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LETTER REGARDING U S EPA REGION VI REVIEW AND COMMENTS ON RCRA FACILITY  
INVESTIGATION FOR AREA OF CONCERN 2 NAS FORT WORTH TX  
8/18/1999  
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

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NAVAL AIR STATION  
FORT WORTH JRB  
CARSWELL FIELD  
TEXAS

ADMINISTRATIVE RECORD  
COVER SHEET

AR File Number 502

502 1

File: P.W. 17A-56

502

Robert J. Huston, *Chairman*  
R. B. "Ralph" Marquez, *Commissioner*  
John M. Baker, *Commissioner*  
Jeffrey A. Saitas, *Executive Director*



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# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

August 18, 1999

**CERTIFIED MAIL # Z 435 645 995  
RETURN RECEIPT REQUESTED**

Mr. Joseph R. Dunkle  
Restoration Team Chief  
Air Force Center for Environmental Excellence (AFCEE)  
3207 North Road  
Brooks AFB, TX 78235-5363

Re: Comments to AOC 2 RFI Report, dated January 1999  
Naval Air Station Fort Worth JRB/Carswell AFB (NAS Ft. Worth)  
TNRCC Industrial Solid Waste Registration No. 65004  
TNRCC Hazardous Waste Permit No. HW-50289  
EPA ID No. TX0571924042

Dear Mr. Dunkle:

The Texas Natural Resource Conservation Commission (TNRCC) has reviewed the above referenced Report, submitted January 15, 1999, with additional information submitted January 20, 1999. This report also contained a Risk Assessment. The TNRCC has also reviewed a comment letter sent by the Environmental Protection Agency (EPA), dated February 25, 1999, to the TNRCC concerning the above referenced Report. Based on our review of these documents, the TNRCC can not approve the RCRA Facility Investigation (RFI) Report for Area of Concern 2, at this time. A list of RFI and Risk Assessment comments are enclosed. Please perform the additional work necessary/required for the RFI, and prepare a written response to each comment, referencing the assigned TNRCC comment number, unless otherwise specifically requested in the enclosure, in an Addendum to the AOC 2 RFI Report. Responses to the Risk and Ecological Assessment may be deferred until the final RFI Report is approved. The facility name, location and identification number(s) in the TNRCC reference line above should be included in your response.

An original and two copies of the written response to the RFI comments, and any additional information required, must be submitted to the TNRCC in the form of an Addendum to the AOC 2 RFI Report, at the letterhead address using mail code number MC-127. An additional copy should be submitted to Mr. Sam Barrett, Waste Program Manager, TNRCC, Region 4 Office, 1101 East Arkansas Lane, Arlington, TX 76010-6499, and to Mr. Gary Miller, EPA, Region 6, Dallas, Tx. Your response must be received within 90 days from the date of this letter.

Mr. Dunkle  
Page 2  
August 18, 1999

Should you need additional information concerning ENCLOSURE 1, or wish to discuss these comments or the due date, please call me at (512) 239-2333. Questions related to ENCLOSURE 2 should be directed to the TNRCC Toxicology and Risk Assessment Section at (512) 239-2492.

Thank you for your cooperation in this matter.

Sincerely,



Ray S. Risner, Sr. Project Manager  
Team II, Corrective Action Section  
Remediation Division  
Texas Natural Resource Conservation Commission

RSR/rsr

cc: Mr. Rafael Vasquez, AFBCA/HQ - Bergstrom  
Mr. Gary Miller, EPA Region 6, Dallas, TX (MC R04)  
Mr. Sam Barrett, Waste Program Manager, TNRCC Region 4 Office, Arlington

Enclosure(s): ENCLOSURE 1 - TNRCC Comments on AOC 2 RFI Report  
ENCLOSURE 2 - Toxicology Comment Memo, AOC 2 Risk Assessment  
ENCLOSURE 3 - EPA Comment Letter, dated February 25, 1999

