



California Regional Water Quality Control Board

Central Valley Region

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13 March 2006

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24 FEBRUARY 2006 DRAFT INVESTIGATION SUMMARY REPORT, EXTENT OF GROUNDWATER IMPACT VERIFICATION, INSTALLATION RESTORATION PROGRAM SITE 117, NASA CROWS LANDING FLIGHT FACILITY, CROWS LANDING, STANISLAUS COUNTY

We have reviewed the 24 February 2006 *Draft Investigation Summary Report, Extent of Groundwater Impact Verification, Installation Restoration Program Site 117* at the NASA Crows Landing Flight Facility near Crows Landing in Stanislaus County. Your consultant, Shaw Environmental, Inc., prepared the report. The report summarized the subsurface investigation of the Administration Area Plume downgradient and off-site (east of Bell Road) to the Crows Landing facility. The investigation found the following:

1. Benzene was detected in the mid-shallow interval only, at a maximum concentration of 2.0 micrograms per liter ($\mu\text{g/L}$). The extent of benzene in groundwater has been defined in the shallow, mid-shallow, mid-deep, and deep intervals.
2. 1,2-dichloroethane (1,2-DCA) was detected in the mid-shallow interval only, at a maximum concentration of 1.6 $\mu\text{g/L}$. The extent of 1,2-DCA has been defined in all four intervals.
3. Carbon tetrachloride was not detected in groundwater samples collected from the shallow interval. The maximum concentration of carbon tetrachloride detected was 14.7 $\mu\text{g/L}$ in the mid-shallow interval, 0.7 $\mu\text{g/L}$ in the mid-deep interval, and 5.4 $\mu\text{g/L}$ in the deep interval. The extent of carbon tetrachloride has been defined in the shallow interval, but has not been defined in the mid-shallow, mid-deep, and deep intervals.
4. Chloroform was detected at a maximum concentration of 0.5 $\mu\text{g/L}$ in the shallow interval and 4.8 $\mu\text{g/L}$ in the mid-shallow interval. Chloroform was not detected in the mid-deep or deep intervals. The extent of chloroform has been defined in the shallow, mid-deep, and deep intervals. The extent of chloroform in the mid-shallow interval has not been defined.
5. Trichloroethene was detected in the shallow interval at a maximum concentration of 2.2 $\mu\text{g/L}$ and in the mid-shallow interval at a maximum concentration of 1.2 $\mu\text{g/L}$.

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6. Based on the results of the off-site investigation coupled with the results of previous investigations, the following was recommended.
- Additional groundwater sampling and analysis should be conducted on the adjacent (downgradient) property to further define the extent of carbon tetrachloride and chloroform in the mid-shallow, mid-deep, and deep intervals.
 - Installation of traditional monitoring wells would also be conducted in the future to provide off-site data that can be compared to all of the historical data collected on-site.
 - An assessment should be conducted to evaluate if the impacted groundwater detected off-site poses a risk to human health and the environment and if migration control is necessary. A predictive model should be developed to evaluate risk associated with plume movement, and to estimate long-term natural attenuation of the plume.
 - Remedial technologies should be evaluated.

Our comments regarding the *Draft Investigation Summary Report* are as follows.

1. We concur with the findings and recommendations presented in the report.
2. A definitive statement regarding whether to conduct additional investigation of the trichloroethene detected in the shallow and mid-shallow intervals should be provided. Additionally, the reasoning behind the statement should be included.
3. Off-site irrigation well 6/8-16M1 is located east of the Administration Plume. This well likely influences the movement and distribution of the contaminants of concern in groundwater, and could be the reason for contaminants found in the mid-deep and deep intervals. Knowing the construction specifications of the well could help explain contaminant movement and distribution. As such, construction data of this well should be obtained. If construction data is not available, then the well should be video-logged.

By 5 May 2006, please provide a finalized version of the report addressing the above comments. If you have any questions, please contact Greg Issinghoff at (559) 488-4390.


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