

December 7, 2001

Mr. Dean Gould
BRAC Environmental Coordinator
Marine Corps Air Station El Toro
Base Realignment and Closure
P.O. Box 51718
Irvine, CA 92619-1718

Dear Mr. Gould:

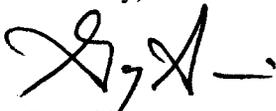
We have reviewed the Proposed Plan – Groundwater Cleanup for Operable Units 1 and 2A (Proposed Plan) at Marine Corps Air Station El Toro dated November 2001. Our review of the Proposed Plan has raised a number of questions. Most importantly, the proposed remedy includes construction of additional extraction and monitoring wells and a conveyance pipeline both off and on the base property. In addition, it includes operating and decommissioning the system. Has the Department of the Navy (DON) evaluated the impact of constructing, operating, and decommissioning the remediation and monitoring equipment on implementation of Local Redevelopment Authority's (LRA) reuse plan for MCAS El Toro? Has the DON developed a list of institutional controls for the selected remedy including institutional controls associated with operation, maintenance, and decommissioning of the remediation system?

We strongly recommend that the DON work closely with the LRA staff to coordinate development of the proposed remediation system and any institutional controls which may impact the implementation of the LRA reuse plan at MCAS El Toro.

The attached memorandum from our consultant, GeoSyntec Consultants, Inc. represents all of our comments/questions regarding the Proposed Plan.

Thank you for the opportunity to review the Proposed Plan. Should you have any questions, please feel free to call Polin Modanlou of my staff at (949) 262-0423.

Sincerely,



Gary Simon
Executive Director
El Toro Local Redevelopment Authority

Attachment

cc: Nicole Moutoux, USEPA
Patricia Hannon, RWQCB
Triss Chesney, DTSC
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Gary Simon
Executive Director

MCAS El Toro
Local Redevelopment
Authority

M E M O R A N D U M

TO: Polin Modanlou, MCAS El Toro Local Redevelopment Authority

FROM: Bertrand S. Palmer, Ph.D., P.E., GeoSyntec Consultants

DATE: 7 December 2001

**SUBJECT: Preliminary Review of Proposed Plan
Groundwater Clean-Up for Operable Units 1 and 2A
Marine Corps Air Station (MCAS), El Toro
Orange County, California**

INTRODUCTION

In August 2000, the Department of Navy/United States Marine Corps (DON/USMC) issued the "Preliminary Draft Final Proposed Plan for Final Soil and Groundwater Cleanup at Marine Corps Air Station El Toro" (Draft Proposed Plan). The Draft Proposed Plan presented DON/USMC's Preferred Remedy for remediation of groundwater contamination at Installation Restoration Program (IRP) Sites 18 and 24. GeoSyntec Consultants (GeoSyntec) reviewed the Draft Proposed Plan and prepared comments that were set forth in a memorandum dated 11 September 2000, which was subsequently transmitted to DON/USMC. To date, DON/USMC has not responded to these comments.

Despite this, DON/USMC issued a document titled, "Proposed Plan - Groundwater Clean-Up for Operable Units 1 and 2A at Marine Corps Air Station El Toro" (Proposed Plan) in November 2001. This Proposed Plan appears to be a final, revised version of the Draft Proposed Plan. At the Local Redevelopment Authority's (LRA) request, GeoSyntec has reviewed the Proposed Plan. The purpose of this memorandum is to present our initial comments on the Proposed Plan. GeoSyntec has not completed its review of the previous work (Remedial Investigation, Feasibility Study, and modeling) performed by DON/USMC at IRP Sites 18 and 24. As such, these

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comments are preliminary in nature. GeoSyntec will provide more detailed comments upon completion of our review of the additional documents regarding IRP Sites 18 and 24.

BACKGROUND

Groundwater at IRP Sites 18 and 24 has been impacted by volatile organic compounds (VOCs), including trichloroethene (TCE). Site 18 includes the VOC-impacted areas of the principal aquifer, which extend for approximately 3 miles from the western boundary of the Site (Regional Groundwater Plume). The groundwater portion of Site 24, is located beneath MCAS El Toro and consists of the VOC-impacted portions of the shallow aquifer. Impacts to both Sites 18 and 24 have been linked to past site operations.

The Proposed Plan prepared by the DON/USMC presents an evaluation of several remedial alternatives for the VOC-impacted groundwater at Sites 18 and 24 and proposes to select one of these alternatives as the "Preferred Remedy". As defined in the Proposed Plan, the Preferred Remedy (Alternatives 8A and 10B' Combined) is comprised of a network of groundwater extraction wells in both the principal aquifer and the shallow aquifer. Impacted groundwater will be extracted from these wells and sent to the proposed Irvine Desalter Project (Desalter Project) for treatment and reuse. Based on the Proposed Plan, natural attenuation is proposed as a back-up remedy if the Desalter Project is postponed or terminated.

