

TITLE: CRITIQUE OF MCAS EL TORO OFF-STATION
REMEDIAL INVESTIGATION DRAFT WORK
PLAN - OCWD

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CATEGORY: 1.2

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MCAS EL TORO
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January 11, 1990

Lt. (jg) Michael W. Rehor
Facilities Management Department
Marine Corps Air Station El Toro (1JG)
Santa Ana, CA 92709-5001

SUBJECT: Comments on MCAS El Toro Off-Station RI Work Plan

Dear Mr. Rehor:

This letter transmits comments and questions from the Orange County Water District based on our review of the MCAS El Toro Off-Station Remedial Investigation Draft Work Plan (November 1989), prepared for Southwestern Division Naval Facilities Engineering Command. Overall, the District believes that the work plan adequately covers the areas and methods necessary to investigate the nature and extent of VOC contamination in shallow aquifer zones within the three specified operable units. However, one area that we feel needs expansion pertains to investigation of intermediate and deep aquifer zones in operable units I and II. Our comments regarding this concern are presented below.

1. Except for the area covered by OU-III, this work plan primarily addresses shallow groundwater contamination and includes only two intermediate depth wells in OU-I and OU-II. The District feels that a comprehensive investigation should include a certain number of wells to evaluate deeper aquifer zones which may be potentially contaminated. Deep aquifer VOC contamination is present in OU-III and needs to be traced upgradient to identify its source. This can only be done by constructing upgradient deep wells. Delineating the lateral extent of shallow contamination, as the work plan adequately proposes, will still leave uncertainties as to the potential for deeper contamination in OU-1 and OU-II.

2. With all proposed wells plotted on one map, it appears that fadditional data could be collected to provide more complete coverage in the middle of the Spectrum area, particularly with respect to intermediate or deep aquifers. We suggest that a minimum of three intermediate or deep wells in the Spectrum area should be installed to identify the presence (or absence) of VOCs in aquifer zones below the first 30 feet of saturation. The deeper wells should be located and constructed after water quality results from the shallow wells are available.
3. Proposed wells in OU-III seem to cover the area sufficiently, except for proposed intermediate depth well OUIII-8. This well is located adjacent to existing well MCAS-5, where siltstone "bedrock" was encountered at a depth of 155 feet. A better location for a 200- to 300-foot deep well is half way between MCAS-5 and TIC 47 along Laguna Road. A well in this location will help define the vertical distribution of TCE near well TIC 47 which is screened over several hundred feet and, therefore, may only provide composite water quality data.
4. Proposed shallow wells OUIII-1 through OUIII-4 along San Diego Creek can probably be combined into two wells, spaced between existing wells MCAS-6 and MCAS-4 and between MCAS-4 and MCAS-5. However, the water table along the creek is about 20 to 30 feet deep, so wells drilled 30 feet below this depth will be relatively inexpensive anyway.
5. p. 3-3, para. 1: The last sentence states that the OU-I investigation will focus primarily on defining the horizontal extent of contamination. This assumes that all deep contamination is overlain by shallow contamination. Otherwise, the horizontal extent of only shallow contamination will be determined. Unless the scope of work is augmented to include additional deeper wells, as we have suggested, this sentence should be modified to state "...will focus primarily on defining the horizontal extent of shallow contamination."
6. p. 3-4, para. 2: Sentence states that OU-I and OU-II investigations are "comprehensive and will provide adequate data to develop alternatives for remediation of the shallow groundwater". The RI objectives for these operable units should be modified to include the development of alternatives for cleanup of deeper contamination if it exists. Otherwise, this RI will be incomplete as is, and will require another phase to address the possible existence and mitigation of deeper contamination.

Lt. (jg) Michael Rehor
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7. p. 3-5, last para., 4th sent.: This sentence should be modified to state "...will define the extent of shallow contamination." District staff do not agree that wells drilled 30 feet below the water table in this area will investigate, much less define, the extent of possible deep contamination.
8. p. 3-6, para. 5: typo
9. p. 3-9, para. 2, last sentence: This states that all four deep wells will be completed to approximately 300 to 400 feet depth, but this contradicts the first paragraph on the following page which states that certain wells will be drilled as shallow as 150 to 250 feet deep. Which statement is accurate?
10. p. 3-12, para. 1: The model should be used to evaluate extractability of VOCs from shallow as well as deeper aquifers. Because deeper contamination is known to exist within OU-III and may exist in the other operable units, a model of deeper aquifers will be a valuable remedial planning tool. Of course, this presumes that deeper aquifer parameters can be estimated sufficiently, since deeper aquifer testing is not proposed in this work plan.
11. When is the schedule provided on Fig. 9-1 expected to begin?