TNRCC letter dated 8/18/99  
ENCLOSURE 1  
TNRCC SWR 65004

### TNRCC Comments on AOC 2 RFI Report

1. The U. S. Environmental Protection Agency, Region 6 (EPA) reviewed the Report and provided comments to the TNRCC in its February 25, 1999 letter from Gary Miller to Ray Risner (enclosed as ENCLOSURE 3). EPA's letter includes one general and five specific comments (items 1, 2 a. & b., 3, 4, and 5) regarding fundamental concerns with the RFI portion of the Report. The TNRCC has evaluated EPA's letter and concurs with its comments. Please consider EPA's concerns as if they were provided by the TNRCC, and provide your responses to both agencies' concerns in the required correspondence addressed to the TNRCC as directed in this letter, and copied to the EPA.
2. Section 1.3, Previous TCE Plume-Related Investigations - This section discusses several of the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) located within the AOC 2 study area. It provides information as to whether or not a release from these SWMUs and/or AOCs occurred and whether it was associated with the TCE and related contamination ("TCE") in the groundwater, believed to be from Air Force Plant # 4. Although, it appears at this time that there is no evidence to support a TCE release from the AOC 2 Study Area, it is important to note that not all of the investigations have been completed. It was noted that for several of the investigations, metals (specifically chromium) were not evaluated [see page 1-9, bottom of the page, last line - compared to each SWMU/AOC's list of Constituents of Concern (COC)]. Please explain.
3. Section 3.3, Summary of RFI Activities - There appears to be volumes of data over the last several years. Although the groundwater information does not indicate a release of TCE from the AOC 2 Study Area, the information is derived from many different types of temporary and permanent wells, installed or constructed for several different programs, with each set of wells sampling or being required to sample for different sets of COCs, and varying types of screens and screen lengths, varying screen locations with respect to aquifer thickness and highest permeable zone(s), and methods of completion and sample collection. Therefore, there is some concern as to the validity of the data. The TNRCC is particularly concerned with the extent boundary. Also, it is possible that wells with screens of greater than 10 feet could provide a diluted groundwater sample, when compared to the results of the wells with screens of 10 and less feet. These concerns can be seen in EPA's comments and below in this enclosure.
4. Table 3-3, Temporary Wells designated AGA-0XX all use a three (3) foot screen, and although the table indicates total depth and depth to water, nothing is provided to inform the TNRCC as to the thickness of the aquifer or depth to the bottom of the aquifer. It is also noted that in over 2/3s of the wells, the screens are set below the water table, in one case. 9.5

TNRCC letter dated 8/18/99  
ENCLOSURE 1  
TNRCC SWR 65004

feet below the water table. In some or many cases this may not matter, as we are looking at heavier than water COCs; however, we must ensure that the highest permeable zone is being tested. Without that knowledge, the values resulting from the well testing are a subject of concern. This could drastically affect the contours of the TCE maps, and could be especially important in defining the final contour interval to determine extent. There were no soil boring logs and/or well completion forms to help identify the location of the screens with respect to the aquifer thickness and total depth. Neither are any of these wells included in the cross sections in Section 4.

