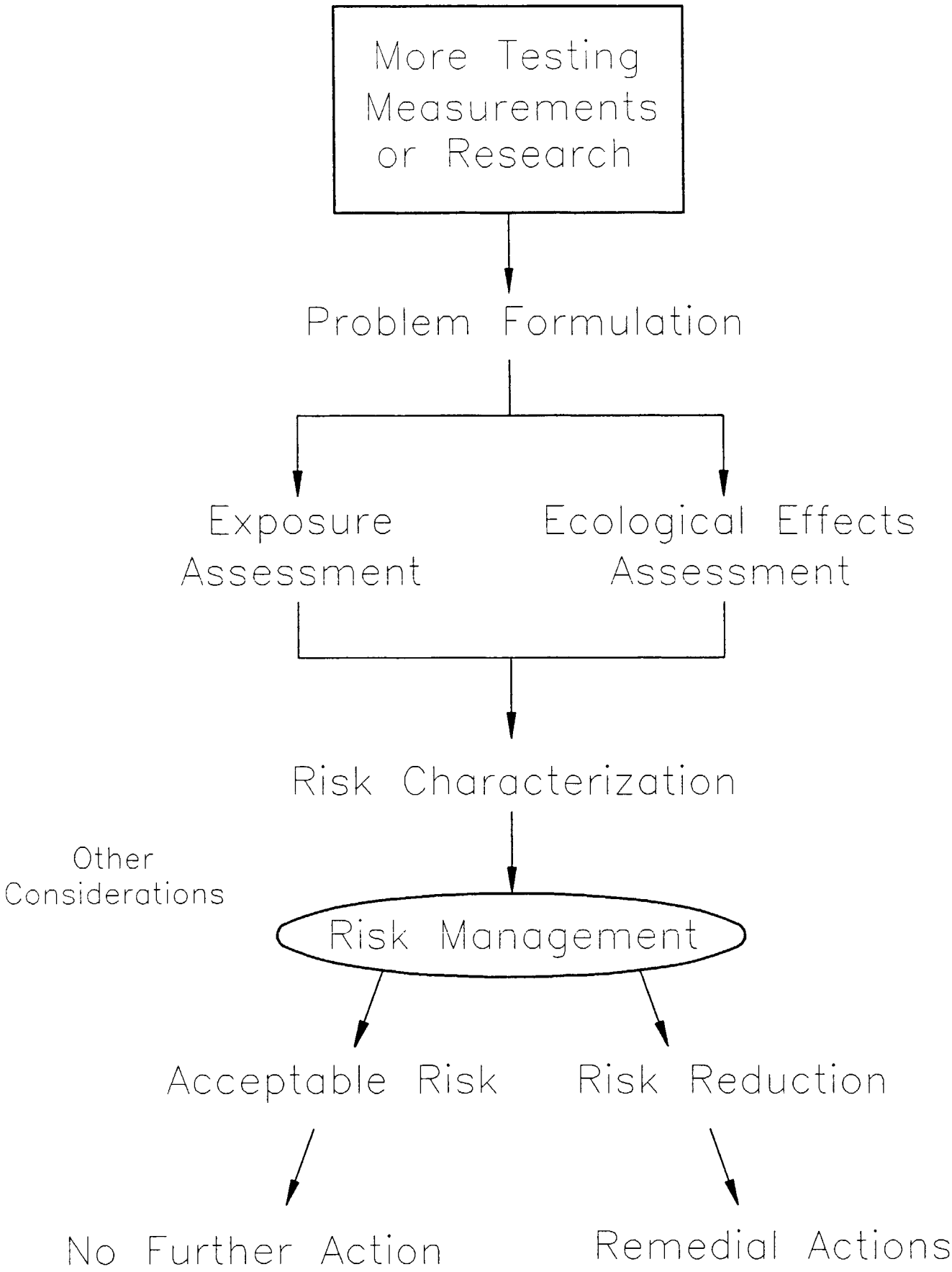
Phased approach ensures that:

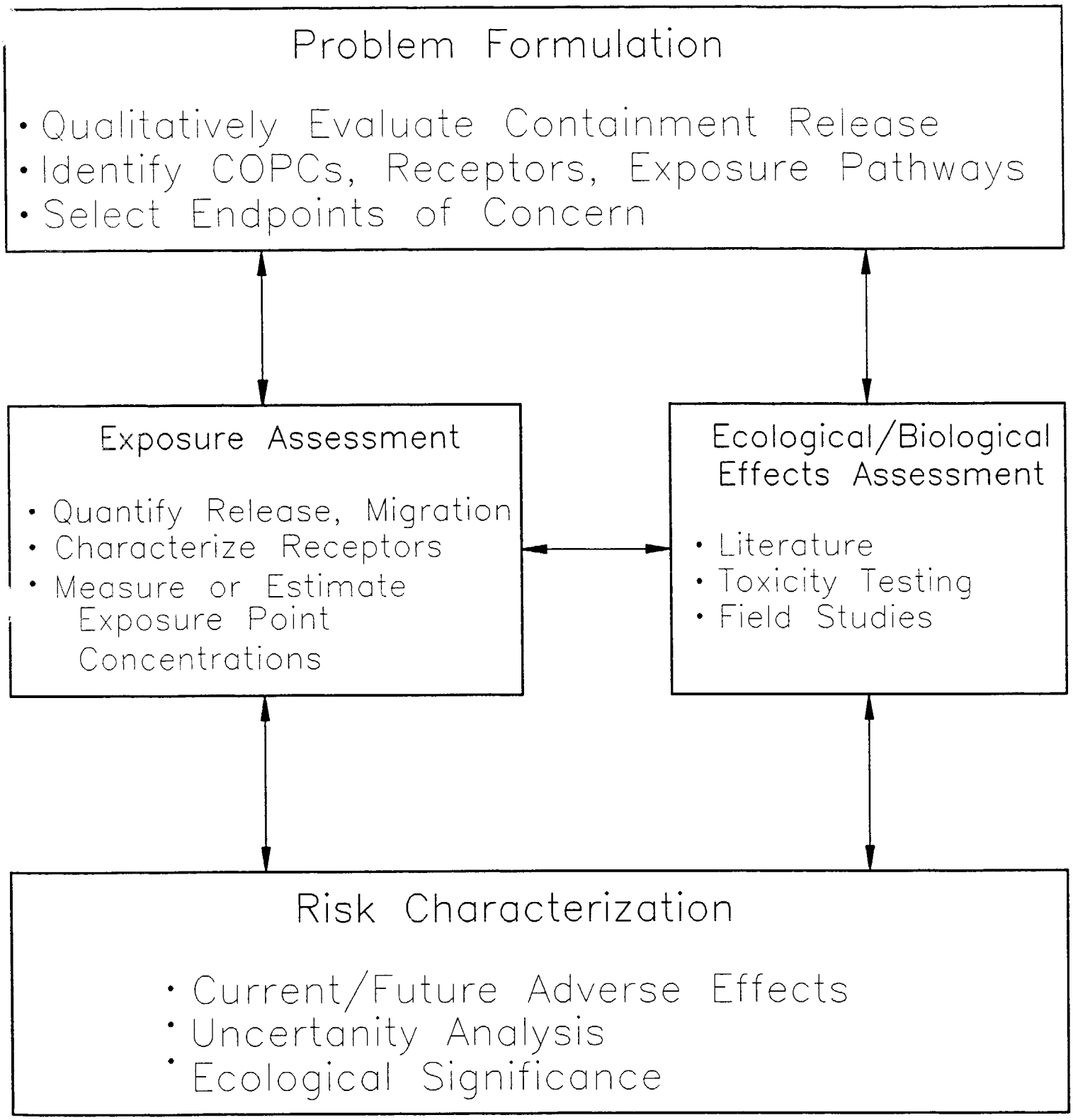
- **Only the necessary work will be done, and**
- **All the necessary work will be done.**

What is an ecological risk assessment

"A qualitative and/or quantitative appraisal of the actual or potential effects of a hazardous waste site on plants and animals other than people or domesticated species."