It should be noted that the Preferred Remedy is directed towards the remediation of groundwater only at IRP Sites 18 and 24. It does not incorporate provisions for remediation of impacts to groundwater at other Locations of Concern at MCAS El Toro.

DISCUSSION

Based on our preliminary review of the Proposed Plan, GeoSyntec believes that there are a number of issues and concerns that need to be addressed by DON/USMC. Some of these issues and concerns were raised previously in our memorandum dated 11 September 2000. It should be pointed out that this memorandum does not address or provide comments on DON/USMC's ongoing remediation of the VOC source in the vadose zone at IRP Site 24. Comments related to that portion of IRP Site 24 were set forth in a separate memorandum dated 13 August 2001.

Comment No. 1

In the Proposed Plan, DON/USMC uses various terminology such as "water quality standards," "clean-up goals," "maximum contaminant levels," and "criteria and standards for VOCs" to describe the concentration of chemicals in groundwater or the concentration of chemicals in treated water delivered for domestic use. This varied terminology is confusing. In the Proposed Plan the DON/USMC should clearly define:

- The acceptable concentration of chemicals in groundwater (i.e., the concentration of chemicals in groundwater at which no remedy is needed and/or at which operation of the remediation systems will be terminated); and
- The acceptable concentration of chemicals in treated water used for (i) domestic use and (ii) recycled water use.

These acceptable concentrations should be defined numerically for each chemical in the groundwater. In addition, the risk to human health and safety during and upon completion of remedial activities should be discussed in the Proposed Plan.

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Finally, this terminology should be used consistently throughout the Proposed Plan to eliminate any potential confusion.

Comment No. 2

The Preferred Remedy proposed by DON/USMC will require installation of additional extraction and monitoring wells and a conveyance pipeline, both on and off the base property. In addition, it includes operating, maintaining, and decommissioning the system. Has DON/USMC evaluated the impact of constructing, operating, maintaining, and decommissioning the remediation and monitoring equipment on the reuse property for MCAS El Toro? Has the DON/USMC developed a list of institutional controls that will be imposed as part of the Preferred Remedy associated with operation, maintenance, and decommissioning of the remediation system? Both of these things should be done before DON/USMC selects a remedy for these IRP Sites.

Comment No. 3

The description of the Preferred Remedy (in the Proposed Plan) is unclear. The Proposed Plan should present a more detailed description of the remedy, including a description of the CERCLA and non-CERCLA elements of the remedy.

For example, the flow diagram shown on Page 16 of the Proposed Plan seems to indicate that the extracted groundwater will be conveyed to the Desalter Project after it has been treated by reverse osmosis, air stripping, and clearwell disinfection (see blue background box with the following note: "CERCLA (VOC) and non-CERCLA (TDS/Nitrate) Treatment for recycled water use"). Is this correct? If this is correct, what is the purpose of the reverse osmosis and air stripper systems?

Comment No. 4

Does the liquid phase treatment in the Preferred Remedy include a granular activated carbon (GAC) treatment unit as a polishing stage for groundwater treatment? For example, such a GAC unit is included in Remedial Alternative 11. If not, DON/USMC should include a polishing GAC unit as part of the Preferred Remedy to insure that the extracted groundwater is treated to standards acceptable for re-injection and/or reuse, regardless of the performance of the air stripper.

Comment No. 5

The Preferred Remedy relies on the Desalter Project for treatment of groundwater. However, the DON/USMC indicates that while the Desalter Project is not in operation, or if the Desalter Project is terminated for any reason, DON/USMC will rely on natural attenuation as a back-up remedy (see Proposed Plan at page 16). DON/USMC also states that monitored natural attenuation will be further evaluated as part of the Record of Decision (ROD). Thus, it appears that DON/USMC has not yet established that natural attenuation is an effective remedy for IRP Sites 18 and 24. Given this, DON/USMC needs to verify, rather than simply assume, that natural attenuation is an effective back-up remedy that will provide complete attenuation of the VOCs present in groundwater, including TCE and its degradation compounds. If natural attenuation is found to be ineffective at the site, some other back-up remedy will need to be included as part of the Preferred Remedy.

Comment No. 6

The Proposed Plan is focused on groundwater remediation pertaining to the investigations and remedial actions for Operable Unit 1 Site 18 and Operable Unit 2A Site 24, pursuant to DON/USMC's Installation Restoration Program. The Proposed Plan does not consider groundwater remediation associated with other compliance programs mandated under the Resource Conservation and Recovery Act (e.g. closure,

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removal, and remediation associated with underground storage tanks, aboveground storage tanks, and fuel supply pipelines, and hazardous materials/waste management and solid waste management) and other laws. We recommend DON/USMC revise the Proposed Plan to address the following concerns:

- How does DON/USMC's Preferred Remedy (Alternatives 8A and 10B' Combined) address existing groundwater impacts from other potential sources (e.g., leaking underground storage tanks (LUSTs), and fuel supply lines)?
- What are the potential additional risks to human health and the environment from these other potential sources and how will they be addressed by DON/USMC?

Comment No. 7

On Page 1 of the Proposed Plan, DON/USMC states "this groundwater is currently not used as a drinking water source." DON/USMC needs to specify if this statement refers to the shallow groundwater or to the principal aquifer, and should indicate what the actual use of the groundwater is.

Comment No. 8

On Page 1 of the Proposed Plan, DON/USMC states that the source of contamination of groundwater is TCE and other solvents that were believed to have been used for degreasing parts, paint stripping, and other maintenance activities performed within the IRP Site 24 boundary. GeoSyntec understands that DON/USMC now believes that the source of TCE also could be other areas, including the sewer system at MCAS El Toro. GeoSyntec understands that DON/USMC is currently investigating such sources. DON/USMC needs to provide additional information

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regarding the status of and results for this investigation of other potential TCE and other VOC sources.

Comment No. 9

DON/USMC is in the process of evaluating radionuclides in groundwater at MCAS El Toro. The Proposed Plan needs to discuss and evaluate the results of this assessment of radionuclides in groundwater and the potential impacts such radionuclides would have on the efficiency of the Preferred Remedy.

Comment No. 10

DON/USMC indicates that the North Lake, that currently is used for recreational purposes is fed by groundwater pumped at a well located in or next to the VOC plume originating from IRP Site 24 (see Proposed Plan at Page 6). DON/USMC further states that a risk assessment shows that the groundwater pumped into North Lake does not pose an unacceptable risk to human health (see Proposed Plan at Page 6). In the Proposed Plan DON/USMC should specify the value of the excess cancer risk and hazard index for the groundwater pumped in the North Lake.

As a separate issue, it seems that wildlife, including birds and fish, may be exposed to water in North Lake. Thus, it would be prudent to perform an ecological risk assessment to evaluate risks to plants and animal life that are or will be exposed to groundwater pumped into North Lake.

Comment No. 11

DON/USMC seems to indicate that the groundwater at IRP Sites 18 and 24 will be remediated until concentrations of chemicals in groundwater are below the most stringent of the Federal or State Maximum Containment Levels (MCLs). However, the State of California has a anti-degradation policy for groundwater that may require

remediation of chemicals to background concentrations. For anthropogenic chemical compounds, background concentrations correspond to a "non-detect" concentration (typically 0.5 ppb). Thus, DON/USMC needs to remediate the groundwater until the concentrations of VOCs are below non-detect concentrations to comply with the State of California anti-degradation policy.

Comment No. 12

A significant number of important parameters, such as location and number of extraction wells, pumping rate, performance monitoring evaluation criteria, and contingency remediation plans, do not appear to have been finalized at this stage of the remediation planning process (see Proposed Plan at Page 16). These parameters typically have a significant impact on a remedy's feasibility, cost, and completion time. Does DON/USMC believe that its final decisions concerning these parameters could affect the feasibility study and/or the remedy selected for IRP Sites 18 and 24?

Comment No. 13

Based on Table 3 on Page 14 of the Proposed Plan, DON/USMC states that the remediation time for Alternative 8A (the Preferred Remedy) is estimated to be 95 years. This remediation duration is extremely long and can be shortened as evidenced by the remediation duration of other alternatives. The design parameters for this remedy need to be revised to shorten remediation time of Alternative 8A.

Also, the remediation time for Alternative 7A, which is solely natural attenuation (i.e., no active contaminant removal), is 60 years. DON/USMC needs to explain why Alternative 8A, which includes active contaminant removal, has a longer remediation time (95 years)?

Comment No. 14

Alternative 8A, as described by DON/USMC (see Proposed Plan at Pages 12 and 16), seems to include cycling of the extraction system (i.e., the extraction system will be turned off when recycled water is not needed). This operational approach will significantly lengthen the remediation time and reduce the extraction systems contaminant removal and containment ability. As part of the Preferred Remedy, DON/USMC needs to include an alternative disposal or reuse method for treated water to increase and maximize the speed and efficiency of the remediation system.

Comment No. 15

It appears that DON/USMC will not control all of the wells that will be in operation around MCAS El Toro. DON/USMC needs to consider the influence these wells may have on the aquifer behavior and the potential impacts on the final design of the extraction system while remediation of IRP Sites 18 and 24 is on-going.

CLOSURE

GeoSyntec recommends these issues and concerns be addressed by DON/USMC before the Proposed Plan is finalized. As remedy design and implementation progresses, GeoSyntec will issue additional comments (as necessary) on the groundwater remediation at IRP Sites 18 and 24. GeoSyntec also anticipates preparing additional comments concerning the issue of groundwater remediation at MCAS El Toro in general.

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