5. Table 3-4, Temporary Wells designated PCHMHTA0A-F all use a 2-3 foot screen. Most of the wells are screened below the water table, one at 15 feet below. The same minimum information is provided and the same concerns exist for the same reasons stated above. Although some of these wells are included in the cross sections in Section 4, the values for depth to water don't appear to always match, and it appears that in most, if not all cases, the screened interval does not include all of the aquifer. Many appear to not cover the bottom of the aquifer.
6. Table 3-5, Monitor Wells designated WCHMHTA001-14 use screens of 5-20 feet. Many wells have screens set below the water table, and two of the well clusters missed .5 and 3 feet of the middle of the aquifer. It is noted that all three well clusters found TCE in the upper and lower screens, and the test results from the lower screens were the highest concentrations. This confirms our 2 most significant concerns : 1) we do not have boring logs or well completion forms on many of the wells, which could identify the screen location and thickness of the aquifer; and 2) even if we had test results on all of the wells, which we do not, if the screens are larger than 10 feet, the results may be skewed low, as concentration dilution may occur due to increased well water volume. Either or both of these could affect the TCE concentration contour maps and more specifically, the location of the extent contours.
7. Also, wells designated BCHMHTA001 & 2 are listed on the Table 3-5 and on the Section 4 & 5 Figures, yet there is no information provided. Please explain and provide the appropriate information.
8. Section 4.1, Identification of Contaminants of Concern - the text explains how the test results are compared to the TNRCC Risk Reduction Standard 2 value. This is incorrect for the investigation. The test results should be compared to background and the Practical Quantitation Limits (PQL). Therefore, TCE mapped to the 5 ppb value may be good for the AFP #4 groundwater program, but for the RFI, the TCE should be mapped to the appropriate PQL. (Method 8260 PQL is 1 ppb). Please identify the TCE extent appropriately.

TNRCC letter dated 8/18/99  
ENCLOSURE 1  
TNRCC SWR 65004

9. Section 4.3.1 and 4.3.2, Several Geo Push and CPT wells were terminated fairly shallow due to refusal. Therefore several of the non-detect and detect values could be misleading. Also, were the on-site and the off-site labs results comparable? AGA-024 results were not comparable. The cause is proposed to be the variation in sampling method (direct vs. bailer). Why were there different methods for on-site and off-site lab use? Were the results from AGA-024 used to construct the TCE contour map(s)? If so, which value (high or low)? If not, why not? Please explain the possibly poor information which may have been used in the report to determine the extent of the TCE plume and the effect the affect it may have on the outcome.
10. The Tables and Figures in Section 4 report several wells with high TCE "J" designated concentrations (examples: LSA1628-3 = 540J, 250J; WCHMHTA011 = 420J; WCHMHTA012 = 620J; PCHMHTAOC3 = 180J; PCHMHTA0B3 = 320J; WCHMHTA009 = 450J; WCHMHTA010 = 1100J; HM-121 = 400J; HM-116 = 530J; WCHMHTA002 = 620J; HM-117 = 150J; HM-118 = 120J; WCHMHTA001 = 400J). There are similar problems with the other COCs. This causes concern with possible high detection limits, please explain.
11. In addition, there appears to be several TCE results that appear anomalous (MW-57 testing at 1U for the last three tests, yet it is close to a well with 520 ppb; GM-22-02M testing 1U for the last three tests, yet it appears to be located between wells with 20 and 320 ppb values; SPOT-35-4 testing at 5U for the latest test, yet it is later mapped several hundred feet outside the 5 ppb contour line in Section 5 Figures). Note that well GM-22-02M is illustrated in the Figure 4-6 Cross Section as having about 10 feet of sand and over 20 feet of gravel, and Table 4-13 reports that the screen length is 25 feet (there is no other information). It appears to be odd that the highest value reported is 1U (Is the bottom of the aquifer screened? Is it possible that the TCE results are skewed due to dilution from using a 25 foot screen?).
12. Figures 5-1, 5-2, and 5-3, Many wells in the AOC 2 study area were not tested in the same events or programs, the appropriate COCs were not tested, or the results were not reported (all or some of the wells designated AGA, PCHMHTA, SPOT, USGS, GMI, MW, BSS, WITCT, and/or BCHMHTA). Only the WCHMHTA series boring logs and well completion forms were provided. Information from some of these other wells may be necessary to help define the extent appropriately and determine if the screens are set correctly. All wells should be utilized each sampling event for each sampling program (problems should be noted). There should not be any differences in the data or the contour maps from program to program (as an example, the Base-wide Groundwater Monitoring Program maps do not match the AOC 2 RFI Report contour maps for TCE, because the 1100 ppb TCE results

TNRCC letter dated 8/18/99  
ENCLOSURE 1  
TNRCC SWR 65004

from WCHMHTA010 are not included). Please combine your efforts and the data to provide the best information possible.

13. After reviewing the figures in Section 4 and 5, and the EPA letter enclosed as Enclosure 2, the TNRCC believes there are plume extent data gaps for each COC. Please verify appropriate screened intervals and aquifer thickness in all wells identified with results equal to or less than 5U. For filling in the remaining data gaps, it may be possible to sample additional existing wells. General locations are provided below:
- a. Directly west of HM-120, and between HM-119 and WCHMHTA014 (due to the Carswell boundary re-entrant).
  - b. West, north, and east of WCHMHTA011.
  - c. South and possibly East of GMI-22-07M (PCHMHTA0D1 is located there, but we have no idea of the screened interval or thickness of aquifer; at this time, we have low confidence in its reported value of 1U).
  - d. Any of the WITCTA wells on the north side or around the perimeter, with appropriate screened interval and aquifer thickness verification.
  - e. South of USGS04T.
  - f. A point south of WITCHA010 and west of GMI-22-05M.
  - g. Verify WCHMHTA013, based on Risk comment 6. in ENCLOSURE 2.
  - h. Near BSS-B.
  - i. Between MW-3 and GMI-22-03M.
  - j. South of GMI-22-03M, and south of WITCTA016.
  - k. Between WITCTA016 and SPOT 35-4 (PCHMHTA0C3 is located there, but we have no idea of the screened interval or the thickness of the aquifer; it was reported in 97 to have 180J, but was not sampled in 98).
  - l. Note that SPOT 35-4 reported 5U in 98, and PCHMHTA0A4 reported 20U in 97, yet are located outside the 5 ppb contour in Figure 5-3. Can appropriate screened

TNRCC letter dated 8/18/99  
ENCLOSURE 1  
TNRCC SWR 65004

interval and thickness of the aquifer be verified in both wells or does another well at the locations or to the south need to be completed and sampled?

- m. EPA noted that although well SD-13-06 is some distance from the north plume and has been dry, in January 1999 it contained 15 ppb PCE. If Carswell wants to claim this is from AFP #4, then the AOC 2 investigation should be expanded. Otherwise, provide information as to the location of the source of PCE, and determine extent.

The TNRCC would like AFCEE to identify the groundwater monitoring data issues which might affect the whole TCE plume picture. This should entail a full accounting of all wells, at a minimum, whether all appropriate constituents are consistently analyzed, identify locations of high porosity zones within each aquifer, and determine all screen lengths and screened interval elevations with respect to the location of the aquifer. Any potential problem areas which might affect appropriate constituent mapping, and determination of the full extent should be identified, explained, and assessed (ie., which wells may have had some problem which prevents the analytical results from being reliable or comparable to other wells; which wells did/do not test for all the appropriate constituents each sampling event; which wells have screens less than 10 feet or greater than 10 or 20 feet; and/or which wells are not screened at the bottom, top, or in the highest porosity zone of the aquifer; etc.). Focus attention on the plume boundary and whether the plume has migrated to or will soon migrate to a receptor of concern, sensitive area, or off-site.

14. If some of the above missing/required information is located in one or more of the Quarterly Base-wide Groundwater Monitoring Reports, please extract that information and provide in the required addendum.
15. Comments on the Risk Assessment can be found in ENCLOSURE 2. Ecological risk concerns expressed in item 11. of ENCLOSURE 2 and all other Ecological issues should be addressed by reviewing the "Guidance for Conducting Ecological Risk Assessment (ERAs) under the Texas Risk Reduction Program, Office of Waste Management, RG 263. November 1996. This document is under revision. Please feel free to call Larry Champagne at (512) 239-2158, or Vickie Reat at (512) 239-6873 for updated information.

# Texas Natural Resource Conservation Commission

## INTEROFFICE MEMORANDUM

**To:** Ray Risner  
Corrective Action Section  
Remediation Division  
Office of Permitting

**Date:** August 13, 1999

**From:** Charles Wheat *CW*  
Toxicology & Risk Assessment Section *CRP*  
Office of Permitting

**Subject:** Toxicology & Risk Assessment Section Comments of the Baseline Risk Assessment for the Draft RCRA Facility Investigation Report Area of Concern 2 (AOC 2), Naval Air Station Fort Worth, Joint Reserve Base Tarrant County, Fort Worth, Texas, January 1999 (CAS Document No. 2787, SWR No. 65004)

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Staff of the Toxicology & Risk Assessment Section (TARA) have reviewed the "Baseline Risk Assessment for the Draft RCRA Facility Investigation Report Area of Concern 2 (AOC 2)," January 1999, Naval Air Station Fort Worth, Joint Reserve Base in Tarrant County, Fort Worth, Texas. The report was prepared by the Air Force Center for Environmental Excellence (AFCEE) for the Carswell Air Force Base. Our review focused on the sections of the report dealing with human health risks and hazards associated with potential exposure to site contaminants. Review of other areas of the report (*e.g.*, ecological risk assessment, hydrogeological issues) have been deferred and evaluations should be conducted by appropriate TNRCC staff with expertise in these areas.

### Comments

#### Page 7-2, Section 7.1 Chemicals of Potential Concern

1. According to AFCEE all detected chemicals were evaluated in this risk assessment, however, it is unclear what screening procedure was used for this report. Please provide the laboratory results as the summary results in Table 7-1 are not adequate for our review. In accordance with the *Risk Assessment Guidance Document for Superfund (RAGS, USEPA, 1989)*, a concentration equal to 1/2 sample quantitation limit (SQL) or the SQL itself should be assigned as a proxy value for non-detected contaminants when the contaminant is detected in some samples but not in others for the purpose of calculating the concentration term. For the purpose of data screening, contaminants which have been detected within environmental media at a site but which meet any of the five criteria listed in Section III, Data Screening Procedures, of the Implementation of the Existing Risk Reduction Rule (Consistency Document) may be considered non-site-related and may be excluded from further consideration (with the exception of groundwater protection which must still be considered if the risk-based screening option is used). The Consistency Document may be found at the

Ray Risner  
Page 2  
August 9, 1999

TNRCC website on the internet at: [http:// www.tnrcc.state.tx.us/waste/consimem.htm](http://www.tnrcc.state.tx.us/waste/consimem.htm).

2. Please verify that surface soils were not impacted. Two soil samples are not adequate to evaluate potential soil impacts over this site.
3. No discussion of off-site soil contamination is provided. Off-site soil contamination, if present, needs to be evaluated and addressed. Please provide information regarding whether off-site soil is impacted.

Page 7-3, Section 7.2 Exposure Assessment

4. Ingestion of groundwater was not evaluated as a potential pathway. In order to preclude groundwater as a potential exposure pathway, it must be determined that groundwater is not currently used nor has the potential to be used in the future. Historically, the TNRCC has assumed that if groundwater has either a background Total Dissolved Solids (TDS) content less than 10,000 milligrams/liter or is capable of transmitting water to a pumping well in useable quantities (e.g., 150 gallons/day) (Subchapter S: Risk Reduction Standards, §335.563 (h)(1)), then it should be considered to be useable groundwater. Please refer to the Existing Risk Reduction Rule (existing rule) for guidance on remedial approaches for different types of groundwater.
5. Contaminants in on-site and off-site groundwater must still be addressed even if the water is determined to be non-drinkable as described above. If determined to be non-drinkable, the cleanup level for the contaminated groundwater can be 100 times the MSC (Subchapter S: Risk Reduction Standards, §335.559(d)).
6. It is noted that since groundwater flows in the direction of the West Fork Trinity River, there is potential for the COPCs to contaminate the surface water. Yet, according to the report, an assessment of the threat to human health and ecological resources from potential exposure was not evaluated; the rationale being that neither current ambient surface water data nor modeled surface water data are available to perform the risk assessment.

Further, it is stated that under **current** conditions, no threat to either human health or ecological resources is expected from the trichloroethylene (TCE) plume, because monitoring well WCHMHTA013, which is the closest downgradient well to the Trinity River, has had no concentrations of organic compounds detected. It was determined therefore, that the TCE plume is unlikely to impact the river. Yet in Section 6.1.2, groundwater flow modeling, which demonstrates a hydraulic connection to the West Fork Trinity River, indicates that although the plume has not yet reached the Trinity River, it is likely to do so at some time in the future. Accordingly, the risk assessment must address **future** risk as required in Subchapter S: Risk Reduction Standards, §335.559(d) and potential impacts to the Trinity River. Appropriate TNRCC staff should verify this modeling and the potential for the organics to impact the Trinity River. Further, it should be stated whether water samples have been taken from the river, and if so, the sampling results should be provided.

Ray Risner  
Page 3  
August 9, 1999

Page 7-5, Section 7.2.1 Conceptual Site Model

7. To ensure that the site will be protective for various future land uses, we require that the standard commercial/industrial scenario using standard commercial/industrial parameters and assumptions be used to determine future risk and hazard for all on-site pathways including inhalation of volatiles and particulates from soil, ingestion of soil, dermal contact with soil, and ingestion of groundwater. The default parameters and equations which are to be used for these standard scenarios can be found in Consistency Document and the existing rule.
8. The following exposure parameters should be used in evaluating the risks/hazards to the on-site construction worker receptor:

<b>Construction Worker Scenario-Default Exposure Parameters</b>	
<b>Exposure Parameter</b>	<b>Default</b>
Exposure Frequency	60 days/year (5 days/wk; 5 events/wk for dermal soil)
Exposure Duration	12 wk
Averaging Time	70 years-carcinogens; 0.23 years-noncarcinogens
Body Weight	70 kg
Soil Ingestion Rate	480 mg/day
Skin Surface Area	2500 cm <sup>2</sup> for dermal soil (head, forearms, and hands exposed)
Soil to Skin Adherence Factor	0.2 mg/cm <sup>2</sup> -event

Due to the uncertainties inherent to the assessment of chronic health risks associated with short-term exposures, two options for evaluating the construction worker scenario are available. Construction worker risks/hazards may be calculated as described above, with the understanding that the construction worker scenario will not compel remediations to contaminant levels below standard commercial/industrial cleanup levels. Alternatively, it would be acceptable to simply apply standard commercial/industrial cleanup levels to all soils within a reasonably likely depth and area of excavation at the site. If the risk assessment concludes that subsurface soils require a remedy, institutional controls which limit access to these deeper soils may be utilized, provided that groundwater protection is addressed.

9. Note that 2500 cm<sup>2</sup> may be used instead of 3600 cm<sup>2</sup> to estimate skin surface area for a construction worker scenario.

Ray Risner  
Page 4  
August 9, 1999

10. AFCEE described the sources used to obtain the toxicity values used in the report. Some of the values listed in Table 7-5 differ from those recommended by the TNRCC. Please use the current values provided in the Toxicity Factors table, which is located on the internet with the Consistency Document.

Page 7-10, Section 7.4 Potential Threats to Ecological Receptors and Recreational Users of the Trinity River

11. According to AFCEE, Table 7-6 is a list of National Ambient Water Quality Criteria for the protection of human health and welfare and freshwater and marine aquatic life for contaminants of concern detected in groundwater associated with the site. If the Trinity River is impacted in the future, contamination must be addressed in accordance with the existing rule, which states that surface water must meet the Texas Surface Water Quality Standards, or if these are not available, groundwater ingestion Medium-Specific Concentrations (MSCs). Review of the potential ecological impacts have been deferred and should be evaluated by appropriate TNRCC staff with expertise in these areas.

