



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

3443 Routier Road, Suite A
Sacramento, CA 95827-3098
Phone (916) 255-3000
FAX (916) 255-3015

N60211_000131
CROWS LANDING
SSIC NO. 5090.3.A



Pete Wilson, Governor

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Mr. Kent Strong
Department of Toxic Substances Control
10151 Croydon Way, Suite 3
Sacramento, CA 95827

DRAFT ANNUAL GROUND WATER MONITORING REPORT, NAVAL AUXILIARY LANDING FIELD CROWS LANDING, STANISLAUS COUNTY

I have reviewed the 9 May 1997 *Draft Annual Ground Water Monitoring Report* for the Naval Auxiliary Landing Field (NALF) in Crows Landing. The report summarizes the data collected from December 1995 through February 1997 and recommends modifications to the monitoring program. My comments on the report are presented below.

1. The report should evaluate the adequacy of the monitoring program at each site. It should state whether or not there are enough wells to define the lateral and vertical extent of contamination at each site and recommend actions to be taken if it is determined that the program is inadequate.
2. I recommend that monitoring well designations be followed by S, M, or D for shallow, mid-depth, and deep monitoring wells, respectively. In addition, the base water supply well, domestic well, and irrigation wells also should be described as such. For example, in the May 1996 shallow groundwater elevation map, there is "New" well northwest of CL2-MW-04. The report should specify whether this is a new domestic well for the base or a new irrigation well for the farmers. The wells southwest of UST Cluster 1 also should be described more clearly.
3. The hydrograph for well cluster 17-MW-02, 17-MW-03, 17-MW-14, and 17-MW-15 shows that for 2 September 1996, the elevation of mid-deep well 17-MW-14 is lower than the elevation of deep well 17-MW-15 suggesting a vertical upward gradient during the sampling event. However, this is inconsistent with the remainder of the data which show a consistent vertical downward gradient from 17-MW-14 to 17-MW-15. This situation also occurred during the same sampling event for well cluster 17-MW-06 and 17-MW-07. In this cluster, the elevation of shallow well 17-MW-06 is lower than the elevation of mid-shallow well 17-MW-07 just for this particular sampling event, but the remainder of the data show the elevations reversed. These discrepancies should be corrected.
4. The last sentence of the last paragraph on page 3-13 of the report needs to be completed.



5. In the groundwater elevation contours for May, June, July, and August 1996, it is not clear if there is really a depression between UST Cluster 1 and background monitoring wells 1 and 2. It could be that the groundwater simply flowed to the southwest during these months. The contaminants, which have been detected at background monitoring well BG-MW-01, could have come from UST Cluster 1. The Navy should install some piezometers in the area between UST Cluster 1 and background monitoring wells BG-MW-01 and BG-MW-02 to determine the actual ground water flow direction in this location.
6. The first sentence of the third paragraph on page 4-1 states that background monitoring well results indicate that potential regional contaminant problems are not affecting the known contaminant plumes on base. This sentence is most likely alluding to the detection of 1,1,1-trichloroethane, benzene, toluene, and xylenes at background monitoring well BG-MW-01. The Navy is attributing the detection of these contaminants to some offsite source although NALF Crows Landing is isolated, there are no industries surrounding it, and there are no known contaminated sites nearby. The Navy should substantiate this assertion and explain further what it means by potential regional contamination. The most likely cause of occasional detection of contaminants at BG-MW-01 is migration of contaminants from UST Cluster 1 due to groundwater flow reversal resulting from irrigation well pumping.
7. The report recommends sampling for volatile organic compounds (VOCs) only at Site 17. However, monitoring wells 17-MW-12 and 17-MW-13 should continue to be tested for total petroleum hydrocarbons as diesel and gas (TPHd/g) and benzene, toluene, ethylbenzene, and xylenes (BTEX) because these are boundary wells to the northwest.
8. Monitoring for TPHg at perimeter wells CL1-MW-04, CL1-MW-05, and CL1-MW-06 may be reduced to annually if four consecutive quarters of no detection occurs. Until then, these perimeter wells along with the remaining wells at UST Cluster 1 should be sampled quarterly for TPHg.
9. The detection limit for VOCs and BTEX should be maintained at 0.5 parts per billion or lower.

If you have any questions, you may call me at (916) 2553049.


PHILIP S. ISORENA
Associate Engineer

PSI:psi/lbj/lbj

cc: Mr. Hubert Chan, EFA West, Naval Facilities Engineering Command, San Bruno
Mr. Neil Bingert, PRC Environmental Management, Inc., Denver, Colorado