KELLY AFB
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 3320

Restoration Advisory Board

Technical Sub-Committee Meeting
October 20, 1995

Discussion Topics

1. Early involvement in technical decisions
   - What work occurring over next six months?
   - Meeting with contractors
2. Review of Zone 3 groundwater restoration plans
   - Risk assessment – use of shallow groundwater
   - Concentrations of chlorinated solvents after 30 years
   - Groundwater modeling
     - General issues
     - Effect of culvert on flow
3. Subsidence
4. Establishing acceptable risk – 10^{-4} vs 10^{-6}
5. Calculation of soil clean-up levels in Zone 2 (see attached pages)
6. Off-base soil contamination in Zone 3
7. Status of requested information:
   - Zone 2 water quality data
   - Shallow aquifer survey
   - Reviews of Zone 2 modeling
   - Map of KAFB Edwards well locations (new request)
   - Measured partition coefficients for inorganics (new request, Halliburton – NUS, 1994)
8. Prioritize items for explanation by Air Force at Future RAB meetings.

31 Oct 95

Meeting Notes of the Restoration Advisory Board
Technical Sub-Committee Meeting
Held on October 20, 1995

The following describes discussions and decisions reached at the technical sub-committee meeting. The agenda and a list of attendees are attached.

1. Early involvement in technical decisions

- Environmental Management (EM) staff will ask the Air Force Contracting Officer to determine 1) at what stage RAB members can become involved in the technical evaluation and planning process and, 2) what, if any, limitations exist concerning contact of RAB members with Air Force contractors. EM staff will report their findings at the next RAB meeting (November 13, 1995).

- Dan Medina will compile a list of the following:
  - Work currently being performed by Air Force Contractors, along with the identity of each contractor.
  - Current and anticipated Work.
  - Work planned to begin within the next year.
- The list will be presented at the next RAB meeting.

2. Review of Zone 3 groundwater restoration plans

- The modeling performed to date shows that between ten and 15 µg/L of chlorinated solvents will remain in off-base groundwater after 30 years of remedial action. This result however only reflects an analysis of total chlorinated solvents, not individual solvents. The TNRCC stated that before it considers the cleanup complete the MCLs for individual solvents will have to be met.

- Although the exact identity of the remaining chlorinated solvents is unknown, they will consist of one or more of the following:
  - Tetrachloroethylene (PCE, maximum contaminant limit for drinking water [MCL] = 5µg/L)
  - Trichloroethylene (TCE, MCL = 5µg/L)
  - 1, 2 Dichloroethylene (DCE, MCL = 70 -100[1] µg/L

[1] MCL depends on form, cis-1, 2 DCE = 70 µg/L, trans-1, 2 DCE = 100 µg/L.

- Vinyl Chloride (MCL = 2 μg/L)

- The modeling results are based on total chlorinated solvents, not individual solvents. Mr. Ron Catchings explained that the Bioplume II model could only address BTEX components. Mr. Rice stated the concern that other sites were modeled for individual components, but this site was not. Mr. Catchings stated that he would find out if this were the case, and if so, the rationale.

- Modeling is an ongoing basewide project and will continue as new data and more capable modeling codes become available

3. Subsidence
- No study of the effects of Air Force activity on subsidence has been done.
- The Air Force will request funding to conduct a subsidence study. Dan Medina will provide further information at the next RAB meeting.

4. Establishing acceptable risk - 10^{-4} vs 10^{-6}
    - Mr. Roberson and Mr. Beyer explained the TNRCC Risk Reduction Rules and related cleanup standards.
    - The Air Force and the Texas Natural Resources Conservation Commission (TNRCC) will give a presentation on risk assessment at the next RAB meeting. They will discuss the meaning of risk assessments and explain how acceptable levels of risk are established at individual sites (e. g. 10^{-4} vs 10^{-6} cancer risk; TNRCC Risk Reduction Standards).

5. Calculation of soil cleanup levels in Zone 2 (see attached pages)
    - The contractor will give a detailed explanation of the calculations shortly after the next RAB meeting. All RAB members are invited to attend.

