March 24, 2004

Brigadier General Arthur J. Rooney, Jr.
Commander
82 TRW/CC
419 G Avenue, Suite 1
Sheppard Air Force Base, TX 76311-2941

Re: Ready For Reuse Application
Installation Restoration Program (IRP) Site FT003
Sheppard Air Force Base, Wichita Falls, TX
TCEQ SWR No. 64009
TCEQ Hazardous Waste Permit No. HW-50187

Dear General Rooney:

The Texas Commission on Environmental Quality (TCEQ) has made a technical determination that the Installation Restoration Program Site FT003 - Former Fire Training Area No. 3 (IRP Site FT003) is Ready for Reuse. A Ready for Reuse (*RfR*) Determination is an acknowledgment that environmental conditions on the property are protective of human health and the environment based on its current and anticipated future use as a commercial/industrial property.

On January 15, 2004, Sheppard Air Force Base submitted to TCEQ a written request for an *RfR* Determination. The request included a detailed description of the property for which the *RfR* Determination is requested. In addition, the facility provided information concerning the assessment, remediation, and risk management activities performed to ensure protection of human health and the environment. A copy of Sheppard Air Force Base's request is provided at Enclosure 1 to this letter.

In order to obtain the *RfR* Determination, IRP Site FT003 was adequately investigated, a remedy was implemented, and the remedy has been demonstrated to be operating successfully. A summary of the environmental conditions of the property, and the risk management activities, including institutional controls (e.g., land use restrictions or limitations) required to ensure protection of human health and the environment, are summarized in Enclosure 2 to this letter and can also be found in the property deed located at the Wichita County Courthouse.

The TCEQ Ready for Reuse Determination is based on a review of all relevant corrective action documents (collectively, the "Documentation") for IRP Site FT003, which are listed in Enclosure 3. With this Ready for Reuse Determination, TCEQ concurs that Sheppard Air Force Base has successfully completed its investigation and remediation pursuant to State municipal hazardous waste and industrial solid waste regulations and that environmental conditions at the property are protective of human health and the environment based on its current use and anticipated future use. The Documentation demonstrates that, although releases of chemical constituents have occurred as a result of activities on the Property, residual concentrations do not require a removal or remedial action to protect human health or the environment, based on TCEQ risk-based cleanup levels, and given the current and reasonably expected future uses of the Property. Current environmental conditions on the property are detailed in documents listed in Enclosure 3.

If conditions at the facility change, including environmental conditions, land use, site receptors, and remedy performance, the current owner/operator will notify the TCEQ and it may become necessary to perform additional remediation to ensure their continuing protectiveness. The undersigned expressly reserve all rights and authorities to require future action by owners or operators if new or additional information comes to light that impacts this Ready for Reuse Determination, whether such information is known as of this date, or is discovered in the future.

Congratulations on this most noteworthy achievement!

Sincerely yours,

Ata-ur Rahman, Ph.D.
Manager, Corrective Action Section
Remediation Division
Texas Commission on
Environmental Quality

Laurie F. King
Chief, Federal Facilities Section
Multimedia Planning and
Permitting Division
EPA Region 6

Enclosure 1: Ready for Reuse Request for IRP Site FT003, Sheppard Air Force Base
2: Current Environmental Conditions
3: Relevant Documents and TCEQ Contacts

ENCLOSURE 1
READY FOR REUSE REQUEST
IRP SITE FT003, SHEPPARD AIR FORCE BASE

1.0 INTRODUCTION

This document represents the Ready for Reuse (*RfR*) Application Package for the former Installation Restoration Program Site FT003 (Former Fire Training Area No. 3) on Sheppard Air Force Base (AFB), Texas. FT003 has been recently closed by the Corrective Action Section (CAS) of the Texas Commission on Environmental Quality (TCEQ), and expanding mission operations on Sheppard AFB could benefit from reutilization of the property associated with FT003 in the future. In accordance with the *RfR* guidance from TCEQ, this package has been prepared for a *RfR* Determination. A description of the current site conditions, background information, and the results of remedial activities at the site are summarized in the following subsections.

2.0 DESCRIPTION AND HISTORY OF FT003

Sheppard AFB is located in the north-central portion of Texas, adjacent to and within the City of Wichita Fall's Extra Territorial Jurisdiction (ETJ), Wichita County. The Former Fire Training Area No. 3 is located in the north central portion of the Base as shown in Figure 1. The geographic coordinates of the site are approximately 34˚ north latitude and 98.5˚ west longitude. The site is located in an undeveloped portion of the Base, is currently unused, and is characteristic of and surrounded by vacant land. A site plan for FT003 is provided as Figure 2, and the size of FT003 is approximately 7 acres as shown on Figures 2 and 3. This includes the area where most of the fire protection training activities occurred and where affected soils and groundwater have been defined.

