# TINKER AFB RCRA PERMIT

## ATTACHMENT 2 – SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

1.0 SWMUs and AOCs

Table A2-1: Ongoing SWMUs

Table A2-2: Ongoing (non-NPL) AOCs

Figure A2-1: Location of Release Areas

# ATTACHMENT 2 - SOLID WASTE MANAGAMENT UNITS AND AREAS OF CONCERN

## 1.0 SWMUs and AOCs

### 1.1 EXISTING SOLID WASTE MANAGEMENT UNITS

**[40 CFR 270.14(d)(1), (d)(2)]**

The locations of the eight remaining SWMUs that require continued regulatory oversight under this RCRA Permit renewal are listed on Table A2-1 and shown on Figure A2-1. The status of each remaining SWMU, as of September 2017, is presented in the following subsections. A general discussion of the location of each of the units, operation and history, waste types, estimated waste volume, investigation summary of waste impacts, and any hazardous waste releases are provided in the following subsections. Although not formally in post-closure, the six Tinker AFB landfills are currently treated as such under the ongoing IRP program at the base.

**Table A2-1: Ongoing Solid Waste Management Units**

| Current SWMU No. | RFA SWMU No. | Current AOC No. | RFA AOC No. | AFSite No. | Original Site Name | Activity History | Current Status |
|---|---|---|---|---|---|---|---|
| 1 | 1 | | | LF016 | Landfill 6 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. Final Phase I RFI report completed September 1994. Final Phase II RFI report completed June 1997. RCRA landfill cap upgrades were completed in 2001. Long term monitoring and care of the RCRA cap was approved as the remedy for this site in a letter from ODEQ dated 6/1/2001. | Long Term Monitoring and Care of the RCRA cap. |
| 2 | 2 | | | LF015 | Landfill 5 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. Final Phase I RFI report completed September 1994. Final Phase II RFI completed September 1995. RCRA landfill cap installed in 1998. Long term monitoring and care of the RCRA cap as the remedy for this site was documented in a letter from ODEQ dated 10/4/2001. | Long Term Monitoring and Care of the RCRA cap. |
| 3 | 3 | | | LF011 | Landfill 1 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. RCRA landfill cap installed in 1991. Final Phase I RFI report completed September 1994. Final Phase II RFI completed April 1999. Long term monitoring and care of the RCRA cap as the remedy for this site was documented in a letter from ODEQ dated 7/25/2001. | Long Term Monitoring and Care of the RCRA cap. |
| 4 | 4 | | | LF012 | Landfill 2 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. Final Phase I RFI report completed September 1994. RCRA landfill cap installed in 1998. Final Phase II RFI completed April 1999. Long term monitoring and care of the RCRA cap as the remedy for this site was documented in a letter from ODEQ dated 7/25/2001. | Long Term Monitoring and Care of the RCRA cap. |
| 5 | 5 | | | LF013 | Landfill 3 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. RCRA landfill cap installed in December 1991. Final Phase I RFI report completed September 1994. Final Phase II RFI completed April 1999. Long term monitoring and care of the RCRA cap as the remedy for this site was documented in a letter from ODEQ dated 7/11/2001. | Long Term Monitoring and Care of the RCRA cap. |
| 6 | 6 | | | LF014 | Landfill 4 | Listed as a SWMU in the 1991 and 2002 RCRA Permits. RCRA landfill cap installed in December 1991. Final Phase I RFI report completed September 1994. RCRA landfill cap installed in 1998. Final Phase II RFI completed April 1999. Long term monitoring and care of the RCRA cap as the | Long Term Monitoring and Care of the RCRA cap. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | remedy for this site was documented in a letter from ODEQ dated 10/29/2001. | |
| 24 | 24 | | | OT034 | IWTP - Industrial Wastewater Treatment Plant Soils | Identified as a RCRA SWMU in the 1991 and 2002 RCRA Permits. Phase I RFI report completed April 1994, Phase II RFI report completed July 1996. CMS report completed June 2003. The Air Force submitted a decision document to ODEQ (April 23, 2004) proposing the selected remedy be vapor extraction from the soils. The ODEQ concurred with the Air Force in a letter dated May 5, 2004. The VEP system was turned off June 4, 2012. In 2016 a non-time critical removal was performed to remove soil hot spots discovered to be slightly above industrial levels. A RCRA Corrective Action Construction Completion Report for soils was completed and was approved by the DEQ on 1/25/2019. | Corrective Action complete - soil removal |

## 1.2 AREAS OF CONCERN

A general discussion of each of the 14 existing and proposed AOCs is provided in the following sections. The AOCs are listed in Table A2-2 and are located on Figure A2-1.

**Table A2-2: Ongoing (non-NPL) Areas of Concern**

| AF Site Number | Current AOC No. | RFA AOC No. | Site Name | Activity History | Current Status |
|---|---|---|---|---|---|
| ST007 | **1** | 1 | Fuel Farm (290 POL Facility) | AOC 1 was identified in the 6/15/89 USEPA Region 6 RFA, but was not listed as an AOC in the 1991 RCRA Permit. As required by the 1991 RCRA Permit, a summary of previous studies was documented in the December 1992 Description Of Current Conditions for Tinker AFB. This AOC was not listed in the 2002 RCRA Permit. However, a RFI report was completed in 1995, and an additional Draft Site Investigation Report was completed in December 1996. Two vacuum enhanced pumping (VEP) systems were installed at the site between 1998 and 2000 as interim corrective measures. Collectively, the two systems extract groundwater and soil vapor from 34 recovery wells around Building 214, the former Building 210, near Tank 349, and near Building 117. The two systems where shut down in April 2012. | ICM – completed in 2012. New RFI underway |
| ST008 | **20** | | Building 201 Vapor Intrusion | A potential vapor intrusion condition was identified at Building 201 during a base-wide vapor intrusion survey (inventory) in 2010. | RFA completed for soil vapors |

| AF Site Number | Current AOC No. | RFA AOC No. | Site Name | Activity History | Current Status |
|---|---|---|---|---|---|
| CG040 | **21** | | Gator Groundwater Management Unit | CG040 encompasses chlorinated solvent impacted groundwater underneath an adjunct facility approximately one mile east of the eastern boundary of Tinker AFB near the intersection of SE 59th St. and Post Road. The facility is non-industrial; only one building used for administrative purposes was found at the site. No unique source has been identified for this contamination. A groundwater extraction and treatment system began operation as an interim action in October 1999. The RFI report was completed in December 2003 and the CMS report was completed in July 2006. A Statement of Basis was completed as a decision document between Tinker AFB and the ODEQ, and was signed by ODEQ on July 31, 2006. In 2013, an insitu-bioremediation treatment system consisting of injection wells and two bioreactors was installed to further treat the higher concentrations of CVOCs within the plumes. The extraction system was temporarily shut down December of 2016. Ultimate goal is to achieve UU/UE site close out. | Corrective Action - GW extraction system and bioreactor with in-situ remediation |
| CG041 | **22** | | AWACS Sector | CG041 encompasses impacted groundwater beneath the tarmac and taxiways south of Building 230. This site was introduced to ODEQ at the October 2009 RAB meeting. The RFI report was completed in August, 2014 with a recommendation to conduct a Corrective Measures Study. | RFI completed under Area A Sites. CMS recommended |
| OT058 | **23** | | Jet Engine Test Cells (Bldg. 3703) | A site investigation report was completed in July 2002; Interim Corrective action using soil gas vapor and groundwater extraction was initiated in 2002 with the report issued in May 2003. A CMS was completed in May 2005. The May 2002 VEP system was turned off on May 4, 2012. An additional RCRA Facility Investigation (RFI) is being conducted at this building to further evaluate the nature and extent of the contamination as well as to determine other possible sources at this location. | RFI underway |
| OT062 | **24** | | Building 230 | A RFI report was completed in March 2004. A VEP system was installed as an interim corrective measure to mitigate the potential risk posed by subsurface contaminants along the north and west sides of Building 230. A Phase I CMS was completed in April 2007 and a draft Phase II CMS was completed in May 2011. The 2005 VEP system was shut down in 2011. A new RCRA Facility Investigation (RFI) is being conducted to further characterize nature and extent. | RFI underway |
| OT064 | **25** | | Building 210 | A Draft Final RFA was completed in July 2008. A potential vapor intrusion condition was identified. A more recent site investigation (2013) to further delineate the nature and extent of contamination has confirmed that a solvent plume exists within the northern portion of the site and further study is planned to be conducted in the near future. | RFI underway |
| OT065 | **26** | | Building 283, Building 284, Building 296 | A potential vapor intrusion condition was identified at Buildings 283, 284, and 296 during a base-wide vapor intrusion survey (inventory) in 2010. . In addition, several fuel USTs existed in the area that may have acted as sources of fuel contamination. However, the tanks were investigated and closed under OCC jurisdiction. | RFI completed under Area A sites; CMS recommended |

| AF Site Number | Current AOC No. | RFA AOC No. | Site Name | Activity History | Current Status |
|---|---|---|---|---|---|
| OT066 | **27** | | Building 2110 Oil Water Separator | Same Location as the Fuel Truck Maintenance Area AOC (see Table 10-1). A fuel leak from the oil water separator was noticed in 2004. A RFI report has been completed and was approved by ODEQ in October, 2016. The OWS, and any associated contaminated soil is planned to be removed with the demolition of Building 2110 in the near future. Ultimate goal is to achieve UU/UE site close out. | Corrective Action - Non-time critical OWS removal |
| OT067 | **28** | | Building 2101 | This building is the former motor pool which has been demolished and will not be replaced. Due to the nature of the motor pool operations, solvent and fuel leaks are suspected. The RFI report was completed in June 2015. The CMA work plan completed involving a non-time critical soil removal action was approved March 2017. Ultimate goal is to achieve UU/UE site close out. | Corrective Action – non-time critical soil removal action |
| OT068 | **29** | | Replaced" Fuel Hydrant System | In 1992, fuel releases from the hydrant system were detected when fuel would seep to the surface between the joints in the concrete of the tarmac. The RFI report was completed in August, 2014 with a recommendation to conduct a Corrective Measures Study. | RFI completed under Area A Sites. CMS recommended |
| OT069 | **30** | | Building 2121 and Building 2122 | A RFA/RFI report was completed in March 2001 followed by a supplemental SI/RFI report in September 2001 and a CMS Report in October 2001 at Building 2122. Soil contamination was identified, but report concluded that it was not impacting the groundwater. Similar process activities occurred at Building 2121 in the past, though no investigations had been performed at Building 2121. Results for sub slab soil gas sampling beneath Building 2121 and 2122 were reported in a Vapor Intrusion Assessment that was completed in August 2011. Recent data from a current RFI to further characterize and delineate indoor air, soil, and groundwater contamination, which is underway, suggests however that soil contamination extends deeper than previously thought and has probably impacted shallow groundwater at the site. | RFI underway |
| ST033 | **31** | | Area A Service (Fuel) Station | Soil and groundwater investigations conducted in 1990 and 1992 showed the presence of motor vehicle gas contamination. A product recovery system was installed in 1992 to pump fuel from the groundwater. By 1996, the extent of soil contamination was delineated, the USTs were removed and the product recovery system expanded. VEP remediation began June 1997, and fuel product recovery was completed by 1999. The OCC approved site closure on December 18, 2000; however, this is limited to only petroleum hydrocarbons in soil and groundwater. A TCE plume (along with other chlorinated compounds) has been identified in the groundwater beneath the site. The VEP system was shut down in November, 2012 and replaced with an Emulsified vegetable oil mixture injection – In Situ. | Corrective Action – In Situ Remediation for CVOCs. |
| VI080 | **32** | | Building 3105 | Suspected releases of solvents from drain lines beneath Building 3105 were reported at this site in August 2009. A RFI to further characterize contamination and to evaluate whether continuing sources exist at the building, is currently underway. | RFI completed Jan 2019, GW under NPL Site |

## 1.3 DISCUSSION OF SWMUS (LANDFILLS POST-CLOSURE)

**[40 CFR 264/265.112, 116-120]**

Six landfills were operated at Tinker AFB during successive time periods between 1942 and 1979. Tinker AFB's six closed landfills are carefully and routinely monitored to insure that erosion and settlement do not compromise the final RCRA cover systems. In addition, the landfills are monitored to detect ground water contamination in accordance with the base wide groundwater monitoring program (subsection 10.5). It is no longer necessary to monitor migration of landfill gases per the Landfill Gas Survey and Ready for Reuse study (Parsons, May 2007) since this study concluded that, with respect to state standards, no Oklahoma toxic air contaminant (TAC) maximum ambient air concentration (MAAC) levels are being exceeded. DEQ issued a certificate of Ready for Anticipated Use for Landfills 1, 2, 3, 4, and 6 on March 28, 2008.

Annual post-closure inspection reports will be provided to demonstrate that each site has been inspected on a regular basis to evaluate the integrity and stability of the final cover and surface water diversion systems. If post-closure inspections of any landfill identify problems which require maintenance or repair, these problems and associated remedies will be discussed in detail within the site report. The purpose of these reports, inclusive of photos, will be to demonstrate that the surface and subsurface of the landfill continues to be stable and will not require further maintenance or repairs.

### 1.3.1 SWMU #1, Landfill 6

Landfill 6 (AF Site #LF016) is situated east of the main base south of Southeast 59th Street and ½ mile east of Douglas Boulevard. Landfill 6 is designated as SWMU #1. It occupies about 25 acres of a 40 acre site that Tinker AFB has leased from Oklahoma City from 1969 to the present. The landfill was operated from 1970 through 1979. The landfill was used to dispose of approximately 500,000 cubic yards of general refuse. There are reports that some paints, insecticides, solvent containers and IWTP sludge were also disposed of at the landfill. After the landfill ceased operating in 1979, the trenches were covered with several feet of compacted soil, and then planted with grasses.

A private well was sampled north of the site in 1983, and results of the sampling indicated some contamination. A follow-on sampling effort of several private wells in the area was performed by the Oklahoma State Department of Health (OSDH), but no contamination was found in any of these wells. The residence where contamination was discovered was connected to the Tinker AFB water supply at that time, but the residence no longer exists.

In January 1986, a compacted clay cap cover system was installed over much of the landfill as part of an interim action. Subsequently, investigations revealed that additional uncapped

trenches existed and an extension to the cap cover system was constructed in 1988. During the site investigation in 1990, solid waste samples of the trenches revealed VOCs and some metals. The upper saturated zone (USZ) at the site also was sampled with the majority of contamination (arsenic, barium and cadmium) found in the western portion of the landfill. Groundwater is the primary route of contamination migration at the landfill. A 25-acre RCRA cap was installed over the landfill in 2000 as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater, and prevent any direct contact with the site. Long term care of the RCRA cap remains the remedy in place (RIP) for Landfill 6, and monitoring of the groundwater around the site will continue as part of the remedy.

### 1.3.2 SWMU #2, Landfill 5

Designated as SWMU #2, Landfill 5 (AF Site #LF015) encompasses about 6.0 acres and is located in the south central portion of Tinker AFB. The landfill is bordered by Tower Road on the west, the TACAMO (Navy) ramp to the south and Crutcho Creek to the north and east. While it was in operation from 1968 to 1970, the landfill accepted approximately 75,000 cubic yards of general refuse with small quantities of industrial waste. Preliminary sampling indicated the presence of both metals and organic compounds including Trichloroethylene (TCE). An interim 12-inch compacted clay cap was installed in August 1990 to minimize infiltration of surface water into the landfill. In 1998, a 6-acre RCRA cap was installed over the landfill as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater, and prevent any direct contact with the site. Landfill 5 lies within the boundary of the East Contaminated Groundwater Management Unit, Site #CG039. Long term care of the RCRA cap will continue for Landfill 5, and monitoring of groundwater around the site will continue as part of the CG039 RIP.

### 1.3.3 SWMU #3, Landfill 1

Landfill 1 (AF Site #LF011) is designated as SWMU #3. Located east of Patrol Road and south of Crutcho Creek, it covers an area of 1.5 acres. During its operation from 1942 through 1945, the landfill received general refuse and industrial waste generated at Tinker AFB. Trench water sampling and soil borings revealed low concentrations of VOCs and semi-volatile organic compounds (SVOCs) along with low levels of metals. An investigation of Crutcho Creek did not reveal any indication that contamination had migrated into the creek. Land use near the site does not include any ecologically sensitive areas, but military housing is located roughly 1500 feet to the west. A 2-acre RCRA cap was installed over the landfill in 1991 as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater, and prevent any direct contact with the site. The site lies within the boundary of the Southwest Contaminated Groundwater Management Unit, Site #CG038. The 2002 RFI for CG038 concluded that Landfill 1 does not appear to be a source of contamination to CG038. Long term care of the RCRA cap will continue for Landfill 1, and monitoring of groundwater around the site will continue as part of the CG038 RIP.

### 1.3.4 SWMU #4, Landfill 2

Landfill 2 (AF Site #LF012) covers 27.5 acres and is located south of Vanaman Road and adjacent to Landfill 4 on the southwest side of the base. This landfill is designated as SWMU #4. Dates of operation for Landfill 2 have been reported as being from 1945 through 1952; however, aerial photos suggest that the range of use of the site might be closer to 1945 through 1963. This landfill primarily received general refuse from the base, including sanitary and industrial waste. Soil and groundwater investigations were performed between 1985 and 1990 to determine if environmental contamination in the area occurred as a result of disposal and management practices. Trench water sampling showed low concentrations of VOCs (including TCE and vinyl chloride) and SVOCs. Low levels of metals such as barium, cadmium, chromium, lead and nickel were also detected. The possibility of leachate migrating into Crutcho Creek from the landfill was thought to exist; however, samples collected in the creek do not indicate that this occurred. In addition, a radiological waste disposal site once located within Landfill 2, was remediated through soil removal actions performed in 1992 and 1997.

A 28-acre RCRA cap was installed over the Landfill 2 in 1998 as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater or to the creek, and prevent any direct contact with the site. Landfill 2 lies within the boundary of the Southwest Contaminated Groundwater Management Unit, Site #CG038. A RFI/CMS was conducted between 2002 and 2004 for CG038, and concluded that the burial trenches and other waste management activities within Landfill 2 are a likely source of chlorinated hydrocarbon contamination to CG038. Between 2004 and 2008 additional studies identified and delineated hexavalent chromium contamination in the groundwater beneath Landfill 2. Long term care of the RCRA cap will continue for Landfill 2, and monitoring of groundwater around the site will continue as part of the CG038 RIP.

### 1.3.5 SWMU #5, Landfill 3

Landfill 3 (AF Site #LF013), designated as SWMU #5, covers approximately eight acres and is located north of Vanaman Road and south of Crutcho Creek in the southwestern portion of the base. It is reported to have been in operation from 1952 through 1961, although aerial photo evidence suggests trenching may have started around 1951. The landfill was used primarily for disposal of general refuse, but included some industrial waste as well. The waste burial trenches were closed in 1961, but a sludge dump operated in the south-central area of the landfill from roughly 1961 until 1968. Soil and groundwater investigations were performed between 1986 and 1990 to determine if environmental contamination in the area occurred as a result of disposal and management practices. Trench water sampling revealed low concentrations of VOCs including TCE, methyl ethyl ketone (MEK), and toluene as well as SVOCs. Metals in the trench water samples included barium, chromium, cadmium, lead, mercury and zinc. In addition, laboratory results for soil samples recovered from 3 to 18 foot deep borings around the sludge pit were indicative of high concentrations of both solvent and fuel compounds.

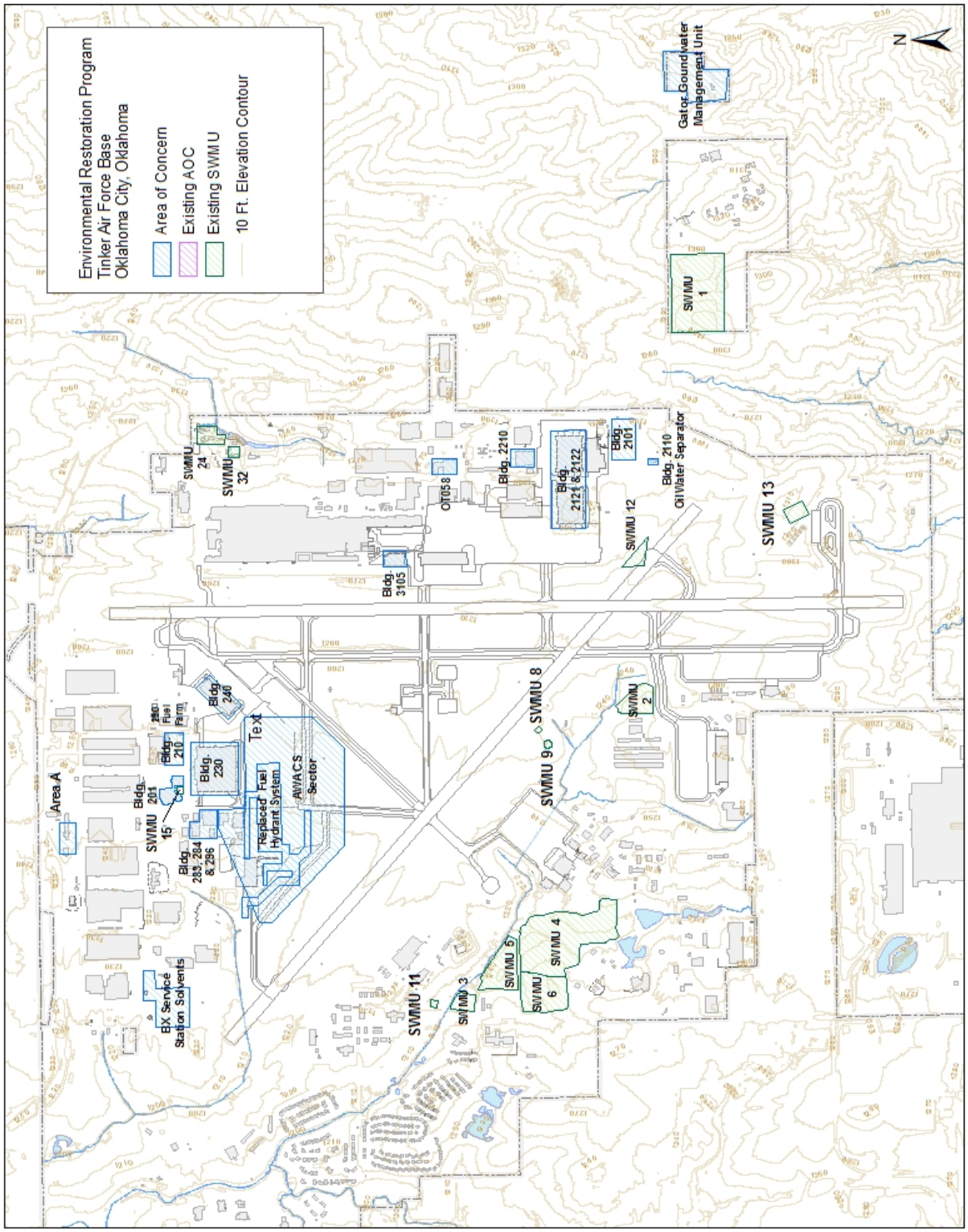


**Figure A2-1: Location of Existing SWMUs and Other Release Areas at Tinker AFB**

An 8-acre RCRA cap was installed over the landfill in 1991 as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater, and prevent any direct contact with the site. An investigation and report of landfills 1 through 4 incorporating data back to 1987, was completed in 1993. After the landfill was capped, additional groundwater investigations were conducted to delineate the contaminant plumes beneath the landfill. The site lies within the boundary of the Southwest Contaminated Groundwater Management Unit, Site #CG038. A RFI/CMS conducted between 2002 and 2004 for CG038 concluded that the former Sludge Dump Area in Landfill 3 was the primary source of the chlorinated hydrocarbon contamination at the north solvent plume in CG038. Near the southern boundary of Landfill 3, high concentrations of several VOCs, including vinyl chloride and cis-1,2-dichloroethene (DCE) have been detected in groundwater. Long term care of the RCRA cap will continue for Landfill 3, and monitoring of groundwater around the site will continue as part of the CG038 RIP.

### 1.3.6 SWMU #6, Landfill 4

Landfill 4 (AF Site #LF014) covers 12.4 acres and is located immediately west of Landfill 2. Landfill 4, designated as SWMU # 6, is south of Vanaman Road and was mainly operated from 1961 through 1968. Aerial photo evidence, however, suggests that trenching occurred as early as 1948 in the northwest corner of the landfill, and again in 1953. Waste placed in the landfill consisted mostly of general refuse with some drums containing solidified solvent and metal shavings. Soil and groundwater investigations were performed between 1985 and 1990 to determine if environmental contamination in the area occurred as a result of disposal and management practices. Trench water sampling showed low concentrations of VOCs including TCE, MEK, and toluene as well as SVOCs. Metals in the trench water contained chromium and manganese. Soil samples obtained from 5 to 18 foot below surface revealed acetone, MEK and chromium. The possibility of leachate migrating into Crutcho Creek was thought to exist. However, an investigation of Crutcho Creek did not show any indication that this has ever occurred. A 13-acre RCRA cap was installed over the landfill in 1998 as part of an interim action to reduce surface water infiltration, minimize the possibility of leachate migrating into the groundwater or to the creek, and prevent any direct contact with the site. Landfill 4 lies within the boundary of the Southwest Contaminated Groundwater Management Unit, Site #CG038. A RFI/CMS was conducted between 2002 and 2004 for CG038, and concluded that the burial trenches within Landfill 4 are potentially sources of chlorinated hydrocarbon and hexavalent chromium contamination to CG038. Long term care of the RCRA cap will continue for Landfill 4, and monitoring of groundwater around the site will continue as part of the CG038 RIP.

### 1.3.7 SWMU #12, INDUSTRIAL WASTE PIT #1

Industrial Waste Pit #1 (AF Site #WP018), is located 500 yards southwest of Building #2121, approximately 400 yards west of Douglas Boulevard and northwest of the intersection of Runway Drive and SE 59th Street. The site is designated as SWMU #12. The area of the waste pit is approximately 1.4 acres. The site was an unlined pit used for disposal of waste oils, stripping solutions and plating waste from 1947 to 1958. The pit was filled and graded in 1958, leaving no visible surface features to indicate its location. Because of the soil and vegetative cover over the site, migration of contaminants via air exposure and surface runoff has not occurred.

Initial investigations were conducted in the early 1980s to confirm the presence of contamination due to past waste practices. Geophysical surveys were performed and soil borings and groundwater monitoring wells were installed over the course of several field investigations. An RFI for both soil and groundwater was completed in 1991, followed by a RFI for soils that was conducted between 1993 and 1996. Chlorinated solvents, compounds with Benzene, Toluene, Ethylbenzene and Xylene (BTEX), and metals were identified. In 1998, an interim action was initiated to remove a portion of the contaminated soils. In 2002, a second interim action was initiated to perform on-site treatment of another portion of the contaminated soils. During this interim action, the logistics of this remedy proved complicated on an active airfield and the majority of the original contaminated soil and debris was returned to the pit after it was lined with a medium density polyethylene liner. The pit was then covered with clean soil and grass.

In 2004, an evaluation of vacuum enhanced dual-phase extraction (DPE) was conducted at Site #WP018, but because of uncertainties concerning the nature and extent of soil contamination, DPE was not considered a fully implementable remedial option. An addendum was completed for the CG039 RFI in the vicinity of IWP-1 in 2006. A CMS was completed in 2008, and MNA with ICs was recommended as the preferred alternative for the site. Contaminant migration in the unsaturated soil is considered minimal with little lateral movement.

IWP-1 lies within the boundary of the East Contaminated Groundwater Management Unit, Site #CG039. Because the pit is suspected as a source of groundwater contamination at CG039, groundwater monitoring within and around the waste pit will continue as part of CG039 LTM RIP. This remedy is consistent with that chosen for the overall CG039 groundwater monitoring unit site.

### 1.3.8 SWMU #24 IWTP – INDUSTRIAL WASTEWATER TREATMENT PLANT-SOIL

The IWTP (SWMU #24), a component of AF Site #OT034, is located in the northeast corner of Tinker AFB and is the process pre-treatment plant for all industrial and sanitary wastewater generated at Tinker AFB. The site is designated as SWMU #24. The IWTP was constructed in 1972 to treat industrial wastewater generated at the base, including electroplating, chemical cleaning and paint-stripping operations. These operations generated wastewater containing oil, grease, metals and organic solvents. In April 1996, Tinker AFB permanently diverted discharge from both the IWTP and sanitary sewer sources to the Oklahoma City wastewater collection system under a City of Oklahoma City Industrial User Permit. Since 1996, the IWTP no longer discharges into Soldier Creek.

Subsequent to the 1988 Federal Facilities Agreement (FFA), it was decided that the soils associated with the IWTP would be managed under RCRA guidance, and the groundwater media would be managed under CERCLA. Under this permit application, remedial action at SWMU #24 therefore is only concerned with the soils associated with the IWTP. SWMU #24 was defined as consisting of thirty-three process units, thirteen of which were designated SWMUs.

A RFI, which included soil, was conducted between 1993 and 1996. Results of the investigations indicated the presence of chlorinated and non-chlorinated VOCs, SVOCs, phenolic compounds and metals in the soil, as well as VOCs in the soil gas. The 1996 Phase II RFI concluded that soil contamination existed at IWTP and corrective measures were implemented to treat the soil media within the IWTP facility.

In 2000, the industrial waste sludge drying beds were removed as an interim corrective measure and a vacuum enhanced pumping (VEP) system with five extraction wells was installed to recover subsurface liquids and soil gas in the vicinity of the former drying beds. In 2001, the former industrial waste tanks D-1 and D-2 were demolished and removed from the IWTP.

In 2003, the VEP system was expanded to recover vapors and liquids from the soils beneath the former tanks D-1 and D-2. The Air Force submitted a decision document to ODEQ in February 2004 selecting VEP as the remedy for treating the remaining IWTP soils. ODEQ approved the selected remedy for IWTP soils on May 5, 2004. The VEP system was turned off on 4 June, 2012. During the summer of 2016, a non-time critical soil removal was conducted to remove additional soil contamination that was discovered to be above industrial risk screening levels. This included removing existing extraction wells, OT034VEP-6 and OT034VEP-7, located within the excavation area, and capping associated transfer piping at the excavation sidewalls. A RCRA Corrective Action Construction Completion Report for soils Construction Completion Report for soils was completed and was approved by the DEQ on 25 January, 2019.

## 1.4 Discussion of AOCs

### 1.4.1 AOC #1, FUEL FARM (290 POL FACILITY)

Designated as AOC #1, the 290 Fuel Farm site (AF Site #ST007) is located in the north-central area of the base. The site is bounded by First and Arnold Streets on the north and south and by "A" and "B" Avenues on the east and west, respectively. The original Fuel Farm consisted of five 18,000-gallon USTs and 20 25,000-gallon USTs. The tanks were used to store motor fuel, aviation gasoline, and JP-4 while several of the smaller tanks stored solvents. Two major spills of 6,000 and 10,000 gallons, respectively, occurred in 1979 and 1980. The USTs were removed and replaced with above-ground storage tanks (ASTs) in 1988. Investigations conducted in 1985, 1987, and 1988 found fuel-related contaminants in the soil and groundwater. An additional investigation was conducted at the site in 1994 to determine the amount of fuel remaining in the soil and the full extent of groundwater contamination. TCE and other chlorinated solvents were also identified in the RI. In 1986, a two-well pump and treat system was installed at the site as part of an interim action. This operated until 1989 when it was shut down. Two VEP systems were installed at the site between 1998 and 2000. Collectively, the two systems extract groundwater and soil vapor from 34 recovery wells around Building 214, the former Building 210, near Tank 349, and near Building 117. The two VEP systems were shut down in April, 2012 to allow for the groundwater to rebound and evaluate the current nature and extent of the contamination. An RFI report to further characterize and delineate the indoor air, soil, and groundwater contamination is underway.

### 1.4.2 AOC #20, BUILDING #201

Building 201 (AOC #20) is currently the base personnel and training office. It is used for administrative processing of employees on Tinker AFB. There are no current industrial activities ongoing inside of the building; however, the building was used for industrial purposes for a number of years after it was constructed in the 1940s. Sub slab soil gas sampling was conducted in 2009 and 2010 and the investigations indicated that a vapor intrusion condition may exist within the building. Building 201 is part of AF site ST008, which includes 4 SWMUs that have

reached NFA status. Three of these SWMUs are located in close proximity to Building 201 but are not considered the sources of the soil gas measurements obtained in 2009 and 2010. However, there are several industrial waste lines to the south and east of the building and a chlorinated hydrocarbon plume in the USZ groundwater is located underneath most of Building 201. Analytical results at one subslab location indicate significant levels of TCE in the soil gas media, although the areal extent has not been determined. The primary source of solvents in soil under the building is believed to be the former (now removed) UST that was located on the west wall of the building; piping extended up the wall and across the roof from the UST and then down into the building close to the location where the highest soil concentrations have been found.

### 1.4.3 AOC #21 GATOR CONTAMINATED GROUNDWATER MANAGEMENT UNIT

AOC #21, the Gator Contaminated Groundwater Management Unit (AF Site #CG040), was designated as a groundwater management unit in 1996. It is located at an adjunct facility approximately one mile east of the eastern boundary of Tinker AFB near the intersection of SE 59$^{th}$ St. and Post Road. The facility is non-industrial; only one building used for administrative purposes is found at the site. Chlorinated solvents including TCE have been detected above regulatory limits in the groundwater since the first monitoring wells were installed in 1995. No unique source has been identified for this contamination. A chlorinated plume has impacted shallow groundwater in the USZ and Lower Saturated Zone (LSZ); both are part of the Garber-Wellington Aquifer. Residences with private wells are extremely close to the site, one within 50 feet. This well has been tested several times by Tinker AFB and shows no contamination.

A groundwater extraction and treatment system began operation as an interim action in October 1999. The extraction system consists of two french drain segments in the USZ and a single pumping well in the LSZ. Contaminated groundwater is being pumped to an air stripper designed to treat contaminated groundwater to drinking water standards or better. The single pumping well in the LSZ was designed to capture the entire LSZ plume. Surrounding wells are monitored to ensure capture. Treated groundwater is discharged into a sanitary sewer near the site. The RFI report was completed in December 2003 and the CMS report was completed in July 2006. A Statement of Basis was completed as a decision document between Tinker AFB and the ODEQ, and was signed by ODEQ on July 31, 2006. The selected remedy consisted of continued operation of the groundwater extraction and treatment system along with institutional and engineering controls; the extraction system was shut down December of 2016. In 2013, an insitu-bioremediation treatment system consisting of injection wells and two bioreactors was installed to further treat the higher concentrations of CVOCs within the plumes. The overall goal of the insitu system is to treat the groundwater contamination to below MCLs and achieve Site Closeout at residential levels – Unlimited Use/Unrestricted Exposure (UU/UE).

### 1.4.4 AOC #22 AWAC Sector

AOC #22, known as the Air Warning and Control System (AWACS) Sector Contaminated Groundwater Management Unit (AF Site #CG041), consists of chlorinated solvent groundwater plumes in the vicinity of the AWACS flight apron. The site is in the north central portion of Tinker AFB and encompasses the contaminated groundwater beneath the tarmac and taxiways south of Building 230. The site also extends beneath several industrial buildings to the west of

Building 230 and unpaved areas to the south, east, and west of the tarmac. The facilities overlying CG041 have been used for industrial purposes since 1942.

Two chlorinated solvent plumes exist within CG041. One is largely under the industrial buildings on the north side of CG041, while the other plume is on the southern border of CG041 underneath the tarmac and taxiways. The northern plume has impacted only the USZ, whereas the southern plume has impacted both the USZ and LSZ. For the northern plume, suspected sources of the contamination include: 1) USTs containing unknown materials that were located adjacent to the former Building 267 (a demolished vehicle maintenance shop), 2) former Building 227 (a demolished motor repair shop), 3) an abandoned waste tank (tank 226) located near the former Building 228 that contained miscellaneous contaminated oil, 4) two 50,000 gallon USTs formerly located under the southwest corner of Building 289, and 5) potential leaks and breaks in the industrial waste lines in the vicinity of Building 289. For the southern plume, historical solvent usage on the tarmac from the 1940s to the 1970s is the suspected source. Currently, concentrations of chlorinated compounds are generally either stable or decreasing in the USZ and generally stable in the LSZ. A RCRA Facility Investigation (RFI) was conducted to evaluate the nature and extent of the contamination. The RFI report was completed in August, 2014 with a recommendation to conduct a Corrective Measures Study.

### 1.4.5 AOC #23, JET ENGINE TEST CELLS (BUILDING #3703)

Area of Concern #23 (AF Site #OT058), consisting of Building 3703, is located within CG039. The Jet Engine Test Cells (JETC) site is in the eastern portion of Tinker AFB, on Turbine Drive between East Drive to the west and Cells Road on the east. The combined facility serves to mechanically test and service rebuilt jet engines and after-burners prior to redeployment. Wastewater associated with jet engine testing and cleaning is discharged to the industrial wastewater collection system. Building 3703 was constructed in 1951 and originally included four test cell chambers. Subsequently, four additional chambers were added. Currently, all eight jet engine test cell chambers are operational. Solvents, such as TCE, were reportedly used at both buildings in the past to clean the jet engines. Presently, JP-5 is the most commonly used fuel for engine testing. The fuel is transported to the facility by pipeline from the 3700 Fuel Yard. These fuel lines were entirely underground until the 1970s, at which time a portion were converted to aboveground. The fuel system is also known as the Nancy Hydrant System.

There are two known release sources at Building 3703: 1) leaks in the JP-5 supply line to Building 3703 within the building's underground duct bank; and 2) the oil-water-separator (OWS) system on the western side of Building 3703, which released industrial wastewater to the subsurface. Since 1992, actions performed to remediate contaminant leakage at Building 3703 include the replacement of various industrial waste lines and OWS upgrades. A RFI was conducted between 2000 and 2002. An interim remedial action began in May 2002 to extract groundwater, vapor, and mobile non-aqueous phase liquids from the subsurface; however, the system was turned off on May 4, 2012. A CMS was completed in 2005.

The same RFI also identified the possibility that contamination at the northwest corner of Building 3234 is the result of JP-5 fuel releases from the nearby Nancy Hydrant system. The contaminant releases at the northeast corner of Building 3234 are a result of faulty installation of an industrial waste line that has since been corrected and/or replaced.

The most prevalent contaminants found in groundwater at this AOC are fuel-related compounds (i.e., TPH-gasoline, TPH-diesel, and BTEX) and chlorinated solvents (including PCE, TCE, and their anaerobic degradation products such as cis-1,2-DCE, 1,2-DCA, and vinyl chloride). Chlorinated solvent contamination in the USZ and LSZ extends beyond the boundary of OT058 to the east, south, and west. Some of the highest concentrations of TCE are directly south of OT058 near a former Industrial Waste Evaporation Basin which overlies the USZ. Groundwater contamination beyond the boundaries of OT058 is being evaluated as part of CG039. Within the boundaries of the site, substantial amounts of dissolved and vapor phase contaminants have been recovered; however, no free product has been observed at the site. Nevertheless, significant contamination remains throughout OT058, particularly petroleum hydrocarbons and chlorinated compounds.

Soil gas sampling conducted in 2007 near Building 3703 indicates that there are probable contaminant sources beneath Building 3703 either in the soil, the groundwater, or both. PCE was detected in soil gas beneath Building 3703 at 41,000 parts per billion by volume. Therefore, contaminants in soil and/or groundwater beneath the building have the potential to migrate into indoor air via vapor intrusion (VI). An additional RCRA Facility Investigation (RFI) is being conducted at this building to further evaluate the nature and extent of the contamination as well as to determine other possible sources at this location.

### 1.4.6 AOC #24, BUILDING #230

Building 230 (AF Site #OT062) is designated as AOC #24. The site is in the north central portion of Tinker AFB, between First Street and the ramp area at "C" Avenue. Building 230 is a four-bay hangar with support facilities that was used as a central repair hangar during World War II. Industrial activities in the building included aircraft overhaul, cleaning, retrofitting, upgrades, and general maintenance. Industrial processes are still conducted on the north end of the building, but are primarily limited to dry operations. There is an extensive network of industrial waste water drain lines along the north side of Building 230 and running north-south beneath the building.

Chemicals were released to the environment from leaks in sumps and the industrial waste water drain lines at Building 230 as well as from spills, allowing chemicals to percolate into the soil. The migrating contaminants have reached the uppermost units of the Garber Sandstone in the vadose zone above the USZ. Contaminants in soil are primarily located on the north and west sides of Building 230 from approximately 2 to 9 feet below ground surface (bgs). More recently, groundwater contamination has also been confirmed to be present under the west portion of the building. The primary contaminants at the site are BTEX, carbon tetrachloride, cis-1,2-DCE, Freon 113 (1,1,2-trichloro-1,2,2-triflouroethane), methane, MEK, TCE, and vinyl chloride.

A VEP system was installed as an interim corrective measure to mitigate the potential risk posed by subsurface contaminants along the north and west sides of Building 230. The VEP system was operated continuously since startup in May 2005 until shutdown in 2011. The system used groundwater extraction wells and horizontal soil vapor extraction wells to remove contaminated groundwater and soil gas, respectively, that was then directed to a treatment plant constructed specifically for this cleanup action. The treatment plant was removed following system shutdown

in 2011. A RCRA Facility Investigation (RFI) is being conducted to further characterize the nature and extent of the contamination.

