

# ***WQARF Report, Superfund Programs Section***

## **A.R.S. § 49-282.G**

ADEQ's Superfund Programs Section, under both state and federal authorities, identifies, assesses, and cleans up soil and groundwater that is contaminated with hazardous substances. The program, in consultation with the Water Quality Assurance Revolving Fund (WQARF) Advisory Board, directs remediation activities using state and federal funds, and oversees privately-funded cleanup efforts. Responsible parties are identified and notified, and legal and technical evidence is gathered for recovery of ADEQ's costs and for enforcement of cleanup requirements.

Funding is provided to the Arizona Attorney General's Office, the Arizona Department of Health Services, the Arizona Department of Water Resources and political subdivisions created to assist ADEQ with remediation efforts.

The program also oversees the WQARF, which was created under the Arizona Environmental Quality Act of 1986 to support cleanup efforts in the state. The fund depends on direct transfer of funds from legislative appropriations, corporate income tax, cost recovery and special fees.

In April 1998, a Registry was created to replace the Priority List, as required by A.R.S. § 49-287.01. Sites are added as they complete the Registry listing process, which includes scoring, notifying owners and operators within the site and providing the public with a 30-day comment period.

As of the end of FY 2000, the WQARF Registry contained 33 sites. The program also oversees 10 projects that are governed and funded by the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), commonly known as Superfund. Sites posing a significant threat to human health and the environment may be placed on the National Priorities List (NPL). Three of these sites are under Department of Defense jurisdiction. In addition to the WQARF Registry and NPL sites, the program also manages seven non-NPL Department of Defense sites.

The WQARF Program also provides fiscal support to the Voluntary Remediation Program, which presently manages clean up activities at 48 sites.

The development of numerous rules, policies and guidance to address site investigation and cleanup process has also been required by statute. The Superfund Programs Section devotes significant resources to the development of these documents in conjunction with the WQARF Advisory Board and other interested stakeholders.

### ***ADEQ's Web site Resources***

*Go to...*

*Environmental Programs  
Waste Programs  
Superfund*

*Community Involvement  
Program Description  
Contacts*

*Program Documents  
Contracting Ops  
Public/Legal Notices  
FAQ*

*Registry List  
Liability Issues  
Site Information and Maps  
Meeting Information*

## Annual Program Performance Measures

### § 49-282.G.1

Accomplishments from expenditures of the fund in terms of reduction of contamination in the environment and actions taken to determine the nature and extent of contamination.

### § 49-282.G.2

**Table III.10. WQARF Remedial Activities Completed**

Sites added to the WQARF Registry	6
Site visits or inspections conducted	162
Soil vapor extraction/injection wells installed	12
Groundwater monitor wells installed <sup>1</sup>	53
Water, soil, air and soil gas samples collected <sup>2</sup>	5,157
Pounds of hazardous substances removed	4,160,697
Billions of gallons of water treated	2.33
Significant early response actions or final cleanup actions with construction complete	3

<sup>1</sup> The number of well installations represents a combined amount for ADEQ and the interested parties.

<sup>2</sup> The number of soil, soil gas, air or water samples collected represents a combined amount for ADEQ and the interested parties.

**Table III.11. WQARF Enforcement and Administrative Activities Completed**

Access agreements completed	26
Consent decrees/consent orders completed	4
Prospective purchaser agreements completed	2
Qualified business settlements completed <sup>1</sup>	7
Potentially responsible party searches underway	12
Applicable or relevant and appropriate	

<sup>1</sup> ADEQ settled with seven responsible parties, resulting in six court actions. In some cases, the number of court actions is less than the number of settlements because several responsible parties may be covered under one settlement.

**Table III.12. WQARF Community Involvement Activities Completed**

Public notices completed	31
Factsheets completed	16
Press releases completed	8
Public meetings, hearings and open houses	46

**§ 49-282.G.3**

The number of settlements made with responsible parties and the terms of each settlement.

During FY 2000, four Consent Decrees were entered with the court as settlements with potentially liable parties in Phoenix and Tucson. WQARF received a total of \$1,432,500. The four settlements include:

1. Gunning – \$7,500 final settlement (South Mesa)
2. City of Phoenix/Bank One – \$250,000 plus \$4.75 million worth of remedial investigation work at the site; this settlement does not prohibit potential natural resource damage claims (Estes Landfill)
3. SRP – \$1.1 million; this settlement does not prohibit potential natural resource damage claims (Estes Landfill)
4. Sterling – \$75,000 plus \$15,000 worth of remedial investigation work (soil gas survey) at the site (Broadway South Landfill)

ADEQ and responsible parties reached seven Qualified Business Settlement settlements, which resulted in six court actions. In some cases, the number of court actions is less than the actual number of settlements because several responsible parties may be covered under the same settlement.

**§ 49-282.G.4**

Number and types of settlements under 49-292.01 (Qualified Business) and 49-292.02 (Financial Hardship), as of the close of FY 2000.

Number of applications submitted in each category

Qualified business 3

Financial hardship 0

Number of applications denied under each section

Qualified business 0

Financial hardship 0

Number of applicants who settled under the Qualified Business formula, and the amount of the settlements

Number settled 7 (These settlements include several parties who applied in FY 99; these settlements resulted in six court actions.)

Total amount of settlements \$146,498.00

The number of settlements pursuant to 49-292.02 and the total amount of the settlements

Number of applications and settlements 0

The number of persons who met the definition of Qualified Business under section 49-292.01 but who settled pursuant to 49-292.02

Number of Applicants and settlements 0 (No applicants who settled under the financial hardship provisions of 49-292.02 met the definition of a Qualified Business under 49-292.01.)

## Sites Managed by the Superfund Programs Section

### ***WQARF Registry Sites***

ADEQ evaluates sites on the WQARF Registry and scores the sites partially on the type and location of contaminant(s), and the possibility for human exposure to the contaminant(s) present. The scores help determine relative risk at the site, but do not necessarily indicate a direct risk to people or the environment. The maximum score a site can receive is 120. The following 33 sites are on the WQARF Registry as of the end of FY 2000.

### **7th Street and Arizona Avenue**

**Site Boundaries:** The 7th Street and Arizona Avenue site is located in downtown Tucson, approximately one-third mile north of Broadway Boulevard and approximately three-fourths mile east of Interstate 10. The site boundary is a northwest-trending oval extending approximately 1,200 feet from the former Oliver's Cleaners facility at 300 E. Seventh Street (southeast corner of Seventh Street and Fifth Avenue) to approximately 150 feet north of Sixth Street and approximately 100 feet east of Seventh Avenue.

**Contaminants:** Tetrachloroethene (PCE), trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) at concentrations exceeding the Arizona Aquifer Water Quality Standards contaminated groundwater in the 7th Street and Arizona Avenue site.

**Public Health Impact:** The site contamination has not affected any drinking water wells. The nearest drinking water wells are located one-half to one mile northeast of the site at the University of Arizona.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Status:** ADEQ placed the site on the WQARF Registry in April 2000 with a score of

40 out of a possible 120.

### **16th Street and Camelback**

**Site Boundaries:** The 16th Street and Camelback site is bounded approximately by Medlock Drive to the north, 17th Street to the east, Pierson Street to the south and 14th Place to the west.

**Contaminants:** Investigations revealed soil contaminated with total petroleum hydrocarbons (TPH) and groundwater contaminated with tetrachloroethene (PCE), dichloroethane (1,2, DCA) and benzene, about five to 10 feet below the surface.

**Public Health Impact:** No one is known to be at risk of exposure to these contaminants. The contaminated groundwater is not used for drinking water purposes.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in June 2000 to all residences and businesses within the community involvement area to update them on site activities.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 23 out of a possible 120.

### **20th Street and Factor Avenue**

**Site Boundaries:** The 20th Street and Factor Avenue site is located approximately one-half mile south of 16th Street (U.S. Highway 95) and approximately three-quarters of a mile east of Fourth Avenue (Interstate 8 Business Loop) in Yuma. The site boundary is a northwest-trending oval extending approximately 1,000 feet from the Houston International facility at 655 E. 20th Street on the southeast to 19th Street and Rail Avenue on the northwest.

**Contaminants:** Tetrachloroethene (PCE) contaminates the site groundwater.

**Public Health Impact:** No irrigation, drinking water or other production wells are affected by the PCE contamination from the site. PCE is present in monitoring wells at concentrations above the Aquifer Water Quality Standards.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in March 2000 with a score of 31 out of a possible 120.

### **Broadway-Pantano**

**Site Boundaries:** The Broadway-Pantano site is located in east-central Tucson. The site is bounded approximately by Speedway Boulevard to the north, Pantano Wash to the east, Broadway Boulevard to the south and Wilmot Road to the west. The site consists of the closed Broadway North Municipal Landfill and associated groundwater contamination emanating from the landfill.

**Contaminants:** Groundwater at this site contains tetrachloroethene (PCE), trichloroethylene (TCE) and vinyl chloride at concentrations exceeding drinking water standards. PCE and TCE are volatile solvents commonly used in dry cleaning and metal cleaning operations, and vinyl chloride is often an end product when PCE and TCE chemically decompose in the environment.

**Public Health Impact:** Since the contaminated groundwater is 325 feet below the ground surface, there is no risk of exposure for people living or working above the groundwater contamination. Tucson Water shut down four wells at the site. St. Joseph's Hospital's well, which was also affected, has a wellhead treatment system to remove the contaminants to non-detectable levels.

**Community Involvement Activities:** ADEQ

established the Community Advisory Board (CAB) in November 1999. The CAB holds meetings on a regular basis.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in September 1998 with a score of 48 out of a possible 120. ADEQ re-evaluated the on July 6, 1999 and raised the score from 48 to 57.

The city of Tucson and Pima County installed a soil vapor extraction (SVE) system to remove contaminant gases which are dissolving into the groundwater. The system consists of six extraction wells located around the perimeter of the site, one injection well located in the center of the northern half of the landfill and one injection well located in the center of the southern half of the landfill. The SVE system began operation in June 2000 and is designed to operate for three years.

During the past year, the city and county developed a conceptual plan for an interim groundwater containment system to prevent, to the extent possible, further migration of the groundwater contamination within the city's central well field. The city and county will submit the plan to ADEQ August or September 2000, at which time it will also be available to the public.

The city and county are currently completing the remedial investigation for the groundwater and plan to submit the remedial investigation report to ADEQ in October 2000.

### **Central and Camelback**

**Site Boundaries:** The site is a bounded approximately by Missouri Avenue to the north, approximately 100 feet east of Central Avenue to the east, Pierson Street to the south and by a line approximately 600 feet west of Central Avenue to the west.

**Contaminants:** The groundwater beneath this site is contaminated with tetrachloroethene

(PCE), a common dry cleaning solvent. Several dry cleaners have operated at the site. Groundwater and the dissolved PCE contamination is found at approximately 45 feet below the ground surface, as detected in several nearby monitoring wells.

**Public Health Impact:** There is no known public health impact to drinking water because there are no drinking water wells within site boundaries. There is an irrigation supply well approximately one-half mile down-gradient that shows PCE at its depth of 400 feet.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in June 2000 to all residences and businesses within the community involvement area to update them on site activities. A Community Advisory Board will be formed by October 2000.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in January 1999 with an Eligibility and Evaluation (E&E) score of 31 out of a possible 120. ADEQ engaged a contractor to conduct an Early Response Action (ERA) at this site for remediation and to control contamination from migrating into an underground parking garage across Central Avenue. ADEQ is not currently conducting a remedial investigation/FS of the entire groundwater contaminated plume, but intends to conduct such activities in the future.

#### East Central Phoenix (ECP) 24th Street and Grand Canal

**Site Boundaries:** The boundaries of the 24th Street and Grand Canal site approximate a circle about 400 feet in diameter. The actual center of the circle is approximately 30 feet to the east of 24th Street and 10 feet to the north of the Grand Canal.

**Contaminants:** ADEQ plans to investigate this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site. The plume is small, appears to be stable and not

moving.

**Public Health Impact:** There is currently no known threat of direct exposure to the public from the contamination at the East Central Phoenix sites.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in May 2000 with a score of 29 out of a possible 120.

#### **ECP 32nd Street and Indian School Road**

**Site Boundaries:** The boundaries of the 32nd Street and Indian School Road site approximate a circle about 400 feet in diameter. The actual center of the circle is approximately 300 feet to the east of 32nd Street and 100 feet to the south of Indian School Road.

**Contaminants:** ADEQ plans to investigate this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site. The plume is small, appears to be stable and not moving.

**Public Health Impact:** There is currently no known threat of direct exposure to the public from the contamination at the East Central Phoenix sites.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in May 2000 with a score of 29 out of a possible 120.

#### **ECP 38th Street and Indian School Road**

**Site Boundaries:** The 38th Street and Indian School Road site is bounded approximately by

Indian School Road to the north, 38th Street to the east, Amelia Avenue to the south and 36th Street to the west.

**Contaminants:** ADEQ plans to investigate this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site.

Contamination is present in the groundwater at depths between approximately 20-35 feet below the ground. The plume is small, appears to be stable and not moving.

**Public Health Impact:** There is currently no known threat of direct exposure to the public from the contamination at the East Central Phoenix sites.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in 1998 with a score of 20 out of a possible 120.

#### **ECP 40th Street and Indian School Road**

**Site Boundaries:** The 40th Street and Indian School Road site is bounded approximately as follows: a diagonal starting near the intersection of 38th Street and Monterosa Street and ending near the intersection of 40th Street and Devonshire Avenue to the north, 40th Street to the east, a diagonal starting near the intersection of 38th Street and Piccadilly Road and ending northeast of the intersection of 40th Street and Indian School Road to the south and 38th Street to the west.

**Contaminants:** ADEQ plans to investigate this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site.

Contamination is present in the groundwater at depths between approximately 20-35 feet below the ground. The plume is small, appears to be stable and not moving.

**Public Health Impact:** There is currently no

known threat of direct exposure to the public from the contamination at the East Central Phoenix sites.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in 1998 with a score of 20 out of a possible 120.

#### **ECP 40th Street and Osborn Road**

**Site Boundaries:** The boundaries of the 40th Street and Osborn Road site approximate a circle about 800 feet in diameter. The actual center of the circle is approximately 400 feet to the west of 40th Street and 50 feet to the south of Osborn Road.

**Contaminants:** ADEQ plans to investigate this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site. The plume is small, appears to be stable and not moving.

**Public Health Impact:** There is currently no known threat of direct exposure to the public from the contamination at the East Central Phoenix sites.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in May 2000 with a score of 30 out of a possible 120.

#### **ECP 48th Street and Indian School Road**

**Site Boundaries:** The 48th Street and Indian School Road site is bounded approximately by a line 450 feet north of Indian School Road to the north, a line 300 feet west of 48th Street to the east, a line 150 feet south of Indian School

Road to the south and 45th Place to the west.

**Contaminants:** ADEQ has investigated this site due to the presence of tetrachloroethene (PCE) in the groundwater beneath the site. The plume is small, appears to be stable and not moving.

**Public Health Impact:** There is a nearby SRP irrigation well that SRP has stopped using because use of the well may pull contamination from this plume into the SRP well. ADEQ has negotiated an agreement with SRP to investigate the potential connection between their well and the plume.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 27 out of a possible 120. ADEQ completed a site investigation and indicated a potential connection may develop when the SRP well is operated. ADEQ is negotiating an expanded agreement with SRP to develop a source control remedy.

### **East Washington Fluff**

**Site Boundaries:** The East Washington Fluff site is bounded approximately to the north by Buckeye Road, to the east by 5th Street, to the south by Pima Street and to the west by a set of railroad tracks.

**Contaminants:** The site is 12 acres in size and contains significant quantities of auto shredder fluff co-mingled with native soils. Contaminants known to exist at the site are lead and polychlorinated biphenyls (PCBs), a substance historically used as a cooling oil in electric components.

**Public Health Impact:** A ten-foot fence was installed by ADEQ around the site with signage in English and Spanish to warn the public that

hazardous substances are present at the site.

**Community Involvement Activities:** The community involvement process will begin when ADEQ initiates a remedial investigation at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in June 1999 with a score of 22 out of a possible 120.

### **El Camino del Cerro**

**Site Boundaries:** The El Camino del Cerro site is located in northwest Tucson and is bounded approximately by the Rillito River on the north, Shannon Road on the east, El Camino del Cerro Road on the south and the Santa Cruz River on the west. The closed El Camino del Cerro Landfill occupies approximately 20 acres of land in the southwest portion of the site area, north of El Camino del Cerro road between the Santa Cruz River and I-10.

**Contaminants:** The primary contaminants of concern at the site include tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride, benzene and methane. Volatile organic compounds (VOCs) concentrations overall appear to be steadily decreasing throughout the site.

**Public Health Impact:** Many of the private wells along Highway Drive were impacted by the contamination. In April of 1987, Pima County began supplying bottled water to businesses along I-10, and in late 1989, Pima County purchased the private wells and connected the properties to the municipal water system. Since no one is known to be drinking contaminated water, no one is known to be at risk of exposure to the groundwater contaminants.

The Arizona Department of Health Services (ADHS) has conducted a preliminary risk assessment to address potential and/or current exposure to chemicals in groundwater and soil at the site. The preliminary risk assessment has been used to guide the investigation at the site

as well as help determine if a health-effects study in the area is warranted.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to all residences and businesses within the community involvement area. ADEQ has formed a Community Advisory Board for the site with the Shannon Road-Rillito Creek Site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in August 1998 with a score of 71 out of a possible 120.

Pima County Solid Waste Division has completed investigations of the groundwater and landfill at the site. Remedial investigations of the groundwater are ongoing. ADEQ has conducted investigations in the area including soil gas surveys and a soil removal action along Highway Drive.

A Landfill Gas Extraction Pilot Test was performed in September 1996. The extraction system was designed to utilize a series of gas extraction wells that remove landfill gasses to a flare where they are burned off. In 1999, the county conducted a biofilter system pilot test as an alternative to the flare. The biofilter system is currently in use. Between 20 and 40 pounds of VOCs are removed each week with this system.

ADEQ has completed the review of the feasibility study documents and agrees with the cleanup methods proposed for the site. Negotiations are in progress regarding the county's request for an early settlement agreement.

### **Estes Landfill**

**Site Boundaries:** The Estes Landfill site is bounded approximately by the Salt River to the north, the 153 Expressway to the east, Magnolia Street to the south and 40th Street to the west. Groundwater contamination from the landfill extends in an oval shape for approximately one-half mile to the west and north of

the landfill.

**Contaminants:** Compounds of interest for the soil are arsenic, lead and thallium. Compounds of interest for groundwater are vinyl chloride; trans-1,2-dichloroethene (DCE); cis-1,2-DCE; trichloroethene (TCE); 1,2-dichlorobenzene (DCB); chlorobenzene; 1,1-DCE; 1,4-DCB; tetrachloroethene (also known as PCE or PERK); benzene; 1,2-dichloroethane; chloroform; bis (2-ethylhexyl)phthalate; arsenic; barium; chromium; cadmium; lead; manganese; and nitrate as N. The historically unregulated landfill is reported to have accepted industrial, commercial, residential and liquid wastes.

**Public Health Impact:** Although the groundwater beneath the landfill is contaminated, there are no known drinking water wells within the area of contamination.

**Community Involvement Activities:** Superfund Programs Section mailed a factsheet to all of the residences and businesses within the community involvement area in December 1999, which provided an update on site activities and an opportunity to apply to the Community Advisory Board (CAB). ADEQ selected CAB members in February 2000, and the board has met several times.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 45 out of a possible 120. The final remedial investigation was completed by an ADEQ contractor on July 30, 1999. It is anticipated that the feasibility study report will be completed by January 2001. A tentative completion time frame for a record of decision (ROD) for this site has been set for December 2001. In December 1999, ADEQ mailed sixty-one request for information letters to facilities around the valley. The intent of the letters was to obtain information on any potential disposal of hazardous substances at the landfill while it was in operation. Additionally, thirteen request for information letters were mailed in February

2000 to other facilities identified as possibly having information related to disposal of hazardous substances at the site. Since February, ADEQ has mailed more than 400 request for information letters.

### **Klondyke Tailings**

**Site Boundaries:** The Klondyke Tailings site, in the unincorporated community of Klondyke, is on the north bank of Aravaipa Creek, approximately 4.5 miles upstream of the Aravaipa Canyon Wilderness Area. The boundaries of this site are irregular. The site is comprised of two piles of mine tailings, the soil between and adjacent to these piles, and the area approximately 50 feet into the stream bed of Aravaipa Creek, directly adjacent to the tailings piles. The site is bounded to the east by Klondyke Road.

**Contaminants:** The contaminants present are various metals left in the tailings following processing for lead, zinc and copper recovery. The metals present at levels higher than regulatory standards include lead, cadmium, antimony, beryllium, copper, manganese and arsenic. Physical evidence and testing of the groundwater and soil in the area indicate that runoff and leaching into Aravaipa Creek from the tailings piles may be occurring and flooding of the creek could erode contaminated materials into the creek bed.

**Public Health Impact:** Under a cooperative agreement with the Agency for Toxic Substances and Disease Registry, the Arizona Department of Health Services conducted a public health assessment of the Klondyke Tailings site. The results of the public health assessment suggest that the site does not pose a health risk to nearby residents, campers, swimmers, or ATV users, nor to those who consume fish from Aravaipa Creek.

**Community Involvement Activities:** Superfund Programs Section mailed a factsheet to all of the residences and businesses within the com-

munity involvement area in April 2000, which provided an update on site activities and an opportunity to sit on the Community Advisory Board (CAB). ADEQ has formed a CAB for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in September 1998 with a score of 69 out of a possible 120. ADEQ is investigating this site in order to effectively protect the water and natural resources in the area. ADEQ has hired a contractor to do the remedial investigation and feasibility study to further characterize the extent of contamination at the site. Preliminary soil sampling has been conducted for bioavailability testing. The results of that testing indicate a wide range of bioavailability for lead-contaminated soils and tailings, and a low level bioavailability for arsenic in soils and tailings.

### **Los Reales Landfill**

**Site Boundaries:** The Los Reales Landfill site is bounded approximately by Valencia Road on the north, Craycroft Road on the east, approximately one-quarter mile south of Los Reales Road on the south and Alvernon Way on the west. Within the site boundary is the Los Reales Landfill, an active municipal solid waste landfill located at 5300 East Los Reales Road consisting of approximately 376 acres in southeast Tucson.

**Contaminants:** The impact to the environment at this site is the contamination of groundwater by volatile organic compounds (VOCs). ADEQ has detected several VOCs in two down-gradient monitor wells including: tetrachloroethene (PCE), trichloroethene (TCE), trichlorofluoromethane, dichlorofluoromethane, chloroethane, 1,1-dichloroethene (DCE), methylene chloride and 1,1-dichloroethane (DCA). PCE and TCE concentrations have exceeded drinking water maximum contaminant levels (MCL).

**Public Health Impact:** The Risk Assessment for the site was finalized by ADHS in March 1994.

Results from the assessment indicate that, because contaminated water from the area is not currently being used for drinking water, no significant health risks associated with this site exist.

**Community Involvement Activities:** The community involvement process outlined in the approved remedial action plan will continue at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 32 out of a possible 120.

On March 10, 1999, the city of Tucson implemented a groundwater pump and treat remediation system. As of April 2000, the extraction wells were pumping approximately five gallons per minute per well. The city is currently focused on completing the remedial action (plume containment) by the end of the calendar year 2000.

In April 1999 and February 2000, the city identified further contamination south and east of the existing plume while drilling new monitor wells. Remaining work will include plume characterization, modeling and modifications to the pump and treat system to confirm plume containment as prescribed by the remedial action plan (RAP).

### **Miracle Mile**

**Site Boundaries:** The Miracle Mile site in Tucson is bounded approximately by Roger Road on the north, Flowing Wells Road on the east, Prince Road on the south and Bottletree Lane on the west.

**Contaminants:** The predominant contaminants of concern in groundwater are trichloroethene (TCE), tetrachloroethene (PCE), 1,1-dichloroethene (DCE) and methyl tertiary butyl ether (MTBE). ADEQ detected benzene and chromium in at least one well in the site above the Maximum Contaminant Levels (MCLs).

**Public Health Impact:** The Arizona Department of Health Services (ADHS) completed a draft Baseline Human Health Risk Assessment on the Miracle Mile Interchange Area in January 1995. ADEQ has identified no significant health risks associated with this site.

The Crescent Manor Mobile Home park was switched from a local supply well to Flowing Wells Irrigation District water in December of 1993, when sampling indicated that the water exceeded the federal drinking water MCL for TCE. Following water quality sampling that indicated no TCE contamination, Crescent Manor returned to using its private well. ADEQ is sampling the Crescent Manor well quarterly.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to residences and businesses in the community involvement area in June 1999, which provided an update on site activities and an application for the Community Advisory Board (CAB). ADEQ selected the CAB members in August 1999, and the board meets on a regular basis.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in September 1998 with a score of 62 out of a possible 120.

In the fall of 1983, groundwater beneath a trailer park within the former Miracle Mile study area was found to be contaminated. ADEQ began investigating the site by researching potential sources of the contamination. In 1988, the investigation continued with testing of soil and groundwater. ADEQ collected groundwater data, performed facility inspections and re-issued questionnaires to knowledgeable parties. Research was done to determine historic land use activities and property ownership. Between 1990 and 1997, ADEQ installed 11 monitor wells to investigate the contamination. ADEQ has begun the remedial investigation and feasibility study phase of the project. This involves fully determining the extent of the

groundwater contamination and considering remediation or cleanup options.

### **Park-Euclid**

**Site Boundaries:** The Park-Euclid site is located in Tucson and is bounded approximately by Broadway Boulevard on the north, Santa Rita Avenue on the east, 14th Street on the south and Euclid Avenue on the west. The site includes facilities located at both 299 and 301 South Park, where several companies have conducted laundry and dry-cleaning operations since the late 1930s.

**Contaminants:** ADEQ detected groundwater contamination from a combination of diesel product and volatile organic compounds (VOCs), including tetrachloroethene (PCE), trichloroethene (TCE) and 1,1 dichloroethene (1,1-DCE), at the site. Both PCE and TCE were present in concentrations above Aquifer Water Quality Standards (AWQS).

**Public Health Impact:** A preliminary risk assessment was completed by the Arizona Department of Health Services (ADHS) in March 1995. There are no significant health risks associated with the site at this time.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to residences and businesses in the community involvement area in December 1999, which provided an update on site activities and an opportunity to sit on the Community Advisory Board (CAB). ADEQ selected CAB members in February 2000, and the board meets regularly.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 51 out of a possible 120.

**Mission Linen** installed a soil vapor extraction (SVE) system beneath the facility at 301 South Park in spring 2000. The SVE system is currently operating.

The Environmental Protection Agency (EPA) initiated site assessment activities in the area in September 1998 with the installation of two up-gradient shallow groundwater monitor wells. In February 2000, EPA informally delegated responsibility for the site to ADEQ.

ADEQ initiated remedial investigations in October 1999. As part of these investigations, ADEQ began quarterly groundwater sampling of two University of Arizona (UA) water supply wells located down-gradient from the site in November 1999. Three groundwater monitor wells were also installed south of the UA Main Campus in January 2000 to monitor groundwater conditions in this area. Groundwater samples taken from these monitor wells in January did not indicate the presence of contamination. In February 2000, quarterly sampling was initiated in the existing monitor wells in the immediate vicinity of the site. Remedial investigations are expected to continue through December 2000.

### **Payson PCE**

**Site Boundaries:** The Payson PCE site is located in Payson and is bounded approximately by Frontier Street to the north, Beeline Highway (State Route 87) to the east, Aero Drive to the south and McLane Road to the west.

**Contaminants:** The primary contaminant of concern is tetrachloroethene (PCE), a solvent commonly used in dry-cleaning. The PCE is present in the groundwater below the site's ground surface.

**Public Health Impact:** ADEQ and the town of Payson have taken precautions to prevent public exposure to the contamination. They have not put the heavily contaminated municipal wells into production for public supply without adequate treatment. The Arizona Department of Health Services (ADHS) developed a "Statement of Risk" to address the risks associated with consumption of water from contaminated

private wells in the area. The conclusions about health risks from residential use of contaminated private well water are considered tentative. In March 1997, the site boundaries were expanded to include additional private domestic wells located to the north and south of the site. Several of these wells were found to be contaminated with PCE above the Maximum Contaminant Level (MCL). ADEQ informed the owners that drinking the well water could be unhealthy, and that ADEQ would provide a temporary supply of bottled water for the owners' use until the owners could secure an alternative supply. Two wells, which are being used for commercial operations in the area, exceed the MCL for PCE. These two wells continue to be used, but the water is not used for human consumption.

**Community Involvement Activities:** ADEQ established a Community Advisory Board (CAB) in June of 1998. The CAB provides community outreach and is involved in the planning and execution of a yearly public open house at the expanded groundwater treatment system.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April of 1998 with a score of 63 out of a possible 120. The 1990 discovery of contamination in two unused municipal wells at 204 West Aero Drive caused the initial investigations to begin at the site. ADEQ investigated the situation and found that PCE affected a number of private wells in the immediate vicinity. The private well owners were informed of the situation and elected to use bottled water for consumption, which is being supplied by ADEQ on an interim basis, ADEQ evaluates while cleanup and supply alternatives. Continuing tests indicate that the PCE did not affect the town of Payson's municipal water supply.