The site was used for fire protection training exercises from approximately 1957 to 1992 when operations ceased at the site. A variety of materials, primarily including waste fuels, were burned at the site during the exercises. FT003 is currently inactive and only three fire pits (a small fire pit, and the former T-34 and T-38 fire pits) remain at the site. Currently, fire training exercises are conducted at a new fire fighter training facility near FT003.

3.0 CURRENT ENVIRONMENTAL CONDITIONS

Work performed at FT003 has been used to define the nature and extent of affected media and to determine if additional remedial action is required. The following subsections provide information regarding remedial actions, residual chemicals of concern, summary of site conditions, cleanup standards, and institutional controls that have been placed on the site.

3.1 Remedial Actions Taken

Remedial actions at FT003 have been limited to closure of the evaporation ponds, removal of the above ground storage tanks that used to supply fuel for the fire training exercises, and remedial

site investigations. The structures at the site (concrete block smokehouse, mock airplanes, pump house structure, and evaporation ponds) were demolished and removed after activities at the site were discontinued in 1992.

3.2 Residual Chemicals of Concern and Summary of Site Conditions

The residual chemicals of concern have been identified and characterized through previous investigation efforts and monitoring at the site. The results have been evaluated using the Risk Reduction Standard No. 2 (RRS2) Medium Specific Concentrations (MSCs) as established by the Risk Reduction Rule (30 Texas Administrative Code, Chapter 335). A summary of the residual chemicals of concern for soil and groundwater is provided below.

Soil Conditions

Analytical results of soil samples collected from borings and wells installed across FT003 have been used to evaluate the soil conditions. The site layout and location of borings and wells completed at FT003 is provided as Figure 3. Organic constituents were reported in several borings that were completed within and around the old fire pits. The most commonly reported constituents were ethylbenzene, total xylenes, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 2-methylnaphthalene. The extent of affected soils was found to be limited to shallow soils and only in the area of the old fire pits. With the exception of TPH in surface soils near the former fire pits, organic constituents are not present at concentrations exceeding background or the TCEQ RRS2 levels. One polychlorinated biphenyl (PCB) detection was reported in one sample (1 foot bgs) collected from the closed fire pit (I0307). PCBs were not reported in samples collected at depth at this location. This result is considered an anomaly since other organic detections have not been reported in samples collected from this area of the site. Elevated levels of arsenic and lead were reported in the surface sample collected from the T-34 fire pit (borings SB003 and SB004). The presence of elevated metals appears to be limited only to this area of the site since occurrences of metals above the RRS2 MSCs were not reported at other locations across the site. None of the reported constituent concentrations exceed the RRS2 MSCs for soil exposure.

Organic and inorganic compounds were reported in subsurface soil samples, but generally at concentrations below the RRS2 MSCs. The occurrence of organic constituents are primarily associated with the former fire pits and based on the existing sampling information, the presence is generally confined to the upper 5 to 6 feet of soil. Samples collected at depths of 10 feet and below were not reported with chemicals of concern. While some constituent concentrations were found to exceed the RRS2 MSCs for groundwater protection, the instances are not significant on the basis of lower or non-detected results in deeper soil samples and/or groundwater samples.

Groundwater Conditions

Shallow groundwater resources in the vicinity and across Sheppard AFB (including FT003) are very limited because of the widespread occurrence of low-permeability materials (siltstone and clay) and the discontinuity of the sandstone units that exist in the shallow subsurface. Shallow groundwater is

not continuous across FT003 based on the results from previous investigations and monitoring events. Groundwater is not used at or near the site or anywhere on Sheppard AFB, and the shallow groundwater zone beneath FT003 is on average between 10 and 15 feet below ground surface. Information collected during recent and historical sampling events reveal that several of the monitoring wells at FT003 can be bailed dry and the recovery is slow. The groundwater gradient is relatively flat and consistently directed to the east-northeast across the site. TDS has been reported in some wells at concentrations above 10,000 mg/L. The low yield and high TDS characteristics of the shallow groundwater zone beneath FT003 render it not desirable and unusable.

