

KAFB
HSCWA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

rec'd 12/19/95

Paul X
Barbara
Steve P. ✓

DEC 18 1995

FILE

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Scott E. Streifert, Colonel
Director, Environmental Management Division
377 ABW/EM
2000 Wyoming Boulevard SE
Kirtland AFB, NM 87117-5659

Dear Colonel Streifert:

The Environmental Protection Agency (EPA) hereby approves your August 23, 1995, Draft Work Plan for Interim Corrective Measures. However, because a Notice of Deficiency (NOD) was recently issued on the Stage 2D-1 RFI Report, EPA recommends that implementation of the interim measure at Radioactive Burial Site 7 be delayed until such time as the NOD has been resolved. EPA appreciates Kirtland Air Force Base's efforts to conduct these voluntary measures.

With respect to the Stage 2A/Appendix I RFI Report, please be advised that EPA will conclude its review of this report in the near future. However, so as not to impede the Kirtland Air Force Base budget request process, please be advised that further investigation will be required at the Stage 2A Solid Waste Management Units. Please ensure that funding is made available to allow the additional investigation to proceed in a timely manner.

If you have any questions, please contact Nancy Morlock of my staff at (214) 665-6650.

Sincerely yours,

David Nelegh
David Nelegh, Chief
New Mexico and Federal
Facilities Section

Enclosure

cc: Mr. Benito Garcia
New Mexico Environment Department

KAFB1706



HSCWA KAFB 12/19/95

SS

*Response to Comments
from
U.S. Environmental Protection Agency, Region 6
dated December 13, 1995
for
Approval With Modifications
Kirtland Air Force Base
Stage 2A RFI Report & NOD Response*

General Comments

1. **Future RFI Work Plans:** *Any major deviation from an approved RFI Work Plan must be reviewed and approved by the Administrative Authority prior to implementation. All deviations shall be described and justified in the RFI Report.*

Kirtland AFB concurs.

2. **Borehole Logging:** *Borehole logging, as conducted in the Appendix I RFI, was not typical of environmental practices and standards. Each borehole log should be presented in a graphic table, complete with information columns for: (1) depth; (2) sample location/number; (3) blow counts and advance rate; (4) percent sample recovery; (5) stratigraphic description; and (6) depth to saturation. Future work plans and reports, including the new RFI Work Plan for the Appendix I SWMUs, shall present detailed boring logs.*

The Base-Wide Plans will include a section describing proper borehole logging procedures as per this comment. This procedure will then be followed for all future corrective action activities. The Appendix I, Phase 2 RFI Report will present detailed boring logs.

3. **Geologic Characterization:** *Characterization of geologic data was inadequate because of: (1) the limited amount of subsurface exploration that was conducted; (2) the poorly documented field records and boring logs; and (3) the absence of geologic maps, cross sections, and detailed discussions relating conditions under each site to those of the overall base area. Each site should be reevaluated regarding the usefulness of existing geologic data. Actions necessary to fully characterize the sites shall be proposed. This discussion, including proposals for additional activity, shall be presented in the new RFI Work Plan.*

Kirtland AFB has prepared an Appendix I, Phase 2 RFI SAP that describes the additional characterization proposed at all Appendix I SWMUs. This SAP will be submitted 60 days

after FY96 funds are awarded. All useful geologic data from the existing Appendix I RFI and the Phase 2 RFI will be evaluated and presented to include geologic maps, cross sections, and discussions relating conditions under each site to those of the overall base area. This information will be provided in the Appendix I, Phase 2 RFI Report to be submitted 18 months after FY96 funds are awarded.

4. ***Hydrogeologic Characterization:*** *Kirtland Air Force Base (KAFB) shall install additional borings and monitoring wells to more fully characterize the hydrogeologic environment at the Appendix I SWMUs. Characterization discussions should (1) provide an in-depth discussion of groundwater conditions, (2) address any anomalies present on interpreted maps, and (3) explain any discrepancies between site-specific and base-wide maps. Each site will be reevaluated regarding the usefulness of existing hydrogeologic data. Actions necessary to fully characterize the sites shall be proposed. This information, including proposals for additional activity, shall be provided in the new RFI Work Plan.*

Kirtland AFB has prepared an Appendix I, Phase 2 RFI SAP that describes the additional characterization proposed at all Appendix I SWMUs. This SAP will be submitted 60 days after FY96 funds are awarded. The additional characterization includes additional borings, geoprobes, soil gas surveys, geophysical surveys, and or monitoring wells. We are also initiating a long-term groundwater monitoring program at existing monitoring wells in 1996. In addition, DOE's site-wide hydrogeologic characterization project is nearing completion and will be submitted as an addendum to the Base-Wide Plans. All three projects will provide the additional information needed to more fully characterize the hydrogeologic environment at Appendix I SWMUs. The hydrogeologic data from the existing Appendix I RFI, the upcoming Phase 2 RFI, and the site-wide hydrogeologic characterization will be evaluated and presented to include a discussion of hydrogeologic conditions under each site and how they relate to those of the overall base area. This information will be provided in the Appendix I, Phase 2 RFI Report to be submitted 18 months after FY96 funds are awarded.

5. ***Waste Source Characterization:*** *Waste source characterization is inadequate because of limited surficial and shallow soil sampling. No investigation has been performed within, or directly beneath, approximately half of the SWMUs. Each site should be reevaluated regarding existing waste characterization data to determine subsequent actions necessary to fully characterize the nature and extent of contamination at the sites. This discussion, including proposals for additional activity, shall be presented in the new RFI Work Plan.*

The original Appendix I RFI Work Plan, as approved by the EPA, described investigations that were intentionally designed to avoid penetrating most of the SWMUs. The Appendix I,

Phase 2 RFI SAP will describe the additional characterization proposed at all Appendix I SWMUs, which includes surficial and shallow soil sampling and deep soil borings directly within most of the SWMUs. This SAP will be submitted 60 days after FY96 funds are awarded.

6. ***Borehole Sampling:***

- a. *Kirtland attributed elevated Organic Volatile Analysis (OVA) readings to false positives related to water added around auger flights. Elevated readings can be dismissed only by detailed discussion, including adequate documentation, of this phenomenon.*
- b. *Future work plans and reports shall include a table that relates sample identification numbers to specific boreholes or monitoring wells.*

Kirtland AFB concurs with a. and b.

7. ***Borehole Logging:***

- a. *Future work shall include sample descriptions at every sample interval, or as prescribed and approved in the new work plan.*
- b. *Future work shall present soil descriptions based on the Unified Soil Classification System, or as prescribed and approved in the new work plan.*

Kirtland AFB concurs with a. and b., except substitute “new work plan” with “Base-Wide Plans.”

8. ***Soil-Gas Surveys:***

- a. *Sites 14 and 15 were reportedly excluded from soil-gas surveys because of a lack of contamination. Kirtland shall provide a detailed discussion and justifications regarding: (1) the decision to not perform soil-gas surveys at these sites, and (2) the determination that these sites need no further action. This discussion shall be included in the new RFI Work Plan.*
- b. *Future work shall ensure that analytical equipment is standardized using gas-phase standards. This method of calibration shall be specified in future work plans and reports.*

a. During the original visual site inspection (VSI), the EPA contractor observed some drums in the abandoned sewage lagoons that form part of Site 14 (SWMU 6-24). Concern for the possibility of drums being buried at this site resulted in the determination to perform a soil gas survey as part of the RFI. Subsequent records searches and interviews revealed that the drums were placed there by members of the adjacent equestrian club for horse-riding

competition practice. For this reason, Kirtland AFB determined a soil gas survey was not required at Site 14. At Site 15, the RFI results were interpreted to indicate that the site was not the location of the Manzano Landfill, and, as such, Kirtland AFB determined that the soil gas survey was not required. This discussion will also be provided in the Appendix I, Phase 2 RFI Report. The Appendix I, Phase 2 RFI SAP, to be submitted in FY96, describes additional characterization proposed for both sites, which includes additional soil borings at both sites and a soil gas survey at Site 15 (SWMU 6-29).

b. Kirtland concurs. A description of equipment calibration using appropriate standards will be provided in the Base-Wide Plans.