### 1.4.7 AOC #25, BUILDING #210

The Building 210 site (AF Site #OT064) is located in the north-central area of the base and consists of Buildings 210 and 213, an unpaved grassy area, and a parking lot. The site, designated as AOC #25, is situated north of First Street between "B" and "C" Avenues. The original Building 210 structure was built in 1942 and was used to refabricate and overhaul hydraulic and pneumatic control systems. The building included a paint shop, parts cleaning area, machine shop, test cells, and instrument repair area. Activities at the original Building 210 required the extensive use and storage of fuels, lubricants, and degreasing solvents. In addition, mercury filled manometers and temperature/pressure controls were used in the former test cells. In 2003-2004, approximately 90 percent of the building was demolished and removed. Most of the former Building 210 is now a paved parking lot. The northeast corner of the former Building 210 remains intact and contains a compressor room that serves a repair and maintenance facility located directly north in Building 200. This remnant of the original Building 210 is also currently used as a turbine maintenance and repair shop. In addition, Building 213, which is another turbine maintenance and repair shop built in 1993, is located in the southeast corner of OT064.

When a 6,000 gallon UST at the site was removed in August 1997, several holes were observed on the underside. Approximately 1,500 gallons of mixed residual solvents and gasoline remained in the tank during excavation, and free product was also encountered on the shallow groundwater during the removal of the UST. At least three additional USTs were also located within the boundaries of OT064, although these are indicated as having been abandoned prior to 1987. Two of these USTs stored fuels and one stored solvents. During demolition of the test cell area of Building 210 in 2003-2004, free-phase mercury was encountered in the test cell drain lines and surrounding soil. The drain lines and the surrounding mercury-impacted soil were excavated and removed in 2004

VOCs have been detected in groundwater at the site; however, no groundwater plumes had been identified previous to 2013 within OT064. There are chlorinated solvent groundwater plumes to the east, west, and south of OT064 in both the USZ and LSZ and fuel plumes to the east, northeast, and west of OT064 in the USZ. Soil gas data from 9 near slab soil gas probes collected from 2005 to 2009 around Buildings 210 and 208 indicate soil gas vapors exist along the northern boundary of OT064 at concentrations that may impact Building 200 directly to the north. As an interim remedial action, VEP extraction and recovery wells were installed in 1998 in the eastern portion of OT064 as a part of the 290 Fuel Farm system (AOC #1). An additional VEP well was installed along the northern boundary of OT064 in 2007 near Building 200. These wells had been removing both contaminated soil vapor and groundwater from the site until the system was shut down in April of 2012.

A more recent site investigation (2013) to further delineate the nature and extent of contamination has confirmed that a solvent plume exists within the northern portion of the site and further study is planned to be conducted in the near future.

### 1.4.8 AOC #26, Building #283, #284, and #296

AOC #26 is located in the north-central portion of Tinker AFB and consists of three buildings: Building 283 (Flight Simulator Training Facility & 552nd Squadron Operations Facility), Building 284 (Data Processing and AWACS Training Facility), and Building 296 (AWACS Supply Warehouse). Although currently used for administrative and storage purposes, these buildings were once industrial in nature. The buildings are collectively referred to as AF Site #OT065. Sentry Road runs east-west through the center of OT065 with Building 284 on the north side and Building 283 and Building 296 on the south side of Sentry Road. The intersection of Sentry Road and "D" Avenue is adjacent to the northeast corner of Building 296.

Past waste streams associated with OT065 include fuels (i.e., JP-4, JP-5, JP-8, and motor gasoline) and photographic developer waste from Building 283. In 1992, during the construction of Building 296, several abandoned utility lines were found containing jet fuel from a leaking adjacent JP-4 transfer line. Subsequently, the leaking JP-4 transfer line was cleaned of the remaining fuel and abandoned in place. The abandoned JP-4 transfer line runs north-south under the eastern portion of Building 296. Several other utility lines run under the east side of Building 296, including the main Tinker AFB industrial waste water line and a fuel distribution line. There is also an OWS south of Building 296, just beyond the boundary of the site. Wash racks, a radar maintenance facility, and a motor repair shop previously existed in the vicinity of Buildings 283, 284, and 296 as well. In addition, several fuel USTs existed in the area that may have acted as sources of fuel contamination. However, the tanks were investigated and closed under OCC jurisdiction.

Subslab soil gas sampling conducted in 2009 at Building 296 revealed concentrations of TCE as high as 7630 parts per billion by volume. In the USZ, a TCE plume exists beneath the southeastern corner of B296 and extends beyond the boundary of OT065 to the northeast, south and southwest. High concentrations of TCE exist in the USZ directly south of Building 296, and at the southeastern corner of Building 289. In addition, cis-1,2-DCE and vinyl chloride plumes in the USZ have been found below the eastern portion of Building 296. There is also a BTEX groundwater plume underneath Building 296 that extends west under Building 283 and northwest to Sentry Road. A LSZ TCE plume identified beneath Building 283 and Building 296 extends beyond the boundary of OT065 to the northeast.

### 1.4.9 AOC #27, Building #2110 Oil Water Separator

Building #2110 (AF Site #OT066) is used as a fuel truck maintenance facility (FTMF). In operation since 1957, Building 2110 includes a wash rack oil water separator (OWS); residual fuel is released to the OWS and is then recycled. The OWS, designated as AOC #27, includes potentially impacted soil and groundwater. During construction operations at Building 2110 in November 1990, soil and water contamination were discovered under the concrete floor. A RFI of the soils was conducted at Building #2110 between 1993 and 1994. Contaminants within the soils were found to consist of petroleum hydrocarbons including BTEX and chlorinated compounds typical of degreasers (acetone, chlorobenzene, and PCE). The 1994 RFI determined that these contaminants were released to the soils from the floor drain of Building 2110, but the report contended that contamination attributed to the FTMF is limited to the upper 15 feet of soils and does not extend down to the water table. However, chlorinated solvent groundwater

contamination in the USZ was independently found to occur beneath Building 2110 and could potentially originate with the OWS. A RFI report has been completed and was approved by ODEQ in October, 2016. The OWS, and any associated contaminated soil is planned to be removed with the demolition of Building #2110 in the near future.

### 1.4.10 AOC #28, BUILDING #2101

Building #2101 (AF Site #OT067) was built in the 1940s and was the original location of the motor pool. The suspected source of the groundwater contamination at AOC #28 is leaks in the wastewater drain lines for Building 2101. This site includes contaminant releases from Building #2101 to environmental media including soil and groundwater. Chlorinated solvent groundwater contamination is located immediately downgradient of Building #2101, and may be present under the building. A facility inspection was completed in August 2009. The building was demolished in 2011. A RFI report was finalized in June 2015 and ODEQ approved the work plan for a non-time critical soil removal of hot spots in 2017.

### 1.4.11 AOC #29, REPLACED FUEL HYDRANT SYSTEM

AOC #29 (AF Site OT068) is known as either the Phillips Hydrant System #66230, the "Replaced" Fuel Hydrant System. It is located in the north central portion of Tinker AFB. The fuel hydrant system is contained mostly within AF site CG041. The Phillips Hydrant System is an underground fueling system used to deliver fuel to aircraft on the north tarmac at Tinker AFB. The fuel hydrant system is constructed beneath the tarmac and extends eastward from Building 260 to a point approximately 500 feet south of the center of Building 230.