Construction of an interim groundwater treatment system was completed in September 1997. Construction of an expanded groundwater treatment system was completed in October

1998. Both the interim and the expanded treatment systems are now operational, pumping and treating approximately 300-400 thousand gallons of water a day, and delivering the clean water to the town of Payson's municipal water supply.

### **Pinal Creek**

**Site Boundaries:** The Pinal Creek site is located in the Globe-Miami area and has irregular boundaries. Within the southern portion of the site, the boundary follows and includes the entire mine sites of Phelps Dodge Miami, Inc. (Phelps Dodge Miami Mine, formerly Inspiration Mine) and BHP Copper, Inc. (the Miami Mine, the Copper Cities Mine, the Old Dominion Mine and related properties, and the Solitude Tailings). The southern boundary follows the southern margin of the flood plain of Bloody Tanks Wash through the town of Miami and the community of Claypool, then turns south to include the BHP Solitude Tailings. The boundary follows the eastern margin of the flood plain of Russell Gulch and Miami Wash northward to the confluence with Pinal Creek. The boundary parallels both sides of upper Pinal Creek to the city of Globe, including the Old Dominion Mine and related mine properties in the Globe Hills. North of the confluence of Miami Wash and Pinal Creek, the boundary parallels Pinal Creek on both sides including the flood plain of Pinal Creek plus a margin approximately 1000 feet wide surrounding the flood plain as far north as Inspiration Dam. North of Inspiration Dam, the boundary follows the flood plain of Pinal Creek. The northern boundary terminates at the Salt River.

**Contaminants:** Numerous contaminants are present at the site in groundwater, surface water and soils. The contaminants that are present at levels above regulatory standards or above background levels include aluminum, arsenic, beryllium, cobalt, cadmium, copper, fluoride, iron, lead, sulfate, manganese, nickel, zinc and sulfuric acid.

**Public Health Impact:** Direct exposure to the contaminants could occur from the consumption of contaminated surface water or groundwater, or from the ingestion or inhalation of contaminated soil particles. Water provided by the local water suppliers (the Arizona Water Co., the city of Globe and others) comes from the deeper regional aquifer and meets both state and federal water quality standards.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to all of the residences and businesses within the community involvement area.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in October 1998 with a score of 97 out of a possible 120.

An interim remedial action began in 1990. This consists of groundwater extraction from the alluvial aquifer at four locations along Pinal Creek-Miami Wash. This remedial action has removed approximately 27,000 tons of metals and 121,000 tons of sulfate from the alluvial aquifer. ADEQ has implemented numerous source control remedial actions at the site, including the draining of Webster Lake, Ellison Pond and other impoundments. Since 1988, ADEQ has removed contaminated groundwater from the alluvium of the buried channel of Webster Gulch at the Phelps Dodge Miami property.

Groundwater extraction in lower Pinal Creek began in October 1998. The Pinal Creek Group has replaced 61 private wells with new wells in the deeper regional aquifer. The Pinal Creek Group has entered into an agreement to provide potable water to the Arizona Water Company.

ADEQ and the Pinal Creek Group entered into a settlement agreement in August 1997. Following implementation of some remedial investigation work required by the consent decree, and approval of the feasibility study, a final remedial

action plan will be developed that addresses all remedial actions required at the Site. The Pinal Creek Group previously completed remedial investigations into the degree and extent of contamination, and human-health and ecological risk assessments, which ADEQ has approved.

In April 1998, ADEQ issued an administrative consent order requiring an expedited remedial action in lower Pinal Creek to prevent further degradation of water quality in the perennial portion of Pinal Creek. The order required the construction of a treatment plant in lower Pinal Creek to treat contaminated groundwater to meet the Arizona surface water quality standards by December 1, 1999. The treatment plant was completed in October 1999 and began treating contaminated groundwater in November 1999. Water removed and treated is discharged back to Pinal Creek. Currently, numeric surface water quality standards are being met in Pinal Creek.

#### Shannon Road-Rillito Creek

**Site Boundaries:** The Shannon Road-Rillito Creek site is located in northwest Tucson and extends approximately one-quarter mile to the north and south of Rillito Creek, and is bounded approximately by Meadowbrook Park to the east and Peglar Wash Park to the west.

**Contaminants:** The only contaminant currently known to be present at levels above the regulatory level in the groundwater underlying the site is tetrachloroethene (PCE).

In addition to PCE, ADEQ detected five other substances below regulatory levels in groundwater at the Shannon-Rillito site. The substances that are currently below regulatory levels in the groundwater at the site are 1,1-dichloroethane, 1,1-dichloroethene, cis- 1,2-dichloroethene, dichlorodifluoromethane (Freon 12) and trichloroethene (TCE).

**Public Health Impact:** Since no one is known to

be drinking contaminated water, no one is known to be at risk of exposure to the contaminants. A risk assessment will be completed prior to selection of a remedy for the site.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to all of the residences and businesses within the community involvement area. A Community Advisory Board has been established at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 53 out of a possible 120.