Low concentrations of organic constituents, namely benzene, cis-1,2-dichloroethene, and trichloroethene, have been routinely reported in wells I0302, I0303, and I0305 (see Figure 3). These wells are generally in the center of the site, and detectable concentrations of these constituents have not been reported in the outer and downgradient monitoring wells. Migration of these volatile organic compounds (VOCs) has not been observed and the extent has been defined with the existing well network. The recent and historical sampling results show that attenuation of the VOCs is occurring as evidenced by the declining trend of concentrations in these wells. The extent of affected groundwater at FT003 is illustrated on Figure 3. The area of affected groundwater has remained consistent over the monitoring period from 1998 to the end of 2001.

Chromium has also been reported in several of the old wells at FT003, and recent sampling information has demonstrated that the presence of chromium is not related to historical activities at FT003. Instead, the presence of chromium is related to deterioration of old stainless steel well materials in several of the old wells. Well MW001 was installed immediately adjacent to one of the old stainless steel constructed wells (MW701), and elevated levels of chromium have not been reported in groundwater samples from this well. Chromium also was not reported in subsurface soil samples above background.

3.3 Site Status

The site is not currently used and has been closed by the TCEQ CAS. Closure was granted with no further action being required other than abandoning the existing monitoring wells, and preparing a deed certification stating the presence of affected shallow groundwater beneath the site. In addition, provisions have been established on Sheppard AFB to prevent installation of water wells and use of groundwater at the site.

3.4 Cleanup Standards for Chemicals of Concern

The cleanup standards used for evaluation of the conditions at FT003 (and the data from previous investigations) were the RRS2 MSCs established by the Risk Reduction Rule. The initial evaluation revealed that seven chemicals in on-site soils and 11 chemicals in on-site groundwater exceeded the RRS2 health-based MSCs. Further evaluation of the site was conducted through completion of a Baseline Human Health Risk Assessment (WESTON, 1999). Further investigation was also conducted after the BHHRA where it was demonstrated that chromium in groundwater was not attributable to historical activities at FT003. Thus, the number of chemicals in on-site groundwater

that exceeded the RRS2 MSCs was reduced. As part of the BHHRA, the site conditions were evaluated with respect to several exposure pathway scenarios. None of the soil sample results were found to exceed the RRS2 MSCs (some results exceeding the groundwater protection standards were further evaluated using deeper soil samples and the results from nearby groundwater samples). The only exposure pathway that generated risks in excess of the TCEQ target risk levels was for exposure to groundwater by future industrial/commercial workers. Some of the groundwater concentrations were found to exceed the RRS2 MSCs for groundwater ingestion.

The risks were further analyzed to determine the likelihood of exposure to the affected shallow groundwater from various activities. Many facts (e.g., Sheppard AFB purchases its potable water from the City of Wichita Falls, yield is poor, and TDS is high) were presented and documented to show that use of groundwater from the small affected area at FT003 would be impractical and not likely. The associated exposure to groundwater was therefore concluded to be improbable, and the conclusions of the BHHRA were documented to have likely overestimated the true risk from FT003 due to the conservative nature of many risk components. Therefore, while some constituents were found to exceed the RRS2 MSCs, the presence and concentrations were found not to generate excess risks due to improbable exposure.

3.5 Institutional Controls

Use of the groundwater at FT003 has been administratively controlled through deed certification, prohibiting water well installation in the shallow groundwater in the vicinity of FT003. This administrative and institutional control will eliminate the one potentially unacceptable health risk by eliminating the exposure pathway (i.e., shallow groundwater ingestion and use). Formal administrative restrictions to require the Sheppard AFB Planning Office and Environmental Department approval prior to consideration of any future development at FT003 is also in place to further help eliminate exposure to the site. Other than the deed certification, no further action is required to address chemicals reported in groundwater or soil at FT003.

4.0 BACKGROUND

4.1 Previous Investigations

FT003 has been characterized through five previous investigations: a soil gas survey, a Remedial Investigation (RI), a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), a Supplemental Site Characterization and Analysis Penetrometer System (SCAPS) Study, and a Corrective Measures Study (CMS) Investigation. Collectively, groundwater, surface and subsurface soil, and soil gas samples have been collected from the site. Sample analyses have included total petroleum hydrocarbons, (TPH), VOCs, semivolatile organic compounds (SVOCs), metals, total dissolved solids (TDS), and pesticides/polychlorinated biphenyles (PCBs), although not all of these parameters were run in each round of sampling or for every sample location. Of the five previous investigations, only the RFI and CMS Investigation data have been validated and are defensible for characterizing the conditions at FT003. A brief summary of each investigation follows.