Prior to system upgrades conducted in 1992, fuel releases from the hydrant system were detected when fuel would seep to the surface between the joints in the concrete of the tarmac. At least six fuel releases from the hydrant system have been reported, with each release resulting in the removal of approximately 500 cubic yards of contaminated soil. A plan to replace the fuel hydrant system included a component to remove contaminated soil. Test borings were drilled in the area subsequent to the hydrant replacement activities. Field measurements from one soil boring sample indicated high levels of volatile vapors at a depth of 4.5 feet bgs. BTEX has been detected at low concentrations in two wells in the USZ near the southern portion of the hydrant system. The RFI report was completed in August, 2014 with a recommendation to conduct a Corrective Measures Study.

### 1.4.12 AOC #30, BUILDING #2121 AND BUILDING #2122

The area including Buildings 2121 and 2122 (AF Site #OT069) is designated as AOC #30. The two buildings are hangars located in the southeast quadrant of Tinker AFB. Aircraft maintenance has been conducted in both buildings since the early 1940s, including the use of solvents and stripping agents. More recently Building 2121 has been used for non-chemical maintenance operations; however, Building 2122 is still one of the main hangars for paint stripping operations using a variety of solvents. Products containing dichloromethane, phenol, monoethanolamine, and chromic acid were still in use in 2001. Degradation in caulking in the floor expansion joints had resulted in approximately 3/4-inch gaps open to the subgrade adjacent to the wastewater collection trenches, which have since been repaired. The solvents and

wastewater had been observed to migrate through the expansion joints to the subgrade. A SI/RFI was performed at Building 2122 between 1999 and 2000, followed by a Supplemental SI/RFI in 2002, and a CMS in 2003. Results of the investigations at Building 2122 indicated that the soils beneath Building 2122 were impacted by waste water leaking through floor/drains joints. Subsurface soil was thought to be impacted but was localized and shallow and it was thought that identified levels of soil contamination had not impacted the shallow groundwater zone, primarily due to presence of the building floor slabs and foundation. The CMS stated that the current level of soil contamination does not pose significant risk to human health and environment, and there are no significant routes for further migration, provided that potential future releases are controlled. Current controls include using proper materials to seal the floor joints. In 2006, sub slab and indoor air sampling was performed in the administrative area of Building 2122. It was determined that contaminants were left in receptacles beneath the floor from shop activities performed in the past. The receptacles were drained and the contamination mitigated. In 2009 and 2010, sub slab soil gas sampling was performed at Buildings 2121 and 2122 to evaluate potential contaminant sources beneath the buildings. Recent data from a current RFI to further characterize and delineate indoor air, soil, and groundwater contamination, which is underway, suggests however that soil contamination extends deeper than previously thought and has probably impacted shallow groundwater at the site.

### 1.4.13 AOC #31, AREA A SERVICE (FUEL) STATION

AOC #31, located south of the original Building 414, is known as the former Area A Service Station. This area served as a motor fuel station from 1942 until it closed in 1990. Gasoline and diesel fuels were stored in four USTs. Two of the tanks were used for leaded and unleaded gasoline storage, a third tank stored unleaded gasoline, and the fourth tank, installed in 1975, was used for diesel storage. The third and fourth tanks noted above were taken out of service when the station closed in 1990. Soil and groundwater investigations conducted in 1990 and 1992 showed the presence of mogas contamination. A product recovery system was installed in 1992 to pump fuel from the groundwater. By 1996, the extent of soil contamination was delineated, the remaining USTs were removed and the product recovery system expanded. VEP remediation began June 1997, and fuel product recovery was completed by 1999. The Oklahoma Corporation Commission (OCC) approved site closure on December 18, 2000; however, this is limited to only petroleum hydrocarbons in soil and groundwater. A TCE plume (along with other chlorinated compounds) was also identified in the groundwater beneath the site. The TCE groundwater plume borders the base boundary. The VEP system was shut down 1 November, 2012 and replaced with an emulsified vegetable oil mixture injection – insitu remedy.

### 1.4.14 AOC #32, BUILDING # 3105

AOC #32, Building 3105 (AF Site #VI080), was used for aircraft maintenance, including mechanical sanding, calibration of hydraulic fuel pumps, and maintenance of electrical systems. This building is located approximately 700 feet east of the North-South Runway between West Drive and the southern extent of Building 3001. Building 3105 is suspected to have leaking drain lines. A TCE groundwater plume immediately downgradient of Building 3105 has TCE concentrations up to 1,180 parts per billion. This site includes contaminant releases from Building 3105 to environmental media including soil. The groundwater is addressed as part of

the Soldier Creek/Building 3001 NPL site. A RFI to further characterize contamination and to evaluate whether continuing sources exist at the building, is currently underway.

### 1.5 HISTORICAL SWMUS, AOCS, AND OTHER RELEASE AREAS [40 CFR 264.90]

As a permit condition pursuant to RCRA and the reauthorization of RCRA in the HSWA the EPA was given the authority to require facilities to take corrective action for any releases of hazardous waste or constituents from any SWMU at a TSDF.

Tinker AFB entered into a FFA with EPA Region 6, and the OSDH on December 9, 1988. The FFA defines the geographic boundary on Tinker AFB that lies between the National Priority List (NPL) site, administered under CERCLA and the non-NPL sites (administered under RCRA). Any sites that are not identified as part of the FFA are considered non-NPL and subject to RCRA authority. The State of Oklahoma provides lead oversight for the non-NPL sites on the base.

On July 1, 1991, OSDH (now DEQ) and EPA Region 6 issued the RCRA Part B Hazardous Waste Management Permit (No. OK1571724391), which formally authorized Tinker AFB to operate as a hazardous waste storage facility.

RCRA was administered at Tinker AFB by the OSDH and EPA until EPA Region 6 granted DEQ administrative authority in 1994. DEQ is the lead oversight agency for the RCRA Hazardous Waste Management Permit and Corrective Action.

The 1991 RCRA Permit and its successor renewals (August 2002 and this application for 2018) require Tinker AFB to investigate any newly identified SWMUs, AOCs, and newly-discovered releases at SWMUs and AOCs, and to take further corrective action where appropriate.

- Ongoing SWMUs identified to date are presented on Table A2-1.
- A list of Ongoing AOCs (non NPL sites) identified to date is presented on Table A2-2.

SWMUs and AOCs that have not yet reached a no further action (NFA) status as well as newly proposed AOCs that are being carried forward under this permit application are listed in Tables A2-1 and A2-2 respectively.

A RCRA Facility Assessment was performed in 1989 which identified 80 SWMUs (two with multiple subunits/process units). An additional SWMU was added to the 1991 RCRA Permit application, after the RFA was conducted, and has reached no further action (NFA) status. In total, 81 SWMUs have been identified through the RCRA permitting process through August 2002. Of these, 73 SWMUs have achieved NFA status.

The 1989 RFA also identified 19 AOCs. No additional AOCs were added through August 2002. Of the original 19 AOCs, 15 have reached NFA status. Table A2-2 lists 12 sites that are being proposed for inclusion as AOCs with this permit application.