6. Off-base soil contamination in Zone 3
    - The Air Force claims it is not responsible for any off-base surface-soil contamination. Information regarding this contamination can be obtained from TNRCC. The TNRCC agreed that the Air Force is not responsible for any off-base surface-soil contamination in Zone 3.

7. Status of requested information:
    - Zone 2 water quality data

- The Air Force will provide water quality data collected under the Resource Conservation and Recovery Act (RCRA). In approximately two months, the Air Force will produce and provide a Basewide Remedial Assessment . Water quality data collected during 1994 is contained in the following documents:
  - Annual Groundwater Assessment Reports (RCRA)
  - Basewide Remedial Assessment

- Shallow aquifer survey

  - The survey will be released to the public in about one month.

- Reviews of Zone 2 modeling

  - The Air Force is not sure whether any specific reviews exist. If such reviews exist, the Air Force does not know if 1) it is legally required to release the reviews to the public, 2) it may ask contractors to voluntarily release the reviews.
  - Adrienne Williams will provide answers to these questions at the next RAB meeting.

- Map of KAFB Edwards well locations (new request)

  - The Air Force will provide a map.

- Measured partition coefficients for inorganics (new request; Halliburton-NUS, 1994)

  - The Air Force will provide the information.

8. Prioritize items for explanation by Air Force at future RAB meetings.

   - Establishing acceptable risk, see item 4.

9. RAB subcommittee members were asked if they had any comments on Zones 1, 2, & 3 Soil Proposed Plans which were presented to the RAB on 27 July 1995. They stated they did not have any comments.

10. RAB subcommittee members were reminded to make requests following the established procedures.

Zone 2 Soil Leaching Calculations

Equations used by Air Force (see Feasibility Study for Zone 2 Soil, page D.1-47 &70):

$$C_{mix} = C_{gw} - \frac{V_d M}{QL}(C_u - C_{gw})$$

Where:

C_{mix} = Acceptable leachate concentration in soil (mg/L)

C_{gw} = Groundwater PRG (mg/L)

V_d = Groundwater Darcy velocity (ft/yr)

M = Mixing depth in aquifer (ft)

Q = Aquifer recharge rate (vertical, ft/yr)

L = Length of source parallel to groundwater flow (ft)

C_u = Groundwater concentration upgradient of site (mg/L)

$$GPC = C_{mix} K_d$$

Where:

GPC = Acceptable soil concentration (mg/kg)

C_{mix} = Acceptable leachate concentration in soil (mg/L)

K_d = solid/liquid distribution coefficient (L/kg)

$K_d = f_{oc} K_{oc}$

f_{oc} = Fraction organic carbon in soil or aquifer

K_{oc} = soil/organic carbon partition coefficient (L/kg)

Sample Calculations for Vinyl Chloride at Site E-1

Variable	Air Force Value	Alternate Value[1]
C_{gw} (mg/L)	$2.0X10^{-3}$	$2.0X10^{-3}$
V_d (ft/yr)	54	16[2]
M (ft)	3.3	3.3
Q (ft/yr)	$6.2X10^{-3}$	$6.2X10^{-2}$[3]
L (ft)	360	360
C_u (mg/L)	0	$1.0X10^{-3}$
f_{oc}	$8.93X10^{-4}$	$8.93X10^{-4}$
K_{oc}	57	8.2[4]
C_{mix} (mg/L)	$1.6X10^{-1}$	$4.4X10^{-3}$
GPC (mg/kg)	$8.2X10^{-3}$	$3.2X10^{-5}$

[1] There is no claim that these values are the *correct* values. They are merely presented to show how a different, yet reasonable, set of assumptions can result in significantly different results.
[2] Calculated using geometric mean of hydraulic conductivity instead of arithmetic mean.
[3] Assume underestimate of soil permeability results in ten-fold increase in recharge (see Feasibility Study for Zone 2 Soil, Section D.2)
[4] See Feasibility Study for Zone 2 Soil, page D.1.6

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE