

**Closure Report
For the UST 2109 Site
Tinker Air Force Base, Oklahoma**

**Facility Number 55-08120
Case Number 064-1554**



**Contract F34650-93-D-0106
Delivery Order 5017**

**Department of the Air Force
Oklahoma City Air Logistics Center
Tinker Air Force Base**

November 1999

**CLOSURE REPORT
FOR THE UST 2109 SITE
TINKER AIR FORCE BASE, OKLAHOMA**

**Facility Number 55-08120
Case Number 064-1554**

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Prepared for

**DEPARTMENT OF THE AIR FORCE
OKLAHOMA AIR LOGISTICS CENTER
TINKER AIR FORC BASE**

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**Contract F34650-93-D-0106
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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
COC	Chemicals of concern
DD	Decision document
DRO	Diesel range organics
ERPIMS	Environmental Resources Program Information Management System
°F	degrees Fahrenheit
GRO	Gasoline range organics
GWMU	Groundwater Management Unit
HSZ	Hennessey saturated zone
IRP	Installation Restoration Program
ISCR/CAP	Initial Site Characterization Report and Corrective Action Plan
IT	IT Corporation
LSZ	Lower saturated zone
msl	mean sea level
OAC	Oklahoma Administrative Code
OCC	Oklahoma Corporation Commission
ODEQ	Oklahoma Department of Environmental Quality
ORBCA	Oklahoma Risk-Based Corrective Action
Parsons ES	Parsons Engineering Science
PZ	Producing zone
RBCA	Risk based corrective action
RBSLs	Risk based screening levels
RCRA	Resource Conservation and Recovery Act
SVOC	Semi-volatile organic compound
TPH	Total petroleum hydrocarbons
USDA	United States Department of Agriculture
UST's	Underground storage tanks
USZ	Upper saturated zone
VOC	Volatile organic compound
Woodward Clyde	Woodward Clyde Federal Services

SECTION 1

INTRODUCTION

This decision document (DD) supports the no further action alternative for the Underground Storage Tank (UST) 2109 Site at Tinker Air Force Base (AFB), Oklahoma. The purpose of the DD is to summarize the existing data for the site and to describe the Air Force's rationale for selecting the no-further-action alternative. The objectives of the DD for the UST 2109 Site are:

1. To briefly describe the location, history, and environmental setting of the site;
2. To summarize the results from previous investigations; and
3. To assess the risk to human health and the environment.

Data used to support the no action alternative for this site was obtained from the UST 2109 Site Oklahoma Risk-Based Corrective Action (ORBCA) Assessment Report (Parsons ES, 1997).

1.1 SITE LOCATION AND DESCRIPTION

Tinker AFB is located in Oklahoma County in central Oklahoma, approximately 8 miles southeast of downtown Oklahoma City. Figure 1.1 shows the location of Tinker AFB. The base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south.

Tinker AFB was established in 1941 as an aircraft maintenance and supply depot, comprising 1,460 acres. Land has been acquired to the west, east, and south, which has been used over the years as additional depot facilities, support facilities, military housing and recreational facilities. Apart from the main Base, Tinker AFB operates six satellite areas. As of 1999, the base encompasses 5,277 acres and contains approximately 747 buildings. Tinker AFB presently serves as a worldwide repair depot for a variety of aircraft, weapons, and engines.

The UST 2109 Site is located in the southeast portion of Tinker AFB, Oklahoma. The site is about 650 feet northwest of Gate 29 (Marauder Gate). A 300-gallon UST provided gasoline to a generator that operated Tinker AFB water supply well number 23. The well is located inside of Building 2109 and is still operational. The UST was removed in 1995. The UST and affected media were evaluated in accordance with applicable requirements of the Oklahoma Administrative Code (OAC) 165:25-3 under Oklahoma Corporation Commission (OCC) case number 064-1554. Figure 1.2 shows the site location and surrounding buildings.

1.1.1 Adjacent Land Uses

The surrounding area consists of several military maintenance facilities. Building 2110, the Fuel Truck Maintenance Building, is located 135 feet northwest of the site. The Motor Pool, Building 2101, is located approximately 375 feet northeast of UST 2109. An undeveloped commercial area is located within one-half mile of the eastern base boundary across Douglas Blvd. The General Motors Corporation operates an automobile manufacturing plant adjacent to the southern border of Tinker AFB. Residential and commercial properties border the northeast, east, and west boundaries of Tinker AFB. The area to the southeast is generally undeveloped.

1.1.2 Nearby Population

The nearest residence to this site is located off base about 2800 feet east of the site. This area is a low-density development. The nearest on-base population consists of Air Force personnel located in base housing facilities, which are about two miles northwest of the site. The base accommodates seven dormitories and 730 family housing units. Commercial on-base workers occupy Building 2110, the Fuel Truck Maintenance Facility and Building 2101, the Motor Pool, daily from 07:00 to 16:00.

1.1.3 Surface and Groundwater Resources

Tinker AFB is located within the Central Redbed Plains section of the Central Lowland Physiographic province. Elevations in Oklahoma County range from about 850 feet to 1,400 feet above mean sea level (msl). The topography is characterized by almost level to gently rolling hills, broad flat plains, and well-entrenched main streams. The valleys of secondary streams may exhibit a sag and swale appearance indicating the erosion of residual soil that are somewhat cohesive. The ground surface at Tinker AFB varies in elevation from approximately 1,320 feet msl in the southeastern portion of the base to 1,190 feet msl in the northwestern portion of the base. Local relief is primarily the result of dissection by erosional activity or stream channel development (Woodward Clyde, 1996).

Surface drainage on Tinker AFB is accomplished by overland flow of runoff to diversion structures, and then to area surface streams. Figure 1.3 shows the surface water drainage paths at Tinker AFB. Surface hydrology for Tinker AFB is dominated by Crutch Creek, Kuhlman Creek, Soldier Creek, and Elm Creek. Soldier Creek and Crutch Creek are perennial streams. Soldier Creek, which would be intermittent at the base under natural conditions, is perennial due to discharges from the drainage feature and cooling towers associated with Building 3001. Soldier Creek flows into Crutch Creek, which discharges into the North Canadian River located approximately six miles north of

Tinker AFB. Crutch Creek and a tributary, Kuhlman Creek, drain most of the base. The northeastern portion of the base is drained by Soldier Creek, and the extreme southeastern portion of the base is drained by Elm Creek. Elm Creek and one small-unnamed stream cross installation boundaries south of the main instrument runway, and generally do not receive significant quantities of base runoff due to site grading designed to preclude such drainage. Elm Creek discharges into the Stanley Draper Lake, which is located less than one mile south of the southeastern border of the base (Woodward Clyde, 1996).

An important source of potable groundwater in the Oklahoma City metropolitan area is the central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation. The Garber Sandstone and the Wellington Formation portions of the central Oklahoma aquifer system are commonly referred to as the "Garber-Wellington aquifer" and considered to be a single aquifer because these units were deposited under similar conditions. Tinker AFB lies within the limits of the Garber-Wellington groundwater basin. At the present time, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by purchasing from the Oklahoma City Water Department. Tinker AFB water supply well number 23 is currently in use at the site. The well is located at pumphouse number 2109. The nearby communities of Midwest City and Del City derive their water supplies from surface sources, but have wells using the aquifer in the event of an emergency. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities presently depending upon surface water supplies, such as Oklahoma City, also maintain a well system drilled into the Garber-Wellington as a standby source of water in the event of drought (Woodward Clyde, 1996).

1.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

1.2.1 History

UST 2109 was immediately adjacent to Building 2109 and connected by underground piping. The 300-gallon, single walled steel UST was installed in 1956 and provided gasoline to the generator for Tinker AFB water supply well number 23, inside Building 2109. The UST was removed from service from 1989 to 1995. Brown and Root Environmental conducted the excavation of UST 2109 in August of 1995. Approximately 12 cubic yards of fill and soil were removed during the excavation. An inspection of the tank revealed two small holes within six inches of each other in the upper northeast corner of the tank. The two holes were probably caused by corrosion and each was one inch or less in diameter. Grab samples of the native formation collected when the tank was removed indicated that the OCC Action Levels were exceeded for benzene, ethylbenzene,

and total petroleum hydrocarbons (TPH) (both diesel range organics (DRO) and gasoline range organics (GRO)). OCC Case No. 064-1554 was activated in accordance with OAC 165:25-3-65. An Initial Site Characterization Report (ISCR) and Corrective Action Plan (CAP) Investigation of UST 2109 was conducted in May 1996 by Woodward Clyde. In this study four soil borings and one monitoring well were installed.

In accordance with OAC 165:25-3-74, an ORBCA Tier 1/1A review of the site was performed in the fall of 1997 (Parsons ES, 1997). ORBCA assessments are conducted in conformance with the American Society for Testing and Materials (ASTM) Method E1739 for Risk Based Corrective Action (RBCA). The investigation of the soil and groundwater at the site in 1997 indicated that subsurface contamination was below laboratory detection limits or did not exceed the Tier 1/1A levels for fuel compounds regulated by the OCC. The ORBCA Report recommended closure of the site in accordance with Tier 1/1A closure guidelines. A detailed site layout and history of the site can be found in the ORBCA Summary Report for the site (Parsons ES, 1997).

1.2.2 Regulatory Agency Activities

Following review of the UST 2109 Site ORBCA Report (Parsons ES, 1997), the OCC concluded that no further action was required and approved closure of the case on October 14, 1999 in accordance with OAC 165:25-3-79. A copy of the preclosure letter can be found in Appendix A of this report. This DD and Closure Report shall be submitted to the OCC to comply with final requirements of the preclosure notice. In summary, all OCC comments and requirements were implemented or fulfilled for this site.

The groundwater beneath the UST 2109 Site is within one of four Installation Restoration Program (IRP) groundwater management units (GWMU) at Tinker AFB. The GWMUs are managed in conformance with Resource Conservation and Recovery Act (RCRA) requirements. As such, the groundwater beneath the site is still regulated by the Oklahoma Department of Environmental Quality (ODEQ).

1.3 COMMUNITY PARTICIPATION

There has been no community involvement in the ORBCA investigation conducted at the UST 2109 Site at Tinker AFB, Oklahoma.

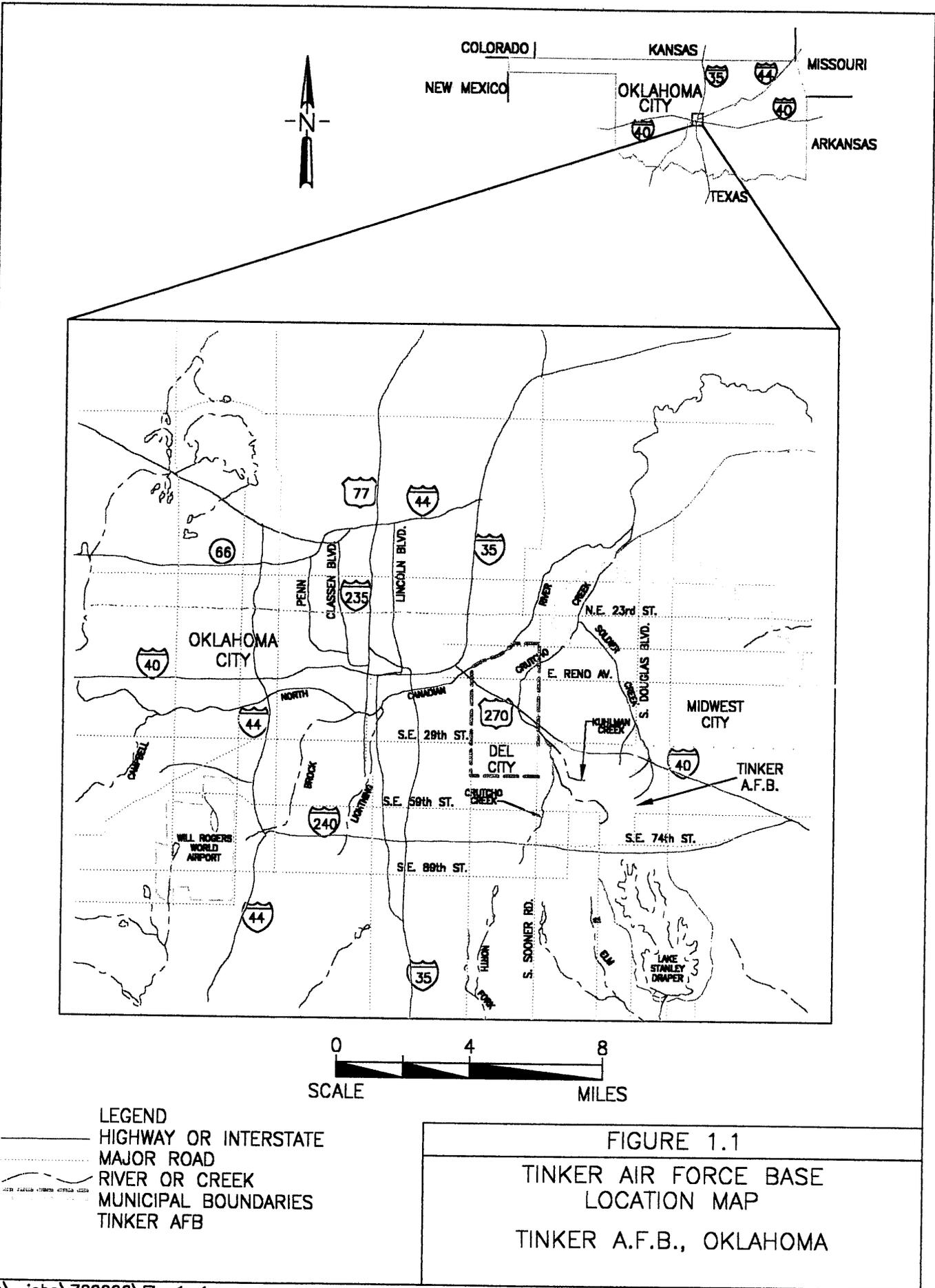
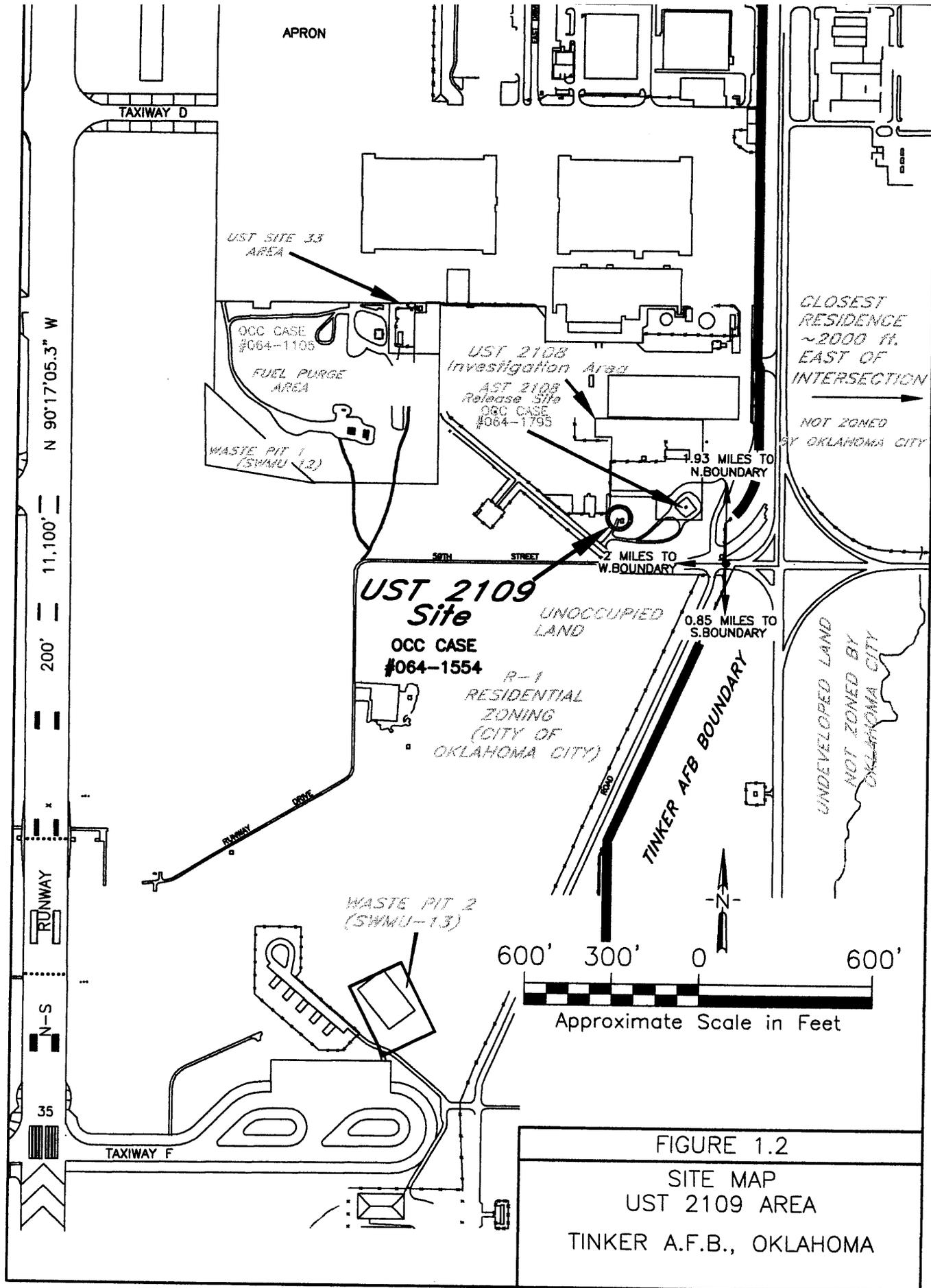


FIGURE 1.1
 TINKER AIR FORCE BASE
 LOCATION MAP
 TINKER A.F.B., OKLAHOMA



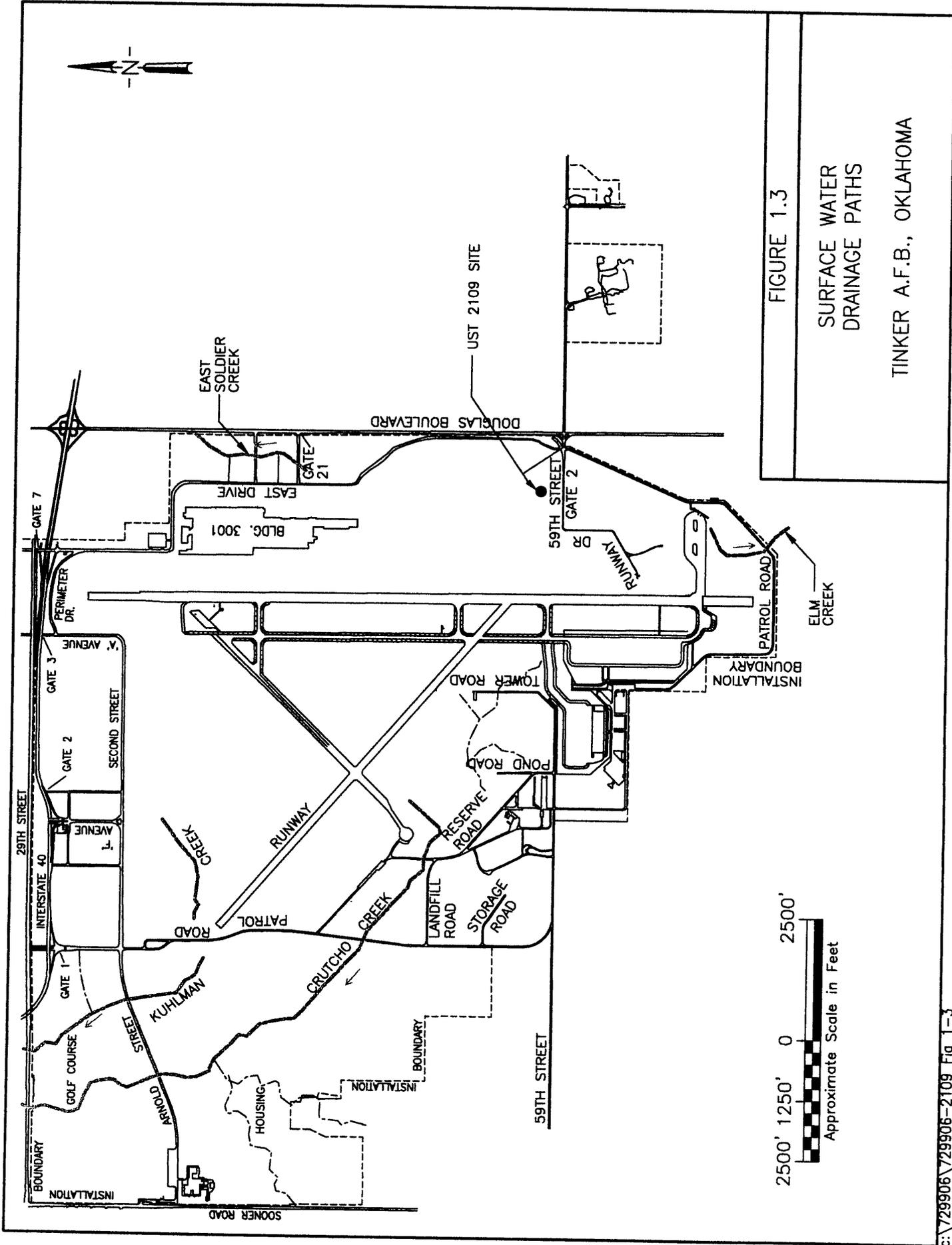


FIGURE 1.3

SURFACE WATER
DRAINAGE PATHS

TINKER A.F.B., OKLAHOMA

SECTION 2

CURRENT SITE STATUS

2.1 CLIMATOLOGY

The climate at Tinker AFB is characterized by long, hot summers (occasional droughts of varying duration occur), and comparatively mild winters. During the summer months, average daily temperatures range from approximately 66 to 94 degrees Fahrenheit (°F). During the winter months, average daily temperatures range from approximately 26 to 54°F. Maximum precipitation generally occurs in May, and the average annual precipitation for the region is 40.45 inches. The average evaporation rate is approximately 50 inches. The prevailing wind direction is southerly; however, northerly and southerly winds occur with about equal frequency from December to March. The average monthly wind speed varies from 12 miles per hour in July and August, to 16 miles per hour in March and April. Strong, gusty winds occur with thunderstorms and low-pressure systems that migrate from west to east during winter and spring. Severe storms occur more frequently in the spring, but can occur in any month of the year (Woodward Clyde, 1996).

2.2 GEOLOGY AND SOIL

The uppermost subsurface (bedrock) geologic units at Tinker AFB consist of, in descending order, the Hennessey Group, the Garber Sandstone, and the Wellington Formation. The bedrock units are composed of a sequence of sandstones, siltstones, and shales. These formations are about 900 feet thick.

Subsurface soils around UST 2109 generally consist of reddish brown clays to a depth of approximately 35 feet below ground surface (bgs). Within this clay unit are silty clays with thin gray silt seams and weathered shales that comprise the Hennessey Formation. Below this formation are moderately well-sorted reddish brown sands that form the Garber Sandstone. The silt content decreases and the grain size increases with depth in this region.

The surface soils of the installation area are of three predominant types: residual, alluvial, and urban land. The predominant soils are the Stephenville-Darsil, Renthen-Urban Land Complex, Kirkland-Urban Land Complex, and Urban Land (USDA, 1996). Geologic units that outcrop at various locations within the Tinker AFB region are composed of Quaternary alluvium and terrace deposits, the Hennessey Group, and the Permian Garber-Wellington Formation. Quaternary alluvium, present along portions of Crutch Creek and Soldier Creek, consists of unconsolidated, interfingered lenses of sand,

silt, clay, and gravel. The terrace deposits, which were deposited by ancient streams, consist mostly of lenticular beds of sand, silt, clay, and gravel (Parsons ES, 1999).

2.2.1 Soil Contamination

Three soil samples were collected when UST 2109 was removed in 1995. Chemical analyses from the three samples confirmed that native soils below the tank had been impacted by the release of petroleum hydrocarbons. Two grab samples were taken from the bottom of the excavation, one near the fill riser, and the other from the southwest (downgradient) corner of the excavation. A composite sample was taken from the excavated soil and fill material. The sample taken from under the fill pipe had a benzene concentration of 1.5 mg/kg, ethylbenzene concentration of 15 mg/kg, TPH GRO concentration of 640 mg/kg, and TPH DRO concentration of 68 mg/kg. These concentrations exceeded OCC Action Levels for these compounds. The sample collected from southwest corner of the excavation had benzene, ethylbenzene, toluene, and xylene (BTEX) concentrations below OCC Action Levels, but, the TPH GRO concentration was 130 mg/kg and the TPH DRO concentration was 50 mg/kg. The composite sample from the excavated material only exceeded the OCC Action Levels for TPH GRO with a concentration of 102 mg/kg (Brown and Root, 1995).

An ISCR/CAP was completed in July 1996. In this study, four soil borings and one monitoring well were installed. Seven soil samples and two water samples were analyzed for BTEX and TPH. Only one soil boring sample exceeded the former OCC Category II Clean-Up Level (pre-1996). This sample was collected from 8-9 feet bgs in boring 96B2 and had a TPH DRO concentration of 237 mg/kg and a TPH GRO concentration of 763 mg/kg. The only detection of BTEX compounds also came from boring 96B2. Toluene was detected at 9.19 mg/kg, ethylbenzene at 6.32 mg/kg, and xylene at 51 mg/kg. Benzene was not detected above the method detection limit of 0.003 mg/kg (Woodward Clyde, 1996).

Analytical data from 12 soil samples collected during the ORBCA investigation revealed that the magnitude of contamination at this site is low. Figure 2-1 illustrates the locations of all the soil borings in the UST 2109 Site. Samples were analyzed for Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), TPH (GRO and DRO), and metals. This data was submitted to the Air Force Center for Environmental Excellence (AFCEE) under the Environmental Resources Program Information Management System (ERPIMS) data management program. The ERPIMS site identification code number is 215. Table 2-1 summarizes the analytical data for the OCC chemicals of concern (COC): BTEX, naphthalene, and TPH (GRO and DRO). Contaminant concentrations for the COCs were either below action levels established in

OAC 165: 25-3-65, or did not exceed Tier 1/1A RBSLs. Based on data from field investigations conducted in 1996 and 1997, soil contamination does not exceed the risk-based screening levels (RBSLs) or modified RBSLs determined from the Tier 1/1A assessment (Parsons ES, 1997).

2.3 HYDROGEOLOGY

The groundwater conceptual model of Tinker AFB was formed by the integration of geologic and hydrologic data from across the base. The hydrogeologic system at Tinker AFB is complex, and the conceptual model provides both an approximation of depth to water and an estimated direction of groundwater movement (Woodward Clyde, 1996). The groundwater and hydrogeologic system in the vicinity of UST 2109 has been investigated and is evaluated as part of a basewide groundwater study by the IT Corporation (IT, 1999).

Approximately 1,150 groundwater monitoring wells have been installed at the base during remedial investigations. The conceptual hydrologic model, based largely on data from these wells, divides the groundwater system under Tinker AFB into three principal aquifer zones: an upper saturated zone (USZ), a lower saturated zone (LSZ), and a producing zone (PZ). The PZ starts at an average depth of 200 or 250 feet bgs at Tinker AFB. In addition, a less extensive zone, the Hennessey saturated zone (HSZ), has also been identified above the USZ on a portion of the base. Numerous shallow, thin saturated beds of siltstone and sandstone may exist within the HSZ throughout the base (Woodward Clyde, 1996).