Again, we feel that, for the most part, the work plan is well done. With the modifications suggested herein, the work plan should result in a thorough investigation. We appreciate the opportunity to provide these comments to you and look forward to discussing them with you at the January 23 meeting.

Sincerely,



Roy L. Herndon
Project Hydrogeologist



IRVINE RANCH WATER DISTRICT

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January 22, 1990

PL 9.1.1(J)

LTJG Michael Rehor
Environmental Director
MCAS El Toro (Code 1JG)
Santa Ana, CA
92709-5001

SUBJECT: COMMENTS ON MCAS EL TORO OFF-STATION RI WORK PLAN

Dear Mr. Rehor:

The Irvine Ranch Water District (IRWD) has reviewed the November 1989 draft plan for the MCAS Tustin & El Toro Off-Station Remedial Investigation Program and has the following comments:

- The existing plan does not adequately cover the investigation of intermediate and deep aquifer zones. The extent of vertical contamination should be determined before a plan to quantify the horizontal extent of contamination is developed.

- Within area OUI there are no up gradient wells. Additional wells should be included in the work plan to establish the northern extent of the plume in this area.

- Based on the electric log for well RW-4, there are approximately four permeable zones between 122' and 270' that may contain contaminated water. There are seven wells proposed within area OUI. Six of these wells (OUI-1, 2, 3, 4, 6, and piez 6) are shallow and only one well (OUI-5) is deep. Additional intermediate/deep wells are needed. Shallow wells OUI-1, 2, 3, 4 will be completed 105' to 120' below ground surface with 30 feet of screen. Shallow well 6 will be completed with 50 feet of screen and will be used as the pumping well for an aquifer test. The depth of this well is not specified. The screen interval for piez 6 is not provided. The screen interval for OUI-5 which will be constructed to a depth of 225' is not specified. The

depths, diameters, and screen intervals for each of these wells needs to be clarified. It is recommended that the deep well (OUI-5) be constructed first to determine if contamination exists below 122'. If contamination is found, additional intermediate/deep wells should be added to the work plan and the screen interval for OUI-6 should be increased to include all contaminated zones. A flow meter survey can be used to determine the amount of water provided by each aquifer during the aquifer test. The screen length and diameter of OUI-6 should be selected so that OUI-6 can be used as a recovery well.

- Based on the electric log for well RW-1 there are approximately five permeable zones between 122' and 430' that may contain contaminated water. There are eight wells proposed within area OUII. Seven of these wells (OUII-1; 2, 3, 4, 5, 6, and piez 7) are shallow and only one well (OUII-6) is deep. Additional intermediate/deep wells are needed. Shallow wells OUII-1, 2, 3, 4, 5 will be completed 90' to 125' below ground surface with 30 feet of screen. The depth for well OUII-6 is 300'. The screen length for well OUII-6 is not provided. The screen length and depth for wells OUII-7 and piez 7 are not provided. The depths, diameters, and screen intervals for each of these wells needs to be clarified. The same approach recommended above also applies to this area. The screen length and diameter of OUII-7 should be selected so that OUII-7 can be used as a recovery well.

- There are eleven wells proposed within area OUIII. Seven of these wells (OUIII-1, 2, 3, 4, 5, 6, 7) are shallow and four of these wells (OUIII-8, 9, 10, 11) are deep. Shallow wells OUIII-1, 2, 3, 4, 5, 6, 7 will be completed 55' to 85' below ground surface with 30 feet of screen. Wells OUIII-7 and OUIII-8 will be completed with 100 feet of screen from 300' to 400'. The depths and screen intervals for wells OUIII-10 and OUIII-11 are not consistent throughout the report. The depths, diameters, and screen intervals for each of these wells needs to be clarified. Have the proposed well locations been coordinated with the well construction program by the Orange County Water District?.

- It is recommended that future reports include an appendix that contains the screen interval in addition to available general chemistry, VOC analyses, and water levels for each well discussed.

- On page 2-8 the addition of THM should be considered as a surrogate for determining if all development water has been removed prior to sampling.