- A soil gas survey was conducted at FT003 in 1991, referenced as the Petrex Soil Gas Survey (Northeast Research Institute, Inc., 1992). In general, the results of the soil gas survey showed areas of affected soil near the fire pits.

- A RI was conducted in 1986 and 1987 where seven monitoring wells were installed at the site (Radian, 1987). The RI data are considered outdated because natural processes have likely changed conditions at the site since 1987, and sample validation/quality assurance information is not available for review.

- A SCAPS Study was also performed in 1997 to better evaluate the geohydrogeologic conditions across the site (USACE, 1998). Data obtained from the SCAPS study were used only for supporting information when evaluation the extent of contamination and the availability of groundwater beneath the site. Based on the results of the SCAPS Study, two monitoring wells (MW011 and MW012) were installed at FT003.

- A RFI (1997) and CMS Investigation (1998) were conducted to characterize the conditions at FT003 and evaluate the need for remedial action at the site. Numerous wells, soil borings, and sampling were completed during the RFI and CMS Investigation. Based on the results of the RFI and the CMS Investigation, the occurrences of organic constituents are primarily associated with the former fire pits and generally confined to the upper 5 to 6 feet of soil. The reported constituents were generally below TCEQ RRS2 cleanup levels and these did not warrant any further investigation. The shallow groundwater was reported with low concentrations of VOCs in isolated wells near the old fire pits.

Following the investigation efforts, groundwater monitoring was then instituted at FT003 to document the groundwater conditions and to demonstrate that the small plume of groundwater containing dissolved-phase VOCs was stable, in a state of decline, and not migrating. One groundwater monitoring event was conducted in 1999 and four quarterly groundwater monitoring events were conducted in 2001.

4.2 Regulatory Background

Following the RFI sampling activities, a RFI Report was prepared and submitted to the TCEQ in 1997 (CDM, 1997). The TCEQ responded to the RFI report stating that additional investigation was required to define the horizontal and vertical extent of affected soils and groundwater at the site. In particular, the presence of elevated chromium in several wells and the lack of sufficient soil data were identified by the TCEQ and required further study.

The CMS Investigation, conducted in 1998, was designed to provide additional and updated information on the conditions at FT003, and to address data deficiencies identified by the TCEQ regarding the RFI. Several soil borings were completed at the site, and two separate rounds of groundwater monitoring were performed. Low-flow sampling techniques were employed when collecting the groundwater samples to better evaluate the representativeness of constituents, mainly chromium, historically reported in groundwater samples from FT003. The results of the CMS

Investigation were used with those of the RFI to complete a CMS Investigation Report (Volume I) and a BHHRA (Volume II) that were submitted to the TCEQ in July 1999 (WESTON, 1999a and 1999b).

After submittal of the CMS Reports, Sheppard AFB conducted additional groundwater monitoring at FT003 and installed one new monitoring well (MW001) to evaluate the elevated chromium reported in several wells at the site. This work was performed in October 1999. Chromium was not reported in the groundwater sample collected from the new well, and the conclusion was that deterioration of the stainless steel construction materials associated with the old wells at the site was attributable to the chromium observed in these wells. The results of these activities were summarized in the Groundwater Monitoring Report for FT003 and WP009 (WESTON, 2000).

The TCEQ responded to the CMS Investigation and BHHRA Reports with a Notice of Deficiency (NOD) and comments on 3 February 2000. Both the Corrective Action Section (CAS) and the Toxicology and Risk Assessment (TARA) Sections of the TCEQ provided comments on the reports. In summary, the TCEQ stated that the work performed during the RFI and the CMS Investigation had not adequately characterized the site and additional investigation and monitoring were required at the site.

Sheppard AFB responded to the NOD on 19 January 2001 with the results of the additional sampling activities that were conducted in October 1999, along with clarifications and supporting information regarding the CMS Investigation and BHHRA conclusions. In summary, Sheppard AFB demonstrated that the available data and information had sufficiently characterized the site soil and groundwater conditions, and additional groundwater monitoring would be performed to demonstrate that the groundwater conditions were stable, potentially in a state of declining concentrations, and not migrating. Furthermore, Sheppard AFB reconfirmed the desire to close the site according to the provisions of the Risk Reduction Rule, and deed certification would be completed to prevent the unlikely installation of groundwater production wells at the site. This measure would preclude exposure to any affected groundwater. The TCEQ approved Sheppard AFB's NOD Response and the associated CMS Reports in a letter dated 25 April 2001.