The USZ and LSZ are recognized over the entire Base. The USZ exists mainly under water table (unconfined) conditions basewide, although subunits appear to be partially confined locally. The LSZ is unconfined on the east side of the base, but becomes confined west of Building 3001 and the North-South runway. The USZ and LSZ are separated by a low permeability shale interval of variable thickness. The shale interval acts as the lower confining bed for the USZ in the vicinity of UST 2109 (Woodward Clyde, 1996).

Groundwater flow in the USZ at the UST 2109 Site is to the west and the average depth to groundwater is 46.79 ft bgs. Hydraulic conductivity in this unit has been measured at 0.59 ft/day (Parsons ES, 1997). A shallow, discontinuous perched groundwater zone was encountered at approximately 12 feet bgs. This thin silt seam would produce water under confined conditions. This perched zone appeared to be recharged by leaking water lines in the vicinity of Building 2109.

2.3.1 Groundwater Contamination

One monitoring well, MW2-327B, was completed as part of the ISCR/CAP (Woodward Clyde, 1996). Two groundwater samples were collected from the well. The analytical results for the two groundwater samples indicated that benzene was the only BTEX compound that exceeded the reporting limits. The benzene concentrations were 0.0039 mg/L for the sample and 0.0042 mg/L for its duplicate.

As part of the ORBCA investigation (Parsons ES, 1997) four soil borings were completed as monitoring wells in the area surrounding the subject site. The total depth of each well ranges between 14.5 and 58.5 feet bgs, and the well screens range between 5 and 15 feet in length. Figure 2-1 illustrates the locations of all monitoring wells in the area. These four new monitoring wells and two existing wells were sampled in September 1997, and analyzed for VOC's, SVOCs', TPH (GRO and DRO), dissolved methane, and metals. Table 2-2 summarizes the analytical data for the COC's. Xylene was detected in monitoring well MW2-379B at a concentration of 0.014 mg/l. Benzene, toluene, ethylbenzene, and naphthalene were not detected above the detection limit of 0.002 mg/L. TPH DRO was not detected above the detection limit of 0.012 mg/L. TPH GRO was not detected above the detection limit of 0.005 mg/L. It is evident from the analytical data that the impact to groundwater by fuel compounds from UST 2109 is extremely low. None of the groundwater sample concentrations exceeded the OCC action levels or the risk-based screening levels (RBSLs).

Low levels of solvents were detected in some of the groundwater samples; however, these compounds are regulated at Tinker AFB by the Oklahoma Department of Environmental Quality. The GWMU beneath this site is managed as one of four IRP GWMUs at Tinker AFB, and in conformance with RCRA requirements. The recommendation to close UST site 2109 under Tier 1/1A guidelines is substantiated by the analytical information provided in this report.

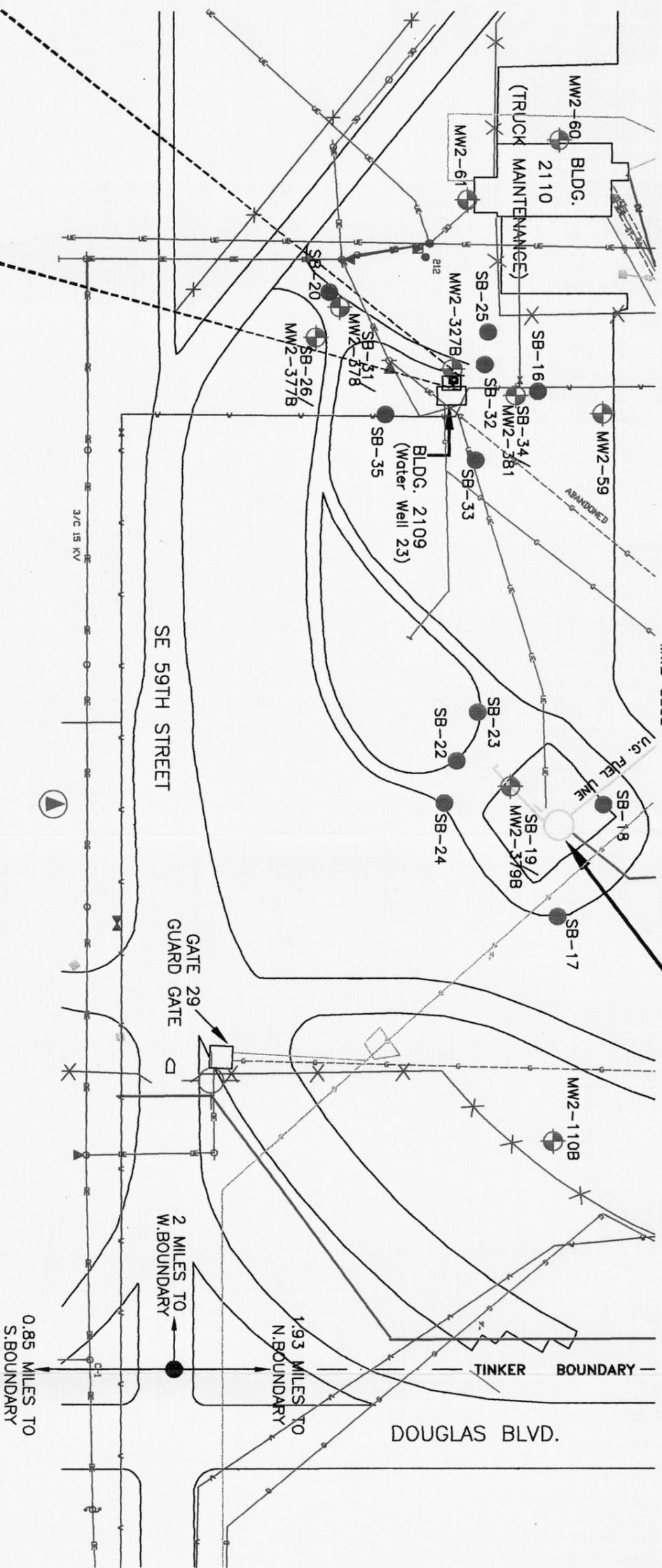
2.4 SURFACE WATER

Surface water at the UST 2109 site drains west toward Crutch Creek. The creek is located approximately one mile from the site, and has not been affected by the subject UST. No surface water or sediment samples were collected as part of the UST 2109 site investigation.

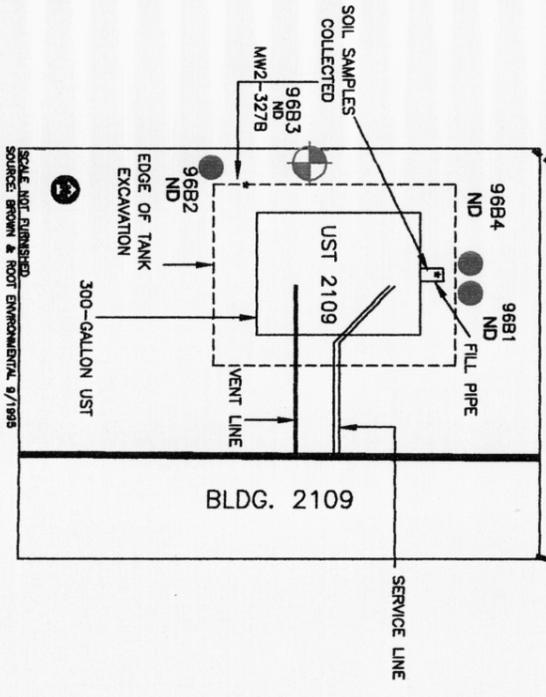
2.5 RECEPTORS

Human receptors in the vicinity of UST 2109 are divided into two groups, on base and off base receptors. Base personnel reside in base housing located approximately two miles

northwest of the site. The base dormitories are located within 2.5 miles of the site. Commercial on-base workers occupy Building 2110, the Fuel Truck Maintenance Facility, and Building 2101, the Motor Pool, daily from 07:00 to 16:00. Building 2109 is not occupied. The closest off-base residence is located 2,800 feet east of the site, and the area is generally undeveloped. The General Motors Corporation operates an automobile manufacturing plant adjacent to the southern border of Tinker AFB within 1.5 miles of the site. There are 11 base supply wells within a one-mile radius of the UST 2109 Site. Tinker AFB water supply well number 23 is located at Building 2109, adjacent to UST 2109. The nearest off-base private water well is about 3,500 feet northeast of UST 2109.



AST 2108
(REMOVED)
NOTE: THIS AREA INVESTIGATED UNDER
OCC CASE # 064-1795



UTILITY LEGEND	DEPTH (FT)
CA - COMPRESSED AIR	2
CM - COMMUNICATIONS	2
G - NATURAL GAS	3
IW - INDUSTRIAL WASTEWATER	>6
OE - OVERHEAD ELECTRIC	-
S - SANITARY	4
SD - STORM DRAIN	>6
ST - STEAM	2
UE - UNDERGROUND ELECTRIC	2
W - WATER	2-4

EXPLANATION
● SOIL BORING
⊗ FENCE
⊕ SOIL BORING COMPLETED AS MONITORING WELL IN SHALLOW PERCHED ZONE
⊕ SOIL BORING COMPLETED AS MONITORING WELL IN USZ
⊕ BENCH MARK (CONTROL MONUMENT PR-03) LOCATION: 148363.95N, 2187153.24E ELEVATION: 1306.73



FIGURE 2.1

SITE MAP
UST 2109 AREA

TINKER AIR FORCE BASE, OKLAHOMA

Table 2.1 Analytical Data Summary for Soil

MY No./Sample Location	Sampling Date	Sample Depth [ft.]	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	Naphthalene [mg/kg]	TPH/CRO [mg/kg]	TPH/DRO [mg/kg]
215 SB-16-17	8/5/1997	17'-18'	<0.003	<0.003	<0.003	<0.003	0.008	<0.005	<1
215 SB-16-31	8/5/1997	31'-32'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-20-11	8/12/1997	11'-12'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-20-42	8/12/1997	42'-43'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-25-13	8/15/1997	13'-14'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-25-27	8/15/1997	27'-28'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-26-47	8/15/1997	47'-48'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-31-11	8/18/1997	11'-12'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-32-12	8/15/1997	12'-13'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-33-12	8/26/1997	12'-13'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-34-12	8/26/1997	12'-13'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
215 SB-35-11	8/27/1997	7'-8'	<0.003	<0.003	<0.003	<0.003	<0.006	<0.005	<1
96B1	5/7/1996	6'-7'	<3.16	<0.011	<0.011	<0.011	<0.011	<0.0546	<10.9
96B2	5/7/1996	8'-9'	<3.16	<0.011	<0.011	<0.011	<0.011	317	83.1
96B2DUPL	5/7/1996	8'-9'	<3.16	9.19	6.32	51	<0.011	763	237
96B3	5/7/1996	17'-18'	<3.16	<0.011	<0.011	<0.011	<0.011	93.3	<10.9
96B4	5/7/1996	17'-18'	<3.16	<0.011	<0.011	<0.011	<0.011	0.125	<10.9