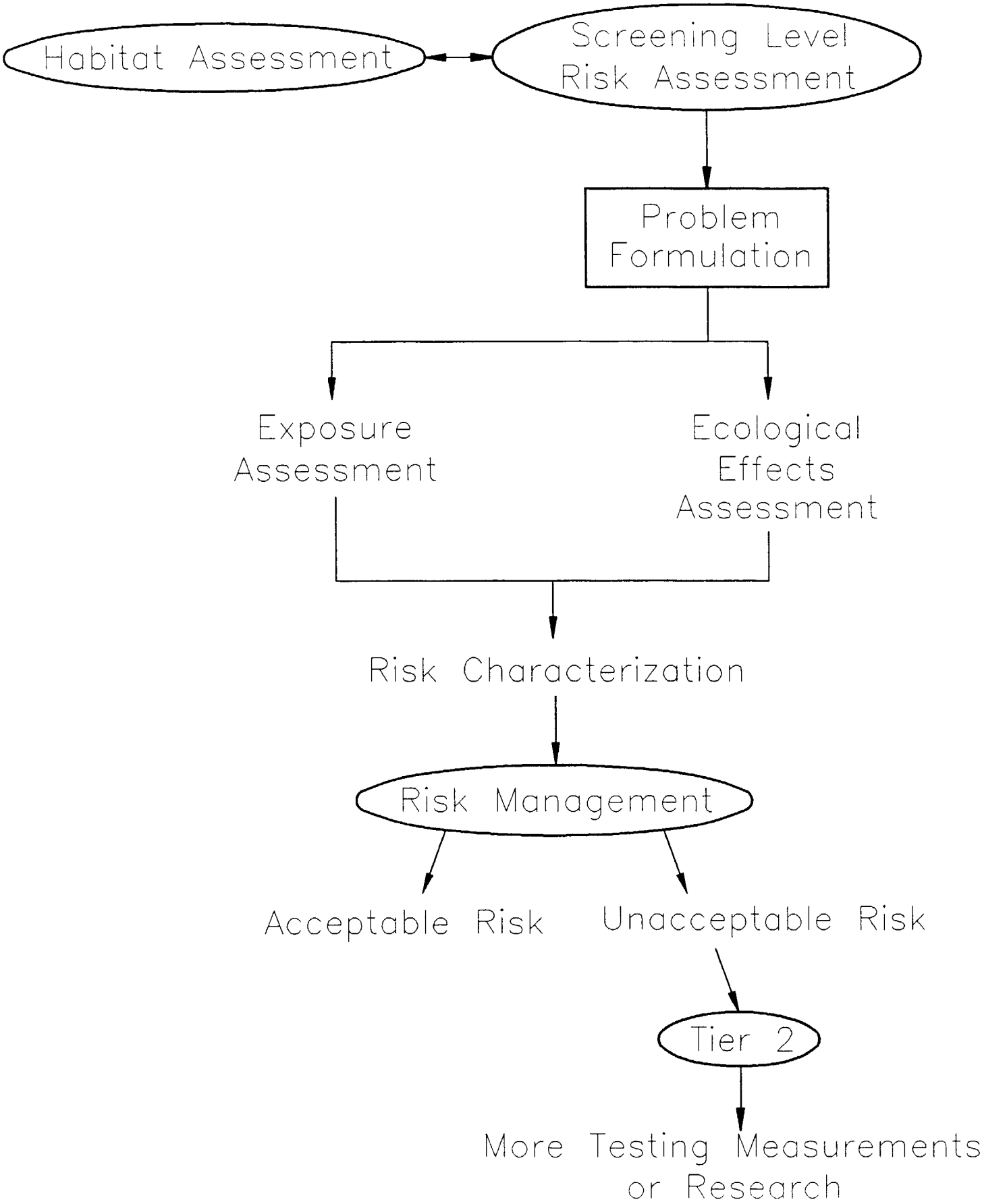
Tier 2


More Testing
Measurements
or Research
Problem Formulation
Exposure
Assessment
Ecological Effects
Assessment
Risk Characterization
Other
Considerations
Risk Management
Acceptable Risk
Risk Reduction
No Further Action
Remedial Actions


Problem Formulation
• Qualitatively Evaluate Containment Release
• Identify COPCs, Receptors, Exposure Pathways
• Select Endpoints of Concern
Exposure Assessment
• Quantify Release, Migration
• Characterize Receptors
• Measure or Estimate Exposure Point Concentrations
Ecological/Biological Effects Assessment
• Literature
• Toxicity Testing
• Field Studies
Risk Characterization
• Current/Future Adverse Effects
• Uncertanity Analysis
• Ecological Significance

Approach to Perform Ecological Risk Assessment at MCAS El Toro

Tier 1



PRESENTATION OUTLINE - VOC SOURCE AREA

TIER 1 - FIELD SCREENING

- **Use CPT to identify permeable strata and potential VOC traps to assist in designing the shallow soil gas survey.**

- **Drill 8 mud rotary borings to 200 feet and continuously sample with 94 mm soil sample core barrel. Perform downhole geophysical logging using resistivity, neutron, density, gamma, and caliper tools. Correlate lithologic and geophysical logs to identify regional scale VOC traps and conduits, and the presence of pure-phase chlorinated hydrocarbons, if present.**

- **Collect and analyze shallow soil gas samples based on CPT analysis.**
  - **near Buildings 296 & 297 and surrounding tarmac**
  - **Site 7**
  - **Site 8**
  - **Site 9**
  - **North of Sites 9 & 10**

- **Collect and analyze soil gas samples from existing monitoring wells. Compare MW soil gas concentrations with the expected equilibrium concentrations (Henry's Law) to identify potential source areas.**
  - **MW-45**
  - **MW-47**
  - **MW-71**
  - **MW-74**

- **Excavate test pits and hand auger borings near degreasers, edge of tarmac, and storm drains.**

- **Locate abandoned water supply wells. Collect groundwater samples from abandoned wells 2, 3, 5, and 6.**

- **Collect surface water samples from major drainages coincident with rainfall event.**

PRESENTATION OUTLINE - VOC SOURCE AREA

TIER 2 - CHARACTERIZE NATURE AND EXTENT OF VOCS

- **Analyze selected soil samples for VOCs from the mud rotary (stratigraphic) borings, based on field screening.**

- **Locate hollow-stem auger borings at potential source areas using data from CPT, shallow soil gas sampling, and stratigraphic analysis. Analyze selected soil samples for VOCs.**

- **Collect deep soil gas samples using hollow-stem auger borings to define nature and extent of VOCs in the soil gas. Use data from CPT and stratigraphic analyses to place soil gas samples in strata likely to collect soil gas. Complete borings as soil vapor extraction wells in impacted areas for future testing.**

- **Drill new monitoring wells to further define extent of VOCs in groundwater using data from CPT, stratigraphic analysis, soil gas survey, and hollow-stem auger borings.**

- **Analyze selected soil samples for geotechnical parameters to aid in the design of treatability pilot tests.**

PRESENTATION OUTLINE - VOC SOURCE AREA

TIER 3 - TREATABILITY PILOT STUDIES

- **Complete hollow-stem auger borings as soil vapor extraction wells at identified soil hot spots.**

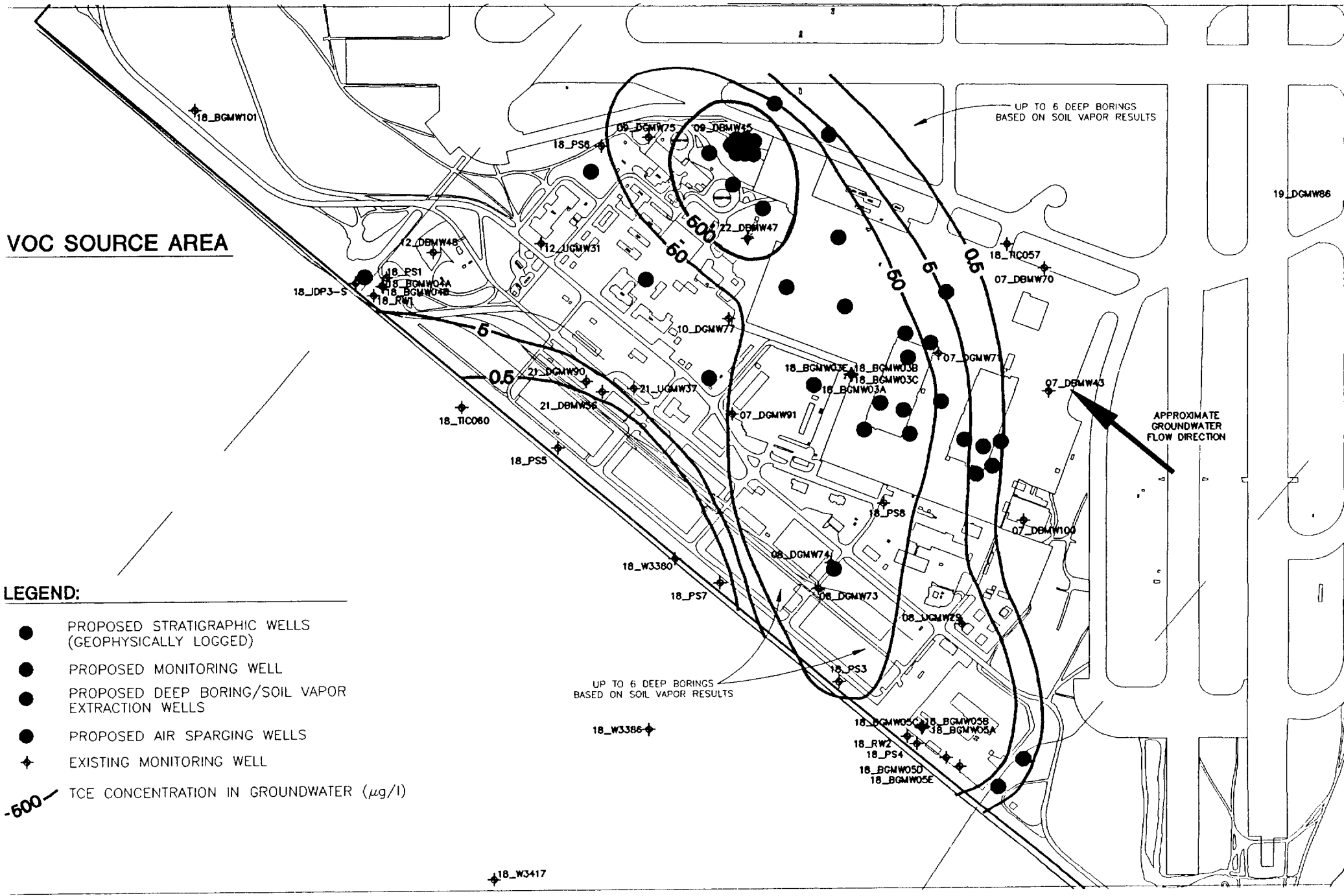
- **Install soil gas piezometers near vapor extraction wells to further characterize extent of VOC soil impacts and to assess radius of influence during vapor extraction pilot tests.**