9. ***Ground Water Monitoring Well Installations:***

a. *Kirtland must compile sufficient hydrogeologic data to estimate seasonal ground water variations prior to the installation of future monitoring wells. A detailed discussion should include historical water-level measurements from multiple wells, both within and outside the site. These data shall be included in the new work plan and can be used to justify any proposed variance requests from standard screen lengths.*

b. *The 2-foot filter pack requirement may be inappropriate for 500-foot-deep monitoring wells; however, 50 feet (a 50-foot filter pack) is excessive and could provide a route of migration for contaminants. A fining-upward filter pack (above the top of the well screen) up to 10 feet thick is appropriate. Filter pack thicknesses shall not exceed 10 feet. The new work plan shall discuss filter packs.*

c. *According to Kirtland's response to the NOD, additional water level data are available. These data shall be presented and discussed in the new RFI Work Plan.*

d. *Data regarding OVA readings in ground water monitoring wells (prior to purging) shall be reviewed and discussed in the new RFI Work Plan.*

a. Both KAFB's long-term groundwater monitoring plan and DOE's site-wide hydrologic characterization plan will provide information on seasonal groundwater variations; they will be submitted as addenda to the Base-Wide Plans when completed. Although indications are that seasonal variations are negligible at best, KAFB will evaluate the data from these two projects to assist future groundwater monitoring well design. We are more concerned, however, with the continued drop in elevation of the regional water table and its impact on well screen design.

b. Kirtland concurs, and the Base-Wide Plans will provide a discussion of filter packs.

c. As stated above, this data will be made available as addenda to the Base-Wide Plans.

d. Data regarding OVA readings in groundwater monitoring wells shall be reviewed and discussed in the Appendix I, Phase 2 RFI Report.

10. **Surface Geophysical Surveys:** *Kirtland should: (1) provide a detailed discussion explaining the decision to dismiss sites 14, 15, and 21 from the geophysical work specified in the work plan, or (2) provide details for conducting a surface geophysical survey, as discussed in the original work plan. This discussion shall be included in the new RFI Work Plan.*

During the original visual site inspection (VSI), the EPA's contractor observed some drums in the abandoned sewage lagoons that form part of Site 14 (SWMU 6-24). Concern for the possibility of drums being buried at this site resulted in the determination to perform a soil gas survey as part of the RFI. Subsequent records searches and interviews revealed that the drums were placed there by members of the adjacent equestrian club for horse-riding competition practice. For this reason, Kirtland AFB determined a geophysical survey was not required at Site 14. The Appendix I, Phase 2 RFI SAP includes descriptions of proposed geophysical surveys at Site 15 (SWMU 6-29) and Site 21 (SWMU 6-8).

11. **Analytical Procedures:** *Kirtland shall expand its discussion of analytical procedures to include additional detail on concentrations of analytes detected. Previous discussions were generally limited to maximum concentrations detected. Discussions of analytes detected in ground water shall focus on unfiltered (total) samples and provide analytical results of unfiltered samples. This discussion shall be provided in the new RFI Work Plan.*

The previous contractor, USGS, is no longer available to provide response. The new contractor, FWE, will have to reevaluate the data, as well as the NOD response, in order to provide the required discussion. As a result, the discussion of analytical procedures will be included in the Appendix I, Phase 2 RFI Report, due 18 months after receipt of FY96 DERA funds.