Page 7-10, Risk Characterization

12. Please be aware that inhalation toxicity values in the US EPA Integrated Risk Information System (IRIS) are now expressed in terms of concentrations in air (RfCs and URFs) and not in terms of dose (*i.e.*, as for inhalation reference doses and inhalation slope factors in units of mg/kg-day) (Section X.1.1, Consistency Document). Therefore, while expression of existing IRIS inhalation toxicity values as intakes is specified in the inhalation equations provided in Standard 2 of the existing rule, this conversion should not be conducted for Standard 3 risk assessments. The appropriate algorithms can be found in Attachment D of the Consistency Document.

If you have any questions or comments concerning this review, please contact me at (512) 239-1336.

cc: Toxicity & Risk Assessment Section, Board, File

SWR # 65004



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

RECEIVED

February 25, 1999

MAR 02 1999

REMEDIATION DIVISION  
Corrective Action Section

Ray Risner  
Corrective Action Section  
Remediation Division  
Texas Natural Resource Conservation Commission  
P.O. Box 13087  
Austin, TX 78711-3087

Doc # 3335

Dear Mr. Risner:

AOC 2

The Environmental Protection Agency (EPA) has reviewed the following document, "Draft RCRA Facility Investigation Report Area of Concern 2, Naval Air Station Fort Worth, Joint Reserve Base, Texas." The "Basewide Groundwater Sampling and Analysis Program Quarterly Monitoring Report, July 1998 Event" and the "Draft Work Plans, Focused Feasibility Study and Interim Remedial Action, NAS Fort Worth, JRB, Texas" were used to complete the review. The following comments are provided:

1. **General Comment.** There appears to be a limited number of monitoring wells screened in the Paluxy Aquifer scattered across Carswell AFB. Have these wells been sampled? Is there any indication that another "window area" could exist on Carswell?
2. **3.2 RFI Objectives.** One of the objectives is the delineation of the northern lobe of TCE groundwater contamination. The following areas do not appear to be fully delineated:
  - a. The southeastern tip of the plume, in the vicinity of wells MW-6, MW-7 and BSS-B has not been delineated. Although the location of these wells is outside the AOC 2 boundary, the plume is shown extending to the boundary. Because of the distance between sampled wells in this area, the above wells should be sampled to confirm the plume has been delineated. Wells MW-6, MW-7 and BSS-B are included in the July Quarterly Monitoring, however the wells are not sampled for volatile organic compounds.
  - b. The northeastern tip of the plume between monitoring well WTCTA010 and USGSS04T has not been fully delineated. Although a direct push temporary well PCHMTHA0F1 is shown as <5 µg/l TCE a permanent monitoring well should be installed. The plume in this area is close to facility boundary and BRAC property.