Table 2.2 Analytical Data Summary for Groundwater

MW No./Sample Location	Installation Date	Screen Interval	Sampling Date	Water Level	Benzene [mg/l]	Toluene [mg/l]	Ethylbenzene [mg/l]	Xylene [mg/l]	Naphthalene [mg/l]	TPH/GRO [mg/l]	TPH/DRO [mg/l]
215 MW2-378	8/18/97	9'-14'	8/28/97	6.33'	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.012
215 MW2-377B	8/16/97	45'-55'	8/28/97	47.17'	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.012
215 MW2-381	8/26/97	10'-15'	9/2/97	2.39'	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.012
215 MW2-327B	5/9/96	40'-49.6'	9/15/97	46.89'	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.012
215 MW2-327B	5/9/96	40'-49.6'	5/15/96	46.9'	0.0039	<0.001	<0.001	<0.002	NA	<0.050	<1.0
215 MW2-327B DUP	5/9/96	40'-49.6'	5/15/96	46.95'	0.0042	<0.001	<0.001	<0.002	NA	<0.050	<1.0
215 MW2-59	11/16/93	49.5'-59.5'	9/15/97	47.77'	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.012
215 MW2-379B	8/12/97	48'-58'	8/28/97	51.58'	<0.002	<0.002	<0.002	0.014	<0.002	<0.005	<0.012

SECTION 3

RISK DETERMINATION

The ORBCA investigation of the soil and groundwater at the UST 2109 Site indicates that subsurface contamination does not exceed the risk-based screening levels (Tier 1) or the modified risk-based screening levels (Tier 1A) for OCC regulated contaminants. Sample concentrations were either below action levels established in OAC 165:25-3-65 or did not exceed the ORBCA Tier 1/1A risk-based screening levels for all pathways and receptors identified. In addition, no nuisance conditions were observed. Complete descriptions of these pathways and receptors are presented in the ORBCA report for this site (Parsons ES, 1997).

SECTION 4

NO FURTHER ACTION

The risk to human health and the environment is low based on the analytical results; therefore, the no action alternative is proposed on the basis that this site is below action levels. No evidence suggests that the groundwater, surface water, soil, or air is sufficiently contaminated by this UST site to pose any threat to human health or the environment. Current site conditions and environmental testing data indicates that no further action is warranted at the UST 2109 Site. Additionally, the secured nature of the site and the limited exposure pathways support this alternative.

The groundwater in the USZ, and the underlying zones, remains under the regulatory jurisdiction and enforcement of the ODEQ. The groundwater beneath this site is part of an IRP GWMU and is being addressed under RCRA requirements. The monitoring wells installed during the UST 2109 Site investigation will continue to be used for groundwater monitoring in this area of the GWMU. Any further actions associated with the GWMU will be coordinated through the ODEQ.

SECTION 5

REFERENCES

- Brown & Root, 1995, 2109 Tank Closure Report, at Tinker Air Force Base, Oklahoma.
- IT Corporation, September 1999, Basewide Non-NPL Groundwater Phase II RCRA Facility Investigation for Appendix I and II SWMUs, Addendum 1, Volume 1-3, Tinker Air Force Base, Oklahoma.
- Parsons ES, October 1997, Oklahoma Risk-Based Corrective Action Tier 1/1A Summary Report for UST 2109 Site at Tinker Air Force Base, Oklahoma.
- Parsons ES, April 1999, Revision 1, Site Investigation Workplan for the Southeast Quadrant Wastewater Collection System, at Tinker Air Force Base, Oklahoma.
- USDA, 1996, Draft-Preliminary Revised Soil Maps and Soil Designations Atlas Sheet #25 for Oklahoma County, Oklahoma.
- Woodward Clyde Federal Services, July 1996, Initial Site Characterization Report and Corrective Action Plan Investigation of UST 2109 at Tinker Air Force Base, Oklahoma City, Oklahoma.

APPENDIX A

CLOSURE NOTICE



OKLAHOMA CORPORATION COMMISSION
PETROLEUM STORAGE TANK DIVISION
(405) 521-4683 FAX: (405) 521-4945

JIM THORPE BUILDING, RM 238 • PO BOX 52000-2000 • OKLAHOMA CITY, OK 73152-2000

October 14, 1999

Case ID # 064-1554
Facility ID # 55-08120
Preclosure

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
CERTIFICATE NUMBER Z 710 095 978

Ms. Cathy R. Scheirman
Chief, Environmental Restoration Division, Directorate of Environmental Mgt.
OC-ALC/EMR
7701 Second Street, Suite 204
Tinker Air Force Base, Oklahoma 73145-9100

RE: UST 2109
West of Building 2109
Tinker AFB, Oklahoma

Dear Ms. Scheirman:

Based upon the data submitted, the Chemicals of Concern levels in the soil and groundwater at this site pose no harm to human health, safety or the environment. This case is approved for closure.

A Final Closure Report, which provides evidence of proper decommissioning of equipment and corrective action materials, is due on **February 15, 2000**. After review and approval, a final closure letter will be mailed. A copy of this letter is being sent to your consultant who will know how to respond.

If you have any questions, please discuss them with your consultant or call me at (405) 522-1446 between 8:00 a.m. and 4:30 p.m. Monday through Friday. Please reference the appropriate OCC Facility Number and Case Number on all correspondence.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Lopez", written over a white background.

Joseph E. Lopez
Project Environmental Analyst

JEL:tt

cc: See Back