12. **Data Validation:**

a. *Kirtland has failed to provide a detailed response concerning laboratory blank contamination and its impact on data usability. A complete response must include (1) an explanation of the potential source of contaminants not common to the laboratory (such as chloromethane, copper, chromium, uranium, and gross beta); and (2) a discussion regarding the significance of "common laboratory contaminants" when detected at low levels in field samples but not detected in associated laboratory blanks. This discussion shall be included in the new RFI Work Plan.*

b. *Kirtland stated in the NOD response that the sampling data affected by blank contamination are questionable and should be used with caution. However, the guidance that Kirtland cited for data validation in Appendix C clearly indicates that sampling results less than five (or 10) times the amount found in the associated blanks should be qualified as undetected. This implies that the positive sample concentrations for those analytes are not*

usable at all and should be designated as undetected (U). In the final summary tables, the results for these analytes in the affected samples should appear as undetected results. These discussions shall be presented in the new RFI Work Plan and be incorporated into all future data validation reports.

c. The effect of poor quality control (QC) results on the overall usability of the data has not been adequately discussed. For example, Kirtland describes specific data associated with poor QC results as being questionable and advises that these data be used with caution. However, the user cannot determine: (1) in which cases the data are useable; (2) the potential for bias, or (3) the direction of bias. Future reports shall be more descriptive of the data useability with regard to bias, false negatives, false positives, and limitations (for example, not to be used in risk assessment). The impact of poor surrogate recoveries in data provided by Kirtland shall be addressed in the new RFI Work Plan.

a. b. & c. The contractor, USGS, is no longer available to provide response. The new contractor, FWE, will have to reevaluate the data, as well as the NOD response, in order to provide the required discussion. As a result, the discussion of the significance of laboratory contaminants, data validation, surrogate recoveries, etc. will be included in the Appendix I, Phase 2 RFI Report, due 18 months after receipt of FY96 DERA funds. The Phase 2 RFI Report will provide a discussion of data validation and quality to include all existing data, as well as the data generated during the Phase 2 RFI.

13. Environmental Setting

a. The NOD response acknowledged that the RFI discussion of ground water hydrology was limited and that "much more" information was available, but it failed to provide any additional data. A thorough discussion of the ground water hydrology, including the newly available data, shall be provided in the new RFI Work Plan.

b. The NOD response failed to explain whether water levels in wells other than Kirtland Air Force Base (KAFB) production well 5 were being evaluated. If other data are available, they should be integrated into the existing site information and presented in the new RFI Work Plan.

c. The NOD response stated that monthly water-level measurements "collected from United States Geological Survey (USGS) wells drilled for the RFI" show seasonal fluctuations of about 1.6 feet. This statement does not agree with the 10 to 20 feet of seasonal variation discussed in the RFI on page 2.28. This apparent discrepancy should be corrected. If new data are available, they should be presented and discussed in the new RFI Work Plan.

d. Kirtland should incorporate all available water-level data and provide a seasonal high water table map. Assumptions and inferences regarding the contouring and interpretation of both the high water-level map and existing water-level map, such as dashed lines, should be discussed. This map(s) and discussion shall be provided in the new RFI Work Plan.

e. Water-level measurements from RFI wells should be mapped and graphed as part of the discussion of ground water hydrology. This discussion, which should include apparent effects of production and municipal wells, shall be presented in the new RFI Work Plan.

f. Kirtland should provide additional data to explain the water table maps, including a discussion of assumptions made and discrepancies between individual site maps and the base-wide water table map(s). If the installation of additional wells would provide useful data on the effect of faults on the ground water table, these should be proposed in the new RFI Work Plan

g. The NOD response states that no perched ground water was detected during the drilling of the RFI wells, yet the RFI report states "...perched ground-water conditions have been noted during the drilling of some wells" (page 2.21). This discrepancy should be addressed in the new RFI Work Plan.

a. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report.

b. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report.

c. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report.

d. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report.

e. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report.

f. This information will be provided in the site-wide hydrogeologic characterization plan and/or will be discussed in the Phase 2 RFI Report. Additional groundwater monitoring wells are planned for the Phase 2 RFI as presented in the SAP.

g. Although a well-defined perched zone was not observed during drilling; however "perched conditions" were encountered during the drilling of some wells. At the time, this was attributed to mounding or some other local conditions. Since the RFI, additional data gathered by Sandia National Labs indicates there is a perched zone under part of the base. This information will be presented in the site-wide hydrogeologic characterization report and will be discussed in detail in the Phase 2 RFI Report.