3. **4.6 Staff Gauge Measurement Findings.** This section indicates groundwater flows to Lake Worth in the northwest section of the AOC 2 plume. Based upon the lack of monitoring wells in this area, the highest concentrations of TCE in the plume could be flowing toward the lake. Monitoring wells WITCTA001, WITCTA003, WITCTA004 and USGSS01T were not sampled during this investigation and are not sampled during quarterly monitoring events. These wells should be sampled to delineate this section of the plume.
4. **5.5.1 First Groundwater Sampling Event (December 1997).** The last paragraph describes the vertical distribution of contaminants. Monitoring well GMI-22-05 does not appear to be drilled to bedrock. If it is screened in the upper part of the plume, the non-detect at this well could be false. A direct push temporary well, AGA002 within 150 feet of GMI-22-05 contained 15  $\mu\text{g/l}$  of TCE and are no other monitoring wells down gradient of this location. This site is within 300 to 500 feet of the facility boundary and the Trinity River.
5. **5.5.1 First Groundwater Sampling Event (December 1997).** The discussion on vertical distribution of contaminants, should be considered in any future investigations of this TCE plume. There appears to be a large number of wells that are screened at the top of the aquifer which could make delineation to 1  $\mu\text{g/l}$  difficult. TCE could be present in the lower part of the aquifer, yet missed in these wells.
6. **Section 7.0 Risk Assessment - General Comments.** Risk assessments are done to provide another tool for the risk manager to use in making decisions concerning the need for remediation and appropriate clean-up levels. Risk assessments are developed to show risks under current conditions and potential conditions taking into account the future land use and future receptors of interest. This document does not look at several exposure pathways relevant for future users. According to the risk assessment, it is recognized that there may be future concerns based upon a model prediction that shows that the groundwater contamination may reach the West Fork of the Trinity River in 4 years at levels that exceed the MCLs and the Texas Water Quality Standards. Is the model prediction enough for a risk manager to make decisions about the need for remediation and to set appropriate clean-up levels? If the model is not sufficient for these decisions, then developing a risk assessment (human health and ecological) looking at the pathways relevant to surface water is not warranted at this time. This potential source is a concern, however, and needs to be addressed in some fashion.
7. **Section 7.0 Risk Assessment - General Comments.** The Risk Assessment presented in this document may be seriously flawed or it may be simply in the presentation. Due to limited resources, this risk assessor does not have the luxury of determining the specific problems and Carswell Air Force Base needs to make sure that the correct equations and parameters were utilized. Please see specific comments below and in particular for Appendix K for where the risk assessment may be flawed.

8. **Section 7.0 Risk Assessment - General Comments.** It should be noted that the conceptual site model does not consider any current or future residents. This is not a problem as long as the reuse plan is consistent with this approach and documentation that residential was not considered in the risk assessment is available to all appropriate parties.
9. **Page 7-10, Table 7-6.** According to page 7-10, Table 7-6 is a compilation of National Ambient Water Quality Criteria and would serve as future potential surface water quality criteria in the event that groundwater should impact the West Fork Trinity River. This is not the appropriate criteria. National Ambient Water Quality Criteria are merely EPA's recommendations and are not enforceable. What should be utilized is the most recent Texas Water Quality Standards as the standards are regulation and are enforceable.
10. **Tables 7-3, and 7-4.** The units for averaging time should be "days" not "years."
11. **Figure 7-1. Conceptual Site Model.** Why is the drinking water pathway not considered under "surface water"?
12. **Table 7-7.** This table is supposed to contain the risk characterization results for the current and future construction worker scenario. I do not see the delineation between the current and future scenarios on this table.
13. **Appendix K.** This table contains erroneous and unexplained numbers which should be checked to see what actually went into generating the hazard quotient table. The table also includes fragments from perhaps another table. I am expecting to see a table based upon a current potential construction worker and a future construction worker. Only one scenario is presented. Why is the soil ingestion rate different between the carcinogenic and noncarcinogenic columns? Why is there a column labeled VF sandwiched between the two columns? How can it be that a 1 year exposure duration (ED) yields a 25,550 day averaging time (AT) when the definition of AT is  $ED \times \text{days/year}$ ? Conversely, the other column lists an ED of 25 years for dermal and inhalation and an AT of 365 days. I need to see the tables corrected, and an example calculation for future and current scenarios and carcinogenic and noncarcinogenic so that I can determine if the right numbers are being input into the calculations.

Please contact me at (214) 665-8306 should you wish to discuss this further.

Sincerely,



Gary W. Miller  
Senior Project Manager  
Base Closure Team

cc:

Mr. Mark Weegar  
Mr. Rafael Vazquez  
Mr. Joseph Dunkle

**FINAL PAGE**

**ADMINISTRATIVE RECORD**

**FINAL PAGE**