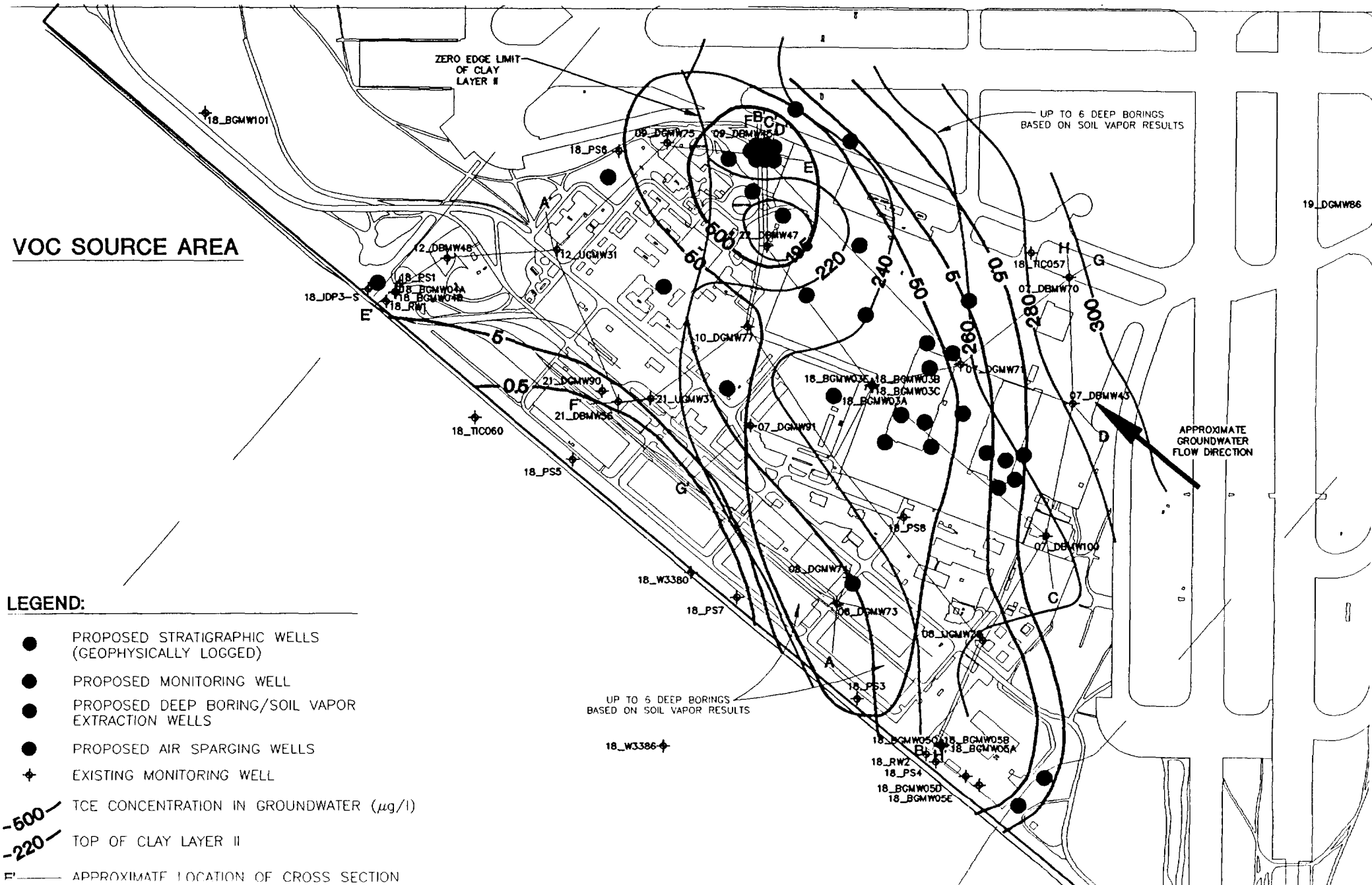
- **Perform soil vapor extraction pilot tests to assess VOC removal rate from soil, optimum well spacing and configuration, blower size and applied vacuum, and effluent gas treatment method.**

- **Drill 2 air sparging wells based on nature and extent of VOCs in groundwater.**

- **Drill 2 soil vapor extraction wells near air sparging wells to collect sparging off-gas and soil vapor.**

- **Perform air sparging pilot tests to assess VOC removal rate from groundwater, radius of influence of sparging wells, ability of vapor extraction wells to collect sparging off-gas, and changes in downgradient groundwater and soil gas VOC concentrations.**


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 (µg/l)
UP TO 6 DEEP BORINGS BASED ON SOIL VAPOR RESULTS
APPROXIMATE GROUNDWATER FLOW DIRECTION
500
50
5
0.5
18_BGMW101
18_PS6
09_DGMW75
09_DBMW45
12_DBMW47
12_DBMW48
12_UGMW31
18_PS1
18_BGMW04A
18_BGMW04B
18_RW1
18_JDP3-S
10_DGMW77
21_DGMW90
21_UGMW37
21_DBMW56
18_TIC060
18_PS5
07_DGMW91
18_BGMW03E
18_BGMW03B
18_BGMW03C
18_BGMW03A
07_DGMW71
18_TIC057
07_DBMW70
07_DBMW43
19_DGMW86
18_PS8
07_DBMW100
08_DGMW74
08_DGMW73
08_UGMW29
18_W3380
18_PS7
18_PS3
18_W3386
18_BGMW05C
18_BGMW05B
18_BGMW05A
18_RW2
18_PS4
18_BGMW05D
18_BGMW05E
18_W3417


VOC SOURCE AREA
ZERO EDGE LIMIT OF CLAY LAYER II
UP TO 6 DEEP BORINGS BASED ON SOIL VAPOR RESULTS
APPROXIMATE GROUNDWATER FLOW DIRECTION
18_BGMW101
18_PS6
09_DGMW75
09_DGMW76
12_DBMW48
12_UGMW31
18_PS1
18_BGMW04A
18_BGMW04B
18_RW1
18_JDP3-S
10_DGMW77
21_DGMW90
21_UGMW37
21_DBMW56
18_TIC060
18_PS5
07_DGMW91
18_BGMW03A
18_BGMW03B
18_BGMW03C
07_DGMW71
07_DBMW43
18_TIC057
07_DBMW70
19_DGMW86
18_PS8
07_DBMW100
08_DGMW74
08_DGMW73
08_UGMW38
18_W3380
18_PS7
18_PS3
18_W3386
18_BGMW05C
18_BGMW05B
18_BGMW05A
18_RW2
18_PS4
18_BGMW05D
18_BGMW05E
500
220
240
50
5
0.5
260
280
300
A
A'
B
C
C'
D
D'
E
E'
F
F'
G
G'
H
H'
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 (μg/l)
-220- TOP OF CLAY LAYER II
E'—— APPROXIMATE LOCATION OF CROSS SECTION

PRESENTATION OUTLINE
LANDFILL SITES

TIER 1 - FIELD SCREENING

Objective Assess Presence of Contamination

Step 1 - Confirm and Obtain Better Resolution:

- **Soil Vapor Sampling -via 100 foot Gird**

- **Geophysics**
  GPR via 50 foot Grid
  EM31 via 50 foot Grid
  EM61 via 50 foot Grid

- **Downhole Geophysical Logging - 3 locations**

Step 2 - Condition of Source Areas (Groundwater and Vadose zone)

- **Groundwater Monitoring Wells**

- **Lysimeters**

TIER 2 - CHARACTERIZE NATURE AND EXTENT

- **Test pits in stained areas**

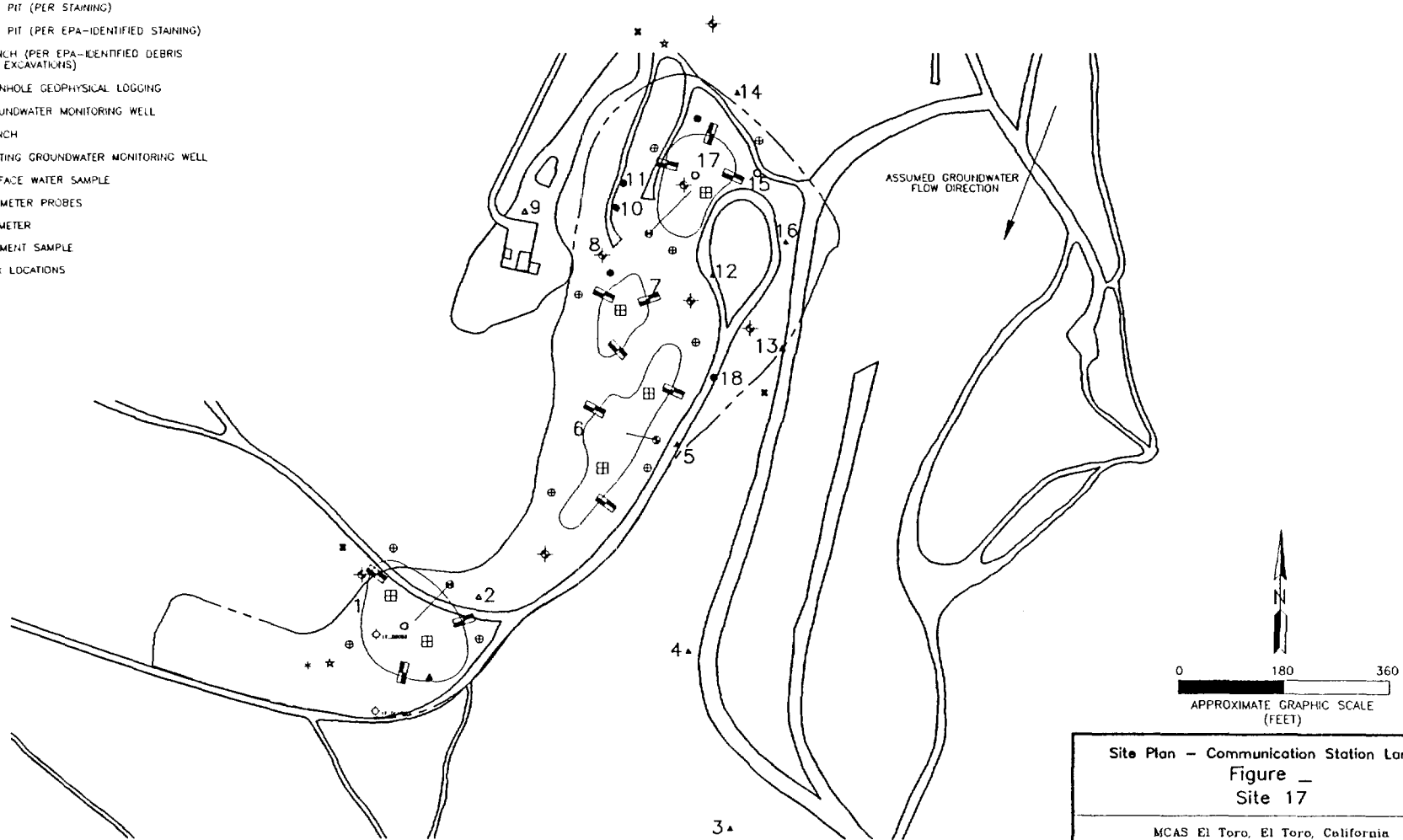
- **Trenches in fill areas**

- **Deep soil borings**

- **Gas migration probes**

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. SITE17
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

