

Davis-Monthan Air Force Base
Tucson, Arizona, Pima County
Project Background

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Regulatory Status

Davis-Monthan is the lead agency with final remedy selection authority, however, compliance with applicable state laws is mandatory. Since Davis-Monthan has not been listed on the NPL, ADEQ has been involved to varying extent in technical oversight. ADEQ has received 31 No-Further-Action Decision Documents regarding 31 of the 47 sites on Base. ADEQ and Davis-Monthan will be working together to establish review and closeout protocols for Decision Documents provided to ADEQ.

ADEQ is lending state assistance to the Department of Defense in their remedial activities being conducted under the federal Installation Restoration Program (IRP). The Federal Facilities Unit of the Remedial Projects Section coordinates with other ADEQ units such as Waste Compliance Unit, RCRA Permits Unit, Aquifer Protection, Solid Waste, Underground Storage Tanks, and appropriate Hydrology personnel.

Site Description

Davis-Monthan Air Force Base (DMAFB) is located in eastern Tucson, Arizona. Ongoing remedial investigations have identified 47 areas of concern on the base. Many of these have no confirmed

contamination or have been evaluated and determined to be of no significant threat to humans or the environment. Some of these sites may be revisited for future analysis before final closure is granted. Current concerns have been narrowed to approximately six sites involving a variety of hazardous substances including aluminum dross, pesticides, petroleum products, and solvents. Following is a list of these sites and their history and status:

DRMO Yard - This site is located in the DRMO yard. The site consists of two waste pits and a french drain. Items unearthed in the area include steel drums, aircraft parts, corrugated metal, broken bottles, and small laboratory type bottles. The area may have been used for aircraft recycling activities. The waste pits contain approximately 100 cubic yards of contaminated soil and the french drain contains approximately 30 cubic yards. Chemicals of concern that have been detected at the site include BETX, TPH, and 1,1,1 trichloroethane (TCA). A removal action is planned for this site.

Underground Fuel Leak - Site 36 - This site is located northeast of the midpoint of the flight line, outside the flight operations area. A leak of automotive gasoline from an underground storage tank (UST) product pipe was investigated in 1988. Subsequent sampling has occurred, and concentrations of TRPH as high as 67,000 mg/kg have been detected in the soil in the area northwest of the fueling pad, just off the pavement. No total fuel hydrocarbons (TFH) or VOCs have been detected in the groundwater. The site is currently in long term monitoring.

Chevron Area - Site OT- 46 - This site is located in the northern part of the base and is the location of a former AMARC area. The site is an open, partially-vegetated area with strips of broken asphalt pavement. A PA/SI was conducted on this site in 1994. Soil samples were collected and analyzed for TPH, total metals, volatile organics, and semi-volatile organics. Low concentrations of toluene, polycyclic aromatic hydrocarbons, and phythalates were detected in soil boring samples throughout the site, particularly in near surface samples. Groundwater has been tested and has not been impacted by the soil contamination. The site is currently in long term monitoring.

Main Base Landfill - LF-01 - This site is located approximately 2,000 feet west of the midpoint of the main runway. The landfill was used from the early 1940's to 1976 for disposal of household garbage, metals, cars and aircraft, thinners, solvents, pesticides and other items. The site is currently an open, 17 acre pit approximately 20 feet deep. Several drainage ditches are located around the current pit and standing water can be found in the pit after rains.

Numerous rounds of soil and groundwater samples were collected between 1983 and 1994 and tested for VOCs, priority pollutant metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), total recoverable petroleum hydrocarbons (TRPH) and other compounds. All compounds detected were at levels below action limits. The site is currently in long term monitoring.

Old Base Landfill - LF-02 - The old base landfill is located near the southeast corner of the intersection of Kolb and Irvington roads. The landfill, used from the 1940's until 1955, is approximately 400 by 500 feet and was primarily for disposal of housing refuse, however, small quantities of solvents and

thinners may have been deposited in the landfill. The site is flat and there is little evidence of the former landfill. A drainage ditch is present parallel to the western boundary of the suspected landfill.

Numerous rounds of soil and groundwater samples were collected between 1990 and 1994 and tested for VOCs, priority pollutant metals, organochlorine pesticides, PCBs, TRPH and other compounds. All compounds detected were at levels below action limits. The site is currently in long term monitoring.

Site 35 - JP4 Jet Fuel Pump House Site - This site is located near the center of the flight line and most of the area is paved. An estimated 60,000 cubic yards of soil contaminated with JP-4 jet fuel are present in the subsurface at this site. The site contains fuel pumps and a six-inch product line located approximately five feet below the ground surface. It is the only site on the base where deep contamination of soil and impacts to groundwater have been documented. The site has been divided into two operable units, one for soil and the other for groundwater. The soil is being remediated through the use of a Soil Vapor Extraction system. The groundwater was remediated with a pump and treat system utilizing granular activated carbon. The site is currently in long-term Operation and Maintenance of the SVE system.

Hydro geologic Conditions

Geologic setting:

DMAFB lies within the Tucson Basin of the Basin and Range Physiographic Province. The source of the basin fill deposits is the crystalline basement rock comprising the surrounding mountains. Regional structural geology includes complex related folds and faults of the basement rock and high angle faults of the sedimentary basin fill. Water bearing units may also be involved in folds.

There are three water bearing strata above the basement rock. The Pantano Formation is comprised of poorly cemented to well-cemented sandstone, mudstones, and conglomerates and may be up to 8,000 feet below the land surface in the central basin. Overlying the Pantano are the Tinaja Beds, three unconformable sedimentary units which together are thousands of feet thick. The Tinaja are differentiated from the Pantano by the presence of gneiss. Overlying the Tinaja is 400 feet of unconformable sediment, the Fort Lowell Formation, consisting of unconsolidated gravels to clayey silts. It is covered by a thin veneer of surficial deposits tens of feet thick.

Soil Contamination and Remediation:

Soil contaminants have been detected at numerous sites throughout the base. Most of these sites have already been remediated. Contaminants identified in the soil include aluminum dross, heavy metals, pesticides, THP, hydraulic fluids, solvents, waste oil, and other petroleum products.

Hydrologic Conditions:

Until recently, Tucson was entirely dependent on groundwater. In November 1992, the City switched to about 15% treated surface water supplied by Central Arizona Project. Many Tucson Public Supply wells have been already - or will soon be - converted to injection wells for recharge of the aquifer. Groundwater has traditionally been used for everything from domestic purposes to industrial and agricultural uses. The groundwater supply for Tucson is a single source aquifer. Geologic units in the regional aquifer system are basically unconfined. Groundwater flow is to the northwest near DMAFB. Depth to water is 275 to 375 feet.

Groundwater Remediation:

There is no proven groundwater contamination that is attributable to dross disposal sites, however, there was one detection of lead in a well at Site 39. Petroleum product groundwater contamination associated with the fuel leaks has been determined to exist at Site 35. A Groundwater Pump & Treat system has been installed which utilizes a three-stage granulated activated carbon treatment unit. The system is currently running and is discussed in further detail in the Project Status section on page 1. Soil Vapor Extraction for prevention of further JP-4 migration at this Site has been installed, tested, shut down, altered and restarted. Changes were made to maximize the extraction rate of volatiles from the soil.

Modeling suggests other sites may contribute to groundwater contamination within 15 to 30 years. For example, contaminants at sites 3, 43, and 44 and 46 could also potentially affect groundwater quality. However, sites 3, 43 and 46 have been recommended for no further action. The remaining site is currently undergoing a PA/SI. The U.S. Geologic Survey continues to conduct quarterly sampling of the two base landfills. There has been no detection of constituents of concern above background levels during continued sampling.

Site History

DMAFB has been a project within the IRP program since 1982. In that year, the project began with a records search performed by CH²M Hill. The records search recommended further study of seven sites including the main base landfill, the Flush Farm drainage ditch, a storm drain outfall, a tow road, an old electrical substation, a transformer spill site, and a sludge burial site. Subsequent field surveys were done by Dames & Moore in 1985 with the result that in most cases contamination was not documented, and recommendations were made for no further action.

The U.S. Air Force has been leading a phased Remedial Investigation study of the Base situation since 1986/87. A Multi-Site Remedial Investigation Report was published by James Montgomery in April 1990 which listed 46 sites. Remedial contracts were obtained to investigate areas of significant contamination, including Site 35, Site 36, and on-base aluminum dross disposal locations (Sites 29, 30-34, and 39). Bioremediation of Petroleum Oil & Lubricants (POLs) at Site 18 (Flush Farm drainage ditch) was implemented in 1990 and is now complete.

Public Health Impacts

Sites involving petroleum products, solvents and pesticides in soil and groundwater may affect public health through ingestion of these substances when they reach drinking water supplies. Contaminants in aluminum dross were of concern due to possible inhalation or ingestion hazard from blowing dust. However, risk is now considered negligible following dross treatment and removal.

Groundwater contamination with petroleum hydrocarbons at Site ST-35 is apparently limited to an area of approximately 15,000 square feet and has shown no significant migration. The nearest drinking water well is located several thousand feet down gradient from the site. Under state supervision, the groundwater will be pumped from two extraction wells, the hazardous constituents reduced to well below action levels, and reinjected 1000 feet down gradient of the point of extraction.