

KAFB 94

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**Stage 2A/Appendix I Draft RFI Report
Kirtland Air Force Base
August 25, 1994**

The following is a general outline of some of the deficiencies and concerns that the EPA has identified in Kirtland's Stage 2A draft RFI Report. This outline has been furnished for discussion purposes only and may not include all of the deficiencies and concerns present in the Report.

WORK PLAN/SAMPLING AND ANALYSIS PLAN

- The objectives and proposed work elements of the WP/SAP were only partially achieved and less work than originally proposed was completed at several of the investigated sites.
- Fewer borehole samples were obtained than had been scheduled (ie. Site 3). Some sampling locations were changed or deleted without explanation (ie. Site 4). No attempt was made to collect samples at intervals where elevated OVA or explosimeter readings were recorded. Extra samples were collected at some sites without explanation (ie. Sites 1 and 11).
- Borehole logs do not provide OVA or explosimeter readings. Limited sampling information is indicated on the logs. Samples were obtained at infrequent intervals which exceeded the 5-foot interval specified in the WP/SAP. No geologic features are included in the lithologic descriptions. Soil descriptions are based on a nonstandard combination of the Wentworth and Unified Soil Classification Systems rather than one accurate classification system.
- Soil-gas surveys were not performed at sites 14 and 15, as was proposed in the WP/SAP. The analytical equipment was calibrated using a nonstandard methodology.
- Several groundwater monitoring wells were screened below the lowest seasonal groundwater level. Some wells included screen lengths of up to 45 feet (ie. Site 3).
- Many monitoring wells were built with filter packs that exceeded the 2-foot clearance recommended in the WP/SAP (ie. Sites 1, 2, 3, 4, 5, 6, 9, 10, and 19).
- Surface geophysical surveys were to be conducted at eight sites. The Report indicates that geophysical surveys were conducted at only four sites.
- Only limited portions of the analytical results were discussed in the Report. In most cases the Report only presented the maximum concentrations detected. For groundwater samples, results were provided only for dissolved inorganic constituents detected in field filtered samples.

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- Significant blank contamination is present in the laboratory and field blanks. The majority of the blank contaminants reported are not considered common laboratory contaminants. The Report never discusses the actual impact of the contamination on the validity and usability of the data.
- The Report fails to adequately discuss the surrogate recoveries and their impact on data validation. The Report should discuss (1) all data that are affected by poor QC results, and (2) their usability.

RFI REPORT DEFICIENCIES

- Groundwater monitoring wells were installed using bentonite additives in the drilling fluids to maintain borehole stability. Removal of bentonite from less transmissive zones during the development process would have likely been difficult. As a result, the monitoring wells may actually be monitoring only the most transmissive portion of the saturated interval in which they were installed.
- There is no information regarding the establishment or definition of the seasonal groundwater variations.
- A seasonal high groundwater condition should be mapped to determine whether there are flow direction changes and/or gradient changes associated with the change in seasons.
- The influence of the Kirtland production wells and municipal pumping (northeast of the site) on the groundwater beneath Kirtland is not clearly defined.
- Little information is provided concerning the effects of faults on the groundwater table.
- Page 2.21 indicates that perched groundwater was encountered during the drilling of some wells. No further reference could be located in the site-specific descriptions or on the boring logs.
- Background soil samples may be upslope from specific sites but downslope of other site(s) (background sites 4, 5, and 18).
- Background groundwater samples may be upgradient from specific sites; however, they may be downgradient of other site(s) (background sites 1, 2, 3, and 10).
- The use of proposed risk-based action levels is inappropriate while characterization is still limited and incomplete. Furthermore, human health risk-based action levels should be based on the most current toxicological data rather than outdated proposed subpart S levels.

- The identification of potential contaminant pathways and receptors is inappropriate while characterization is still limited and incomplete.
- Many of the boring logs fail to provide the following information:
 - Elevations
 - Field screening results
 - Method of sample collection
 - Frequency of sample collection
 - Whether drill cuttings or samples were described
 - When perched groundwater is encountered
 - When saturated conditions are encountered
 - Geologic features (such as the presence of a clay layer within a sand or whether the sand has a clayey matrix)
 - Drill action
- In the unsaturated zone, the presence of perched groundwater, although noted on page 2.21 of the Report, is not reported at the individual sites at which it was encountered.
- With respect to the saturated zone, the individual site-specific flow directions, based on groundwater surface contouring, have been developed in a manner that is inconsistent with conventional technical practice (at sites 1, 3, and 6).
- The effects of groundwater mounding or recharge have not been discussed, although a review of the individual site-specific topographies indicates surface depressions and/or water bodies that would serve as recharge locations (at sites 1, 3, 5, 6, 9, 10, 13, 14, 17, 18, and 19). A review of the groundwater level data indicates mounding or local recharge at sites 6 and 10.
- The geologic depositional environment affecting groundwater flow and preferential pathways for contaminant migration is not discussed.
- Slug test data were not included in the Report. Only the final conclusions obtained from the slug test data were provided.
- There is very little waste source characterization in the Report.
- At some locations (ie. Site 10), sampling was not conducted at the depth of the probable source. Sampling was conducted to the 100-foot depth; however, the documented depth of the explosives testing exceeded 300 feet bgs.