14. Risk-Based Action Levels: *The use of risk-based action levels is not appropriate until the site has been adequately characterized.*

Risk-based action levels will be used upon completion of the Phase 2 RFI.

15. Geologic Characterization:

- a. The NOD response indicated that elevations were provided on the RFI well completion diagrams (Appendix C of the RFI). However, these data were limited to the elevation at the top of casing; surface elevation data were not provided. This information is necessary to construct subsurface geologic cross sections.*
- b. Kirtland should provide geophysical logs at a large scale (such as 1 inch = 10 feet) and properly constructed boring logs (at the same scale as the large scale geophysical logs). These data should be provided in the new RFI Work Plan.*

- a. Surface elevations will be provided in the Phase 2 RFI Report and all future documents.
- b. Full size geophysical logs, as produced by field instruments, can be made available upon request. Boring logs can be constructed on a 1 inch = 10 feet scale for certain types and depths of drilling; however, Kirtland maintains that logging 450-foot-deep boreholes, using mud or air rotary techniques, in a relatively homogeneous medium does not provide the degree of lithologic accuracy needed to support a scale of 1 inch = 10 feet. In addition, each boring of that depth would require five pages to present it in standard report size. The Base-Wide Plans will, nevertheless, indicate that all future boring logs will be on a scale of 1 inch = 10 feet or smaller.

Specific Comments

1. *Site 1 - Landfill 1:*

- a. The NOD response failed to discuss the significance of the increase in total organic halogen (TOX) concentrations measured in monitor well KAFB0107 or identify the chlorinated compounds, as requested in the NOD comments. These discussions should be presented in the new work plan. In the future, TOX analyses should be discontinued in favor of more specific analyses, including volatile and semivolatite organics analyses.*
- b. Kirtland should include the monitoring wells downgradient of landfill 1, in addition to KAFB Production Well 2, in annual monitoring.*

- a. These discussions will be provided in the Phase 2 RFI Report. TOX analyses have not been used since 1993, having been replaced with specific EPA methods.
- b. These wells have been included in KAFB's Long-Term Groundwater Monitoring Plan, which has been approved by NMED.

2. *Site 2 - Landfill 2:*

Kirtland should further discuss the suspected source of chromium. Detailed documentation should be provided to substantiate the suspected source, including a discussion of analytes present in the ground water that could reasonably have caused this leaching. This discussion shall be included in the new RFI Work Plan.

This discussion will be provided in the Phase 2 RFI Report.

3. *Site 3 - Landfills 4, 5, and 6:*

Kirtland should provide a revised map of site 3 that displays the locations and boundaries of landfills 4, 5, and 6. This map shall be included in the new RFI Work Plan.

This revised map will be included in the Appendix I, Phase 2 RFI SAP.

4. **Site 4 - Fire Training Area:**

Kirtland should provide an detailed explanation or interpretation of the presence of TOX values within this site. This discussion shall be presented in the new RFI Work Plan.

This discussion will be provided in the Phase 2 RFI Report.

5. **Site 10 - McCormick Ranch:**

Kirtland should provide additional information concerning (1) the nature of past activities at this site, including amounts of explosives used and locations of major tests, and (2) the types of future activities that are scheduled at this site. This information shall be provided in the new RFI Work Plan.

Phillips Laboratory plans no future activity at this site and will return it to the State of New Mexico when remediation is complete. The requested information will be provided in the Phase 2 RFI SAP and RFI report.