										ANALYTICAL METHODS(s)										
										GW	624	625	8015 M	608		200.7	7196	9310/9315	615	NA
										SOIL	8240	8270	8015 M	8080		6010	7196 MOD	703	8150	TO-14
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	VOCs and Gas & Diesel	SVOCs	TRPH	Pesticides/ PCBs	General Chemistry	Metals (24)	Metals Chrome VI	Gross Alpha/ Beta	Herbicides	VOCs Mobile Lab
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58
-2		See Note 1 (6 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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	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.

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 Test Pits	Number Borings	Depth (ft. bgs)	Total Lin. Ft.		No.	Depth	Lin. Ft.	(No.)	Lin. Ft.	Number	Lin. Ft.	Borings No.	Borings Lin.Ft	Wells No.	Wells Lin. Ft.
Field Screening	0 (1)	N/A	58	46000	-	-	3	225	675	-											
Fill Area, 1986 Trench, 1991	1 (3)	230	15	16000	CPT	-	1	40	40	200	1	250	250	3	60	1	240	4	160	-	-
Lt. MM Stain, 1980	2 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-
Trench, 1970	3 (3)	230	5	3000	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-
Trench, 1970	4 (3)	230	5	3000	-	-	1	40	40	25	-	-	-	-	-	-	-	-	-	-	-
Debris, 1991	5 (3)	230	5	3000	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-
Refuse, 1970, 1986	6 (3)	230	15	14000	CPT	-	-	-	-	25	1	250	250	3	60	1	190	4	160	-	-
Fill, 1991	7 (3)	230	7	11000	-	-	-	-	-	100	2	250	500	2	40	-	-	4	160	-	-
Stain, 1980	8 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-
Stain, 1980	9 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	
Stain, 1980	10 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-
Stain, 1980	11 (2)	230	5	0	-	1	-	15	15	-	-	-	-	-	-	-	-	-	-	-	-

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 Test Pits	Number Borings	Depth (ft. bgs)	Total Lin. Ft.		No.	Depth	Lin. Ft.	(No.)	Lin. Ft.	Number	Lin. Ft.	Borings No.	Borings Lin.Ft	Wells No.	Wells 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

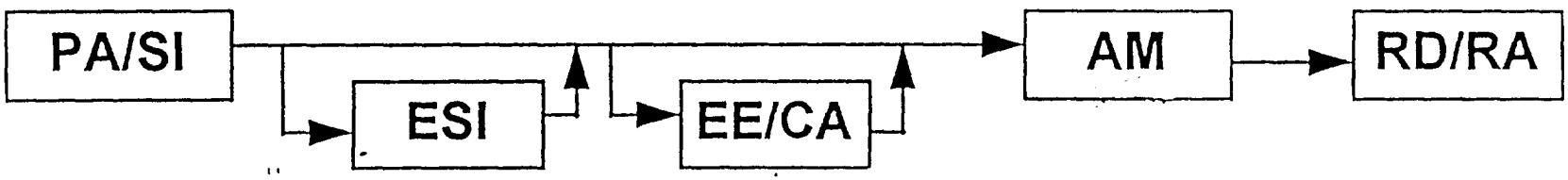
NOTES
1. Borings for Geophysical logging drilled by Mud Rotary, 6 in. borings. These borings are for downhole geophysics info. only. No chemical/analytical samples taken for "Feature ID SITE 0(1)".
2. Test Pits performed with a Backhoe.
3. Soil Borings drilled with CME 95 Rig, 8 in. diameter borings.
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.

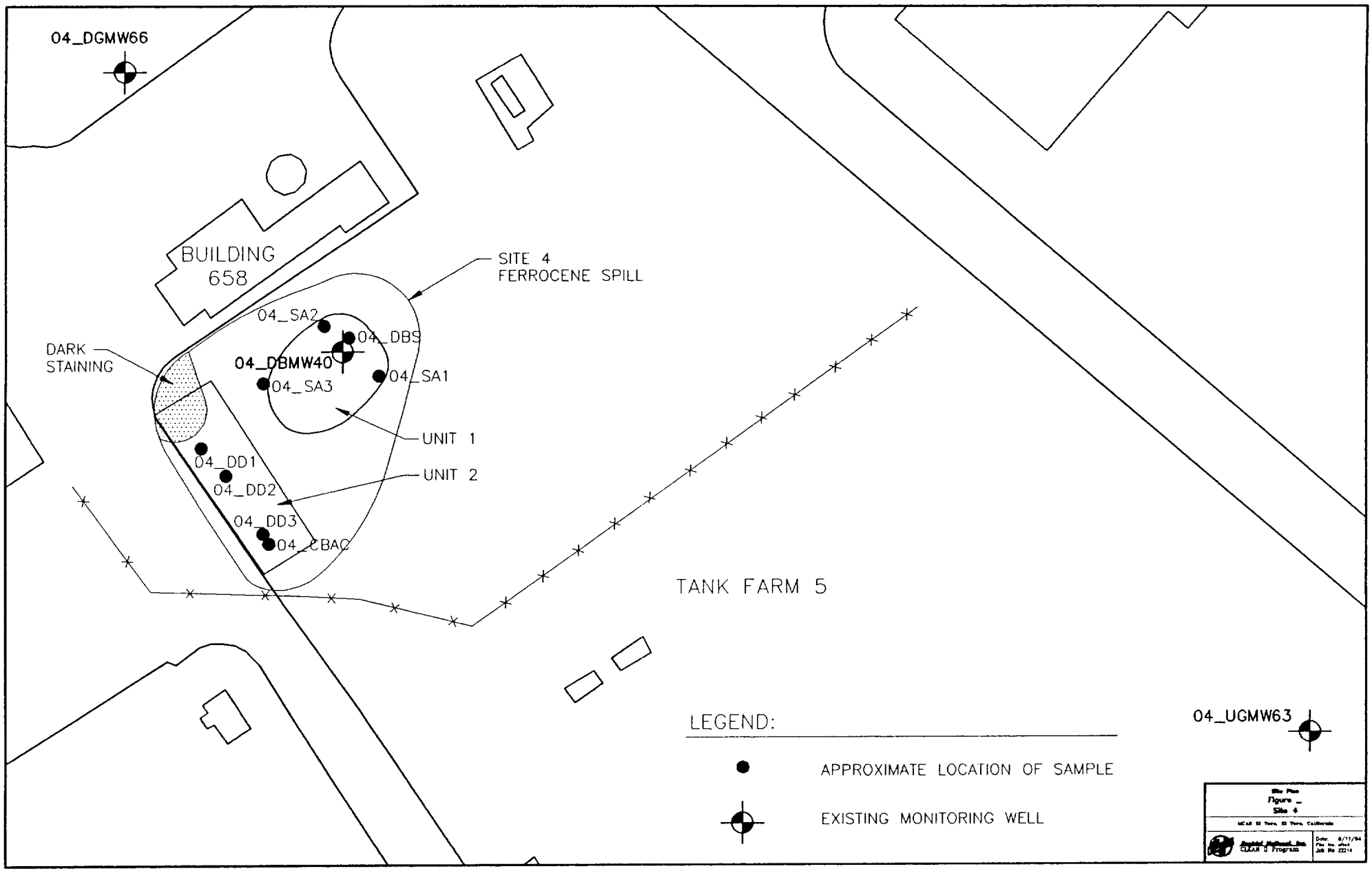
NCP REQUIREMENTS FOR SITE CLEANUP UNDER CERCLA/SARA

RESPONSE TYPES: REMOVAL ACTION & REMEDIAL ACTION

REMEDIAL ACTION:

REMOVAL ACTION:




04_DGMW66
BUILDING
658
SITE 4
FERROCENE SPILL
04_SA2
04_DBS
DARK
STAINING
04_DBMW40
04_SA1
04_SA3
UNIT 1
04_DD1
UNIT 2
04_DD2
04_DD3
04_CBAC
TANK FARM 5
LEGEND:
APPROXIMATE LOCATION OF SAMPLE
EXISTING MONITORING WELL
04_UGMW63
Site Plan
Figure _
Site 4
NEXT El Toro, El Toro, California
CLEAN II Program
Date: 8/11/94
Job No 22214

MCAS EL TORO

SITE 4 - FERROCENE SPILL AREA (OU-3)

CHEMICALS DETECTED IN PHASE I RI WITH

CONCENTRATIONS GREATER THAN RBC/PRG

STATION ID			04_DD1			04_DD2			04_DD3				04_CBAC
SAMPLE DEPTH			0'	2'	4'	0'	2'	4'	0'	0'	2'	4'	0'
ANALYTE	UNITS	RBC/PRG											
TFH DIESEL	mg/kg	2,600	16,400	103	25.2	865	56.2	14.9 U	32.4	14.3 U	14.1 U	14.6 U	15.1 U
BENZO (A) PYRENE	ug/kg	120	220	770 U	810 U	740 U	730 U	790 U	740 U	760 U	750 U	770 U	810 U

STATION ID			04_SA1			04_SA2			04_SA3			04_DBS	04_DBMW40	
SAMPLE DEPTH			0'	2'	4'	0'	2'	4'	0'	2'	4'	0'	5'	10'
ANALYTE	UNITS	RBC/PRG												
TFH DIESEL	mg/kg	2,600	14.1 U	13.9 U	15.7 U	13.3 U	12.9 U	12.7 U	13 U	13.1 U	15.3 U	56.8		
BENZO (A) PYRENE	ug/kg	120	750 U	730 U	830 U	710 U	690 U	680 U	690 U	690 U	810 U	710 UJ	730 U	720 U