After completing the groundwater monitoring activities in 2001, a Closure Verification Report (WESTON, 2003) was prepared and approved by the TCEQ CAS. In a letter dated 19 November 2003, the CAS closed FT003 in accordance with Risk Reduction Rule (30 Texas Administrative Code, Chapter 335), Standard No. 3 (Closure with Controls).

5.0 REFERENCES

CDM Federal, 1996. *Final Risk Reduction Guidance Document*. Sheppard Air Force Base, Wichita Falls, Texas. August 1996.

CDM Federal, 1997. *Additional RCRA Facility Investigation for Nine Installation Restoration Program Sites*. Volumes IV (FT03). Sheppard Air Force Base, Wichita Falls, Texas. February 1997.

National Research Institute, Inc. 1992. *Final Petrex Soil Gas Survey Report, Sheppard Air Force Base*. April 1992.

USACE (U.S. Army Corps of Engineers, Tulsa District). 1998. *Second Supplemental Site Characterization and Analysis Penetrometer System (SCAPS) Field Investigation at FT0-03 and WP-09 – Draft Data Summary Report*. May 1998.

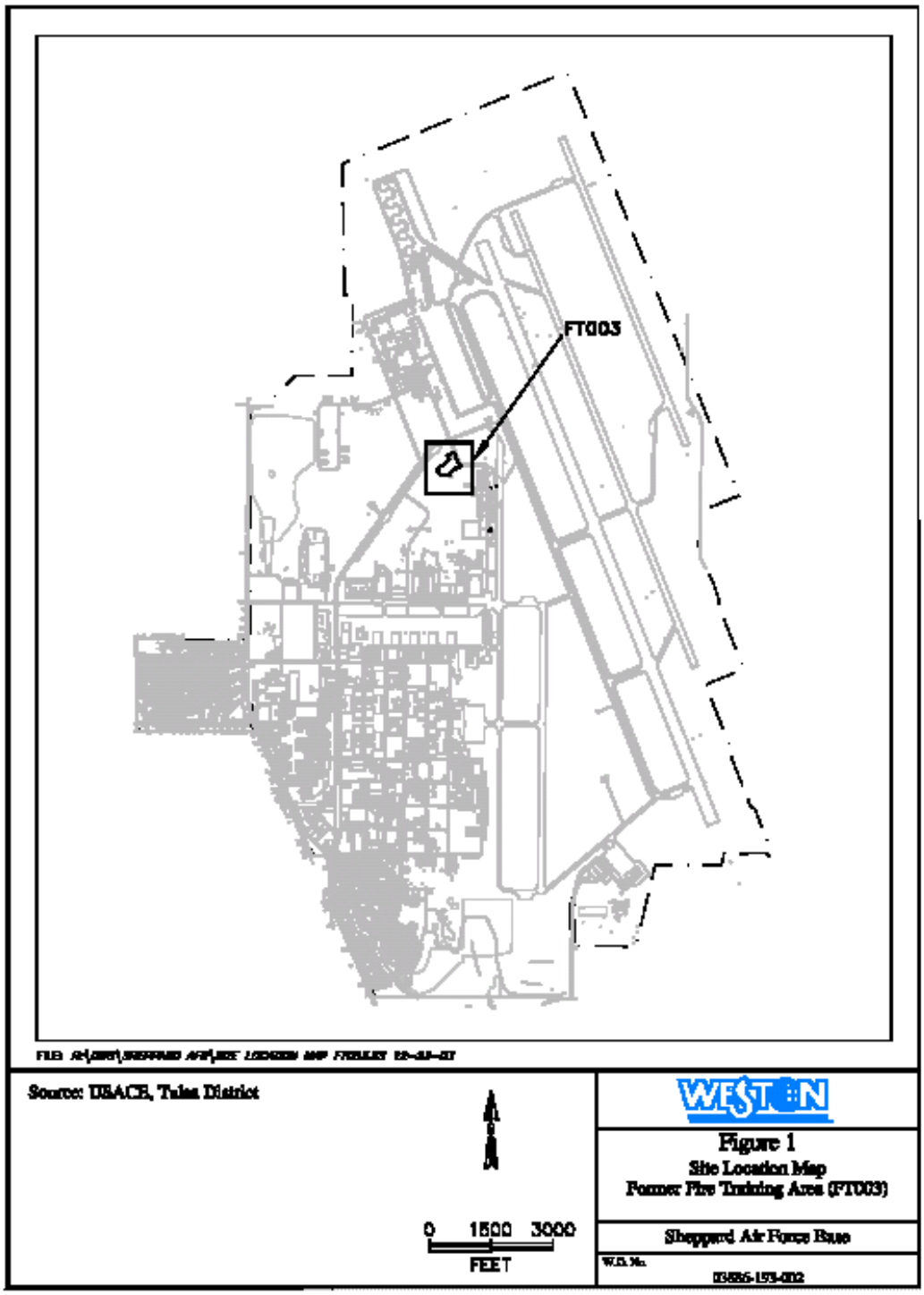
WESTON. 1999a. *Final Corrective Measures Study Investigation Report, Former Fire Training Area 3 (Site FT003), Volume I*. July 1999.

WESTON. 1999b. *Final Baseline Human Health Risk Assessment Report, Former Fire Training Area 3 (Site FT003), Volume II*. July 1999.

WESTON. 2000. *Groundwater Monitoring Report for Former Fire Training Area No. 3 (FT003) and Former Solvent Waste Pits (WP009)*. February 2000.

WESTON. 2002. *Final 2001 Annual Groundwater Monitoring Report, IRP Sites FT001, FT003, and ST012*. 30 April 2002.

WESTON. 2003. *Closure Verification Report for Former Fire Training Area No. 1 (FT003), Sheppard AFB, Texas.* April 2003.


FT003
Source: USACE, Tulsa District
0 1500 3000
FEET
WESTON
Figure 1
Site Location Map
Former Fire Training Area (FT003)
Sheppard Air Force Base
W.O. No.
03885-153-002

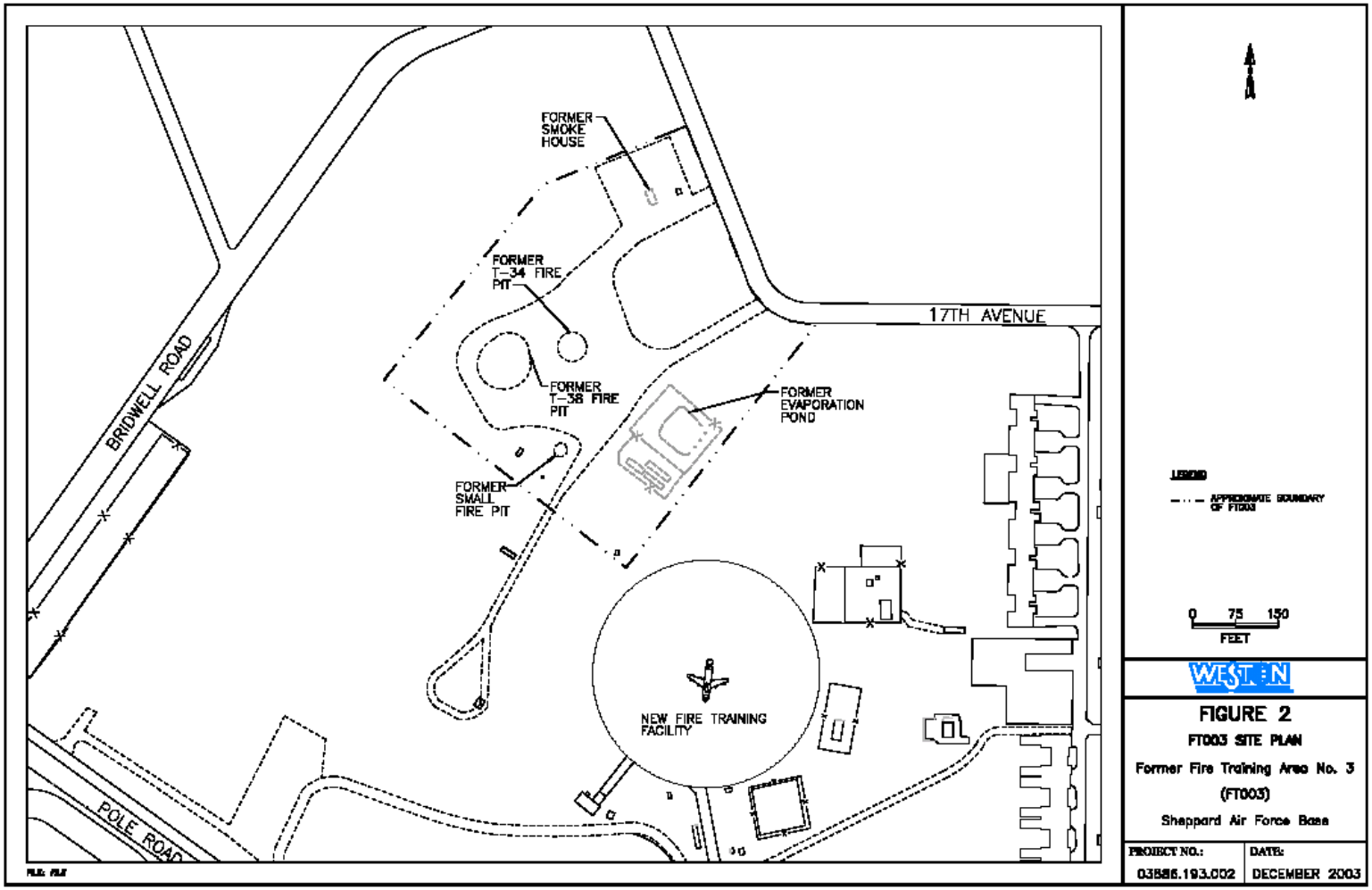


FIGURE 2

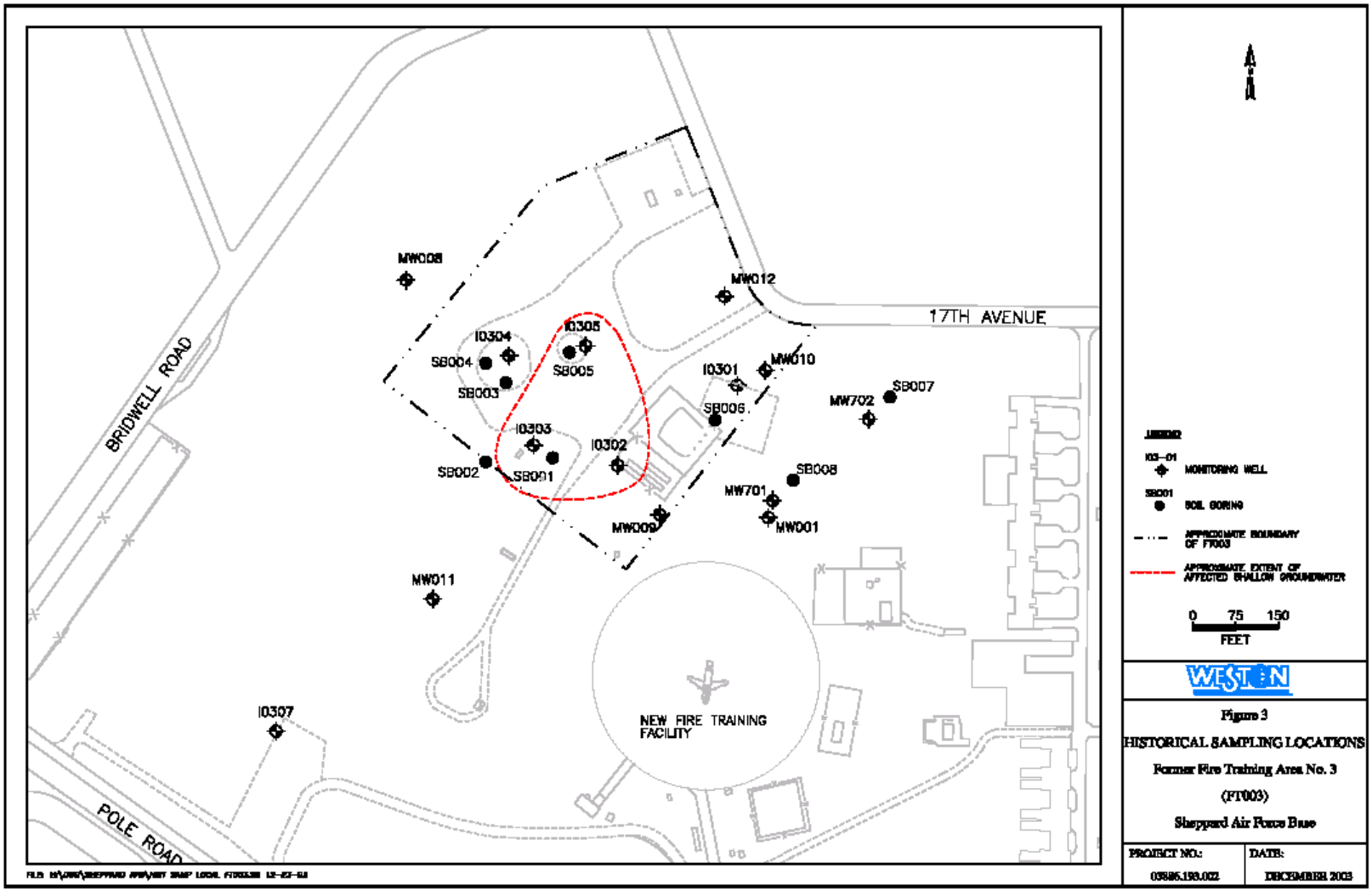
FT003 SITE PLAN

Former Fire Training Area No. 3

(FT003)

Sheppard Air Force Base

PROJECT NO.:	DATE:
03585.193.002	DECEMBER 2003


MW008
MW012
17TH AVENUE
BRIDWELL ROAD
I0304
I0305
SB004
SB005
SB003
I0301
MW010
SB006
MW702
SB007
I0303
I0302
SB002
SB001
SB008
MW701
MW009
MW001
MW011
I0307
NEW FIRE TRAINING FACILITY
POLE ROAD
LEGEND
I03-01 MONITORING WELL
SB001 SOIL BORING
APPROXIMATE BOUNDARY OF FT003
APPROXIMATE EXTENT OF AFFECTED SHALLOW GROUNDWATER
0 75 150
FEET
WESTON
Figure 3
HISTORICAL SAMPLING LOCATIONS
Former Fire Training Area No. 3
(FT003)
Sheppard Air Force Base
PROJECT NO: 03586.193.002
DATE: DECEMBER 2003

ENCLOSURE 2
CURRENT ENVIRONMENTAL CONDITIONS

Current Environmental Conditions Table
Former Fire Training Area No. 1 (FT003)
Sheppard Air Force Base, Texas

Site Name	Remedial Actions Taken	Residual Contaminants of Concern (COCs)	Status	Cleanup Standards [1]
Former Fire Training Area No. 1 (FT003)	1. Closure of Evaporation Ponds. 2. Removal of ASTs used to store off-spec fuel for the fire training exercises. 3. Demolished structures at the site. 4. Investigations: 1986 Remedial Investigation 1997 RCRA Facility Investigation 1999 CMS Investigation	Soils [2] TPH up to 3,000 mg/kg Arsenic up to 42.4 mg/kg Cadmium up to 2.3 mg/kg Chromium up to 388 mg/kg Lead up to 91.1 mg/kg Groundwater [3] Benzene up to 6.29 ug/L cis-1,2-DCE up to 295 ug/L TCE up to 15.2 ug/L Arsenic up to 20.5 ug/L	NFA NFA [4]	RRS2 MSCs For Industrial Soil Exposure (SAI-Ind.) N/E (Groundwater Protection MSCs 200 mg/kg [GWP-Ind] not applicable - Further 1,500 mg/kg evaluated by lack of presence/ 350,000 mg/kg lower concentrations in deeper soil 1,000 mg/kg samples or absence in groundwater) RRS2 MSCs for Industrial Groundwater Use (GW-Ind) (Further evaluated by Risk Assessment - Improbable exposure to small area of affected groundwater result in GW-Ind MSCs being not applicable)

[1] Based on current and future land use being Industrial.

[2] Maximum values as reported in the CMS Investigation Report (Weston, 1999).

[3] Maximum values as reported during the (last) December 2001 Groundwater Monitoring Event (WESTON, 2003).

[4] Based on fulfilling deed certification, metes and bounds survey, and final monitoring well abandonment requirements.

mg/kg = milligrams per kilogram
ug/L = micograms per liter
N/E = Not Established
TPH - Total Petroleum Hydrocarbons, Diesel Range Organics
DCE = Dichloroethene
TCE = Trichloroethene
RRS2 MSCs = Risk Reduction Standard No. 2 Medium Specific Concentrations

ENCLOSURE 3

RELEVANT DOCUMENTS

WESTON. 1999a. *Final Corrective Measures Study Investigation Report, Former Fire Training Area 3 (Site FT003), Volume I.* July 1999.

WESTON. 1999b. *Final Baseline Human Health Risk Assessment Report, Former Fire Training Area 3 (Site FT003), Volume II.* July 1999.

WESTON. 2000. *Groundwater Monitoring Report for Former Fire Training Area No. 3 (FT003) and Former Solvent Waste Pits (WP009).* February 2000.

WESTON. 2002. *Final 2001 Annual Groundwater Monitoring Report, IRP Sites FT001, FT003, and ST012.* 30 April 2002.

WESTON. 2003. *Closure Verification Report for Former Fire Training Area No. 1 (FT003), Sheppard AFB, Texas.* April 2003.

TCEQ CONTACTS

For copies of the documents listed above, please contact:

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