- On page 2-8 the addition of specific capacity data should be added as an indicator of the hydraulics for each well.
- On page 2-14 the addition of silica to the general chemistry testing should be considered.
- On page 3-4 it is unclear what information will be derived from collecting water samples or sediment samples from the surface water drainage system. If this work is done, it should be coordinated with the Irvine Company and the City of Irvine since major improvements to these facilities have been completed recently. Will the water sampling be done during base flow conditions? Since MCAS is no longer allowed to make off-site discharges to the surface water drainage system during base flow conditions, it is not apparent that surface water sampling is necessary.
- A groundwater model is described on page 3-11. Is any additional information from IRWD needed for this model?
- Both salt and nitrate should be considered when evaluating the groundwater extraction scenarios mentioned on page 3-12.
- Does the schedule on Figure 9-1 (after page 9-1) include time for well site acquisition?

The IRWD would like to see the Navy expand their existing groundwater cleanup effort as soon as possible. How can the facilities in the proposed work plan be used to accomplish this goal? When will additional cleanup facilities be on line and what are their flow capacities?

Please feel free to contact me if you have any questions.

Yours truly,



Lauran Howard
Senior Engineer

LH:lh

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January 22, 1990

Ltjg. Michael Rehor
Environmental Director
MCAS - El Toro (1JG)
Santa Ana, CA 92709 - 5001

DRAFT WORK PLAN REVIEW - OFF-STATION REMEDIAL INVESTIGATION
MCAS - EL TORO INSTALLATION RESTORATION PROGRAM

Dear Ltjg. Rehor:

We have reviewed the draft work plan for the proposed off-station remedial investigation at MCAS - El Toro, dated November 1989, prepared by the Marine Corps' consultant, James M. Montgomery Consulting Engineers, Inc. This investigation is in response to Orange County Water District's findings of TCE contamination in several irrigation and deep monitoring wells positioned down-gradient of MCAS - El Toro. The proposed work is also intended to supplement the findings of shallow groundwater contamination in the Perimeter Investigation - Interim Report (1989, prepared by the same consultant). The draft work plan is structured around three operable units (OU-I, OU-II, and OU-III). Within these operable units, the objectives of the investigation is to: 1) characterize the hydrogeologic properties of the aquifer(s), 2) characterize the contaminated areas with respect to constituents present, and 3) evaluate the potential for San Diego Creek and tributary drainage channels to be pathways for groundwater contamination. Tasks proposed to meet these objectives vary slightly, but generally consist of the installation of monitoring wells to shallow, intermediate or deep depths; the performance of aquifer pump tests; quarterly groundwater sampling and analysis; and the sampling of the surface waters and sediments of Agua Chion Wash, Bee Canyon Wash and San Diego Creek.

We are in agreement with the general direction of the proposed investigation. However, we feel the scope of the proposed investigation should be broadened to include the intermediate-depth sand layers in this investigation in order to determine whether there is sufficient vertical hydraulic continuity between the water table and the deeper sand layers to account for the detected deeper TCE contamination plume.

In each of the operable units, a 72-hour aquifer pump test is proposed to generate hydrologic information about the groundwater flow of the uppermost portion of the aquifer. The tests will be conducted in a wells specifically constructed for this purpose. These wells will be completed approximately 50 to 100 feet into the groundwater. A small-diameter piezometer will also be installed proximal to the test well to monitor water level changes during the duration of the pump test.

Aquifer pump tests should also be performed in an intermediate-depth sand layer to provide needed information regarding the interconnectiveness of the several sand layers encountered during the drilling of the RW wells. Therefore we request that all wells targeting the intermediate-depth sand layers be constructed as aquifer pump test wells and that aquifer pump tests be performed in these wells in addition to the proposed shallow tests. These wells would include OUI-5 in operable unit I and OUIII-10 in operable unit III. In operable unit OU-II, in addition to OUII-7, OUII-6 also be completed as an aquifer pump test well, targeted on the sand layers encountered during the drilling of RW-1 and RW-3 at the 300-foot-depth indicated in the workplan. These wells should be constructed similarly to the well OUIII-11 as described in the workplan.

If you should have any questions, please contact Ken Williams of my staff.

Sincerely,



Gary D. Stewart, Chief
Special Projects Section

KRW/MCASTORO.100

cc: Roy Herndon - Orange County Water District
Livio Devanzo - Orange County Health Care Agency