In 1993 volatile organic compounds (VOCs) were detected below regulatory standards in the city of Tucson Z-6A water supply well and this well was shut down. In 1994 VOCs were also detected below regulatory standards in the Metropolitan Domestic Water Improvement District (Metro Water) South Shannon well and in the Acacia Gardens Mobile Home Park water supply well. Metro Water redesignated the South Shannon well as a backup well and the water drawn from it was blended with the water from two other wells prior to distribution. In June 1997, Metro Water completed the installation of a wellhead treatment system for the South Shannon Well. In 1995, Acacia Gardens Mobile Home Park was connected to city of Tucson Water. In 1997, the owners of Acacia Gardens installed a wellhead treatment system for their well.

PCE concentrations in untreated city of Tucson Z-6A, Acacia Gardens and Metro Water South Shannon well water exceed regulatory standards. ADEQ has initiated a remedial investigation of the site to focus on defining the origin, nature and extent of contamination at the site.

#### **Silverbell Jail Annex Landfill**

**Site Boundaries:** The Silverbell Jail Annex site lies between, but is not bounded by, Silverbell Road on the west, Sweetwater Drive on the north, Interstate 10 on the east and Grant

Road/Ironwood Hill Drive on the south.

**Contaminants:** A groundwater contamination plume consisting primarily of the solvents tetrachloroethene (PCE) and trichloroethene (TCE) is present at the site. Other volatile organic compounds (VOCs) routinely detected in site monitor wells include vinyl chloride, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride and cis-1,2 dichloroethene. October 1999 groundwater quality data indicate concentrations of PCE at 250 micrograms per liter (g/L), TCE at 30.1 g/L and vinyl chloride at 13.2 g/L.

**Public Health Impact:** The Arizona Department of Health Services (ADHS) completed the draft health risk assessment for the Miracle Mile site in 1993. The draft risk assessment concluded that exposure through ingestion, inhalation, or dermal contact to groundwater containing arsenic posed the greatest potential risk. Arsenic was not identified in any sample at concentrations greater than the Maximum Contaminant Level (MCL) or Health Based Guidance Level (HBGL). However, ADHS determined there to be a high potential exposure risk due to the presence of arsenic and organic chemicals in the groundwater.

The Tra-Tel Mobile Home Park supply well showed PCE concentrations of 4.4 g/L on November 22, 1999. The EPA MCL is five g/L. Distributed water to the individual mobile homes is for non-drinking purposes such as cooking and showering. For drinking purposes, the Park has a filter attached to a fountain in a common area. ADEQ has little information on the filtering system and is unsure of the filter's effectiveness for removing PCE. As the Tra-Tel Mobile Home Park is classified as a transient non-community public drinking water supply system, it is regulated for total coliform, nitrate and nitrite only.

**Community Involvement Activities:** The community involvement process outlined in teh

approved remedial action plan will continue at the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1999 with a score of 51 out of a possible 120.

The city of Tucson completed an interim final Remedial Action Plan for the Silverbell Jail Annex Landfill. The plan consisted of containment and contaminant mass reduction with a pump and treat system which would extract groundwater from the aquifer and treat it by air stripping utilizing a carbon filter. Treated water would be reinjected into the aquifer and/or reused at Silverbell Golf Course.

In 1996, ADEQ approved the city's request to conduct a trial study to evaluate the effectiveness of recirculation well technology at the site to replace or enhance the approved pump and treat system. The city completed the study and submitted their report to ADEQ in March 1999. The city is currently deciding the effectiveness of utilizing such technology for groundwater remediation at the landfill. From October to December 1999, the city removed 180 pounds of volatile organic compounds (VOCs) using a pilot soil vapor extraction (SVE) system. The system removed soil gas underneath the south cell at the landfill. The south cell contains high enough concentrations of the soil gas to be considered a continuing source of groundwater contamination.

### **South Mesa**

**Site Boundaries:** The South Mesa site is bounded approximately by 10th Drive on the north, Stapely on the east and the railroad south of Baseline on the south and west. The site includes industrial, commercial and residential areas.

**Contaminants:** The primary contaminant of concern at the site is tetrachloroethene (PCE), a solvent, which is present in the groundwater approximately 110-130 feet beneath the

ground.

**Public Health Impact:** No drinking water wells are threatened by this contamination plume. The nearest drinking water well is approximately one-half mile from the down-gradient plume edge. As part of the remedial action plan for interim remediation of one of the two contaminated SRP wells, a preliminary risk assessment was conducted.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet to residences and businesses in the community involvement area in April 2000. ADEQ will form a CAB for this site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in August 1998 with a score of 26 out of a possible 120. ADEQ implemented two early remedial response action projects, which have significantly reduced the concentration of PCE. The first early response action was a wellhead treatment system operated from 1994 through 1996 by Salt River Project (SRP) on their well at the northeast corner of Baseline Road and Mesa Drive. In 1996, the concentration of PCE in the water pumped became less than the concentration regulated under the National Pollutant Discharge Elimination System (NPDES) and operation of the treatment system was discontinued. The well is pumped for irrigation purposes, as needed.

The second early remedial response action was a soil vapor extraction (SVE) system operated at a facility about 500 feet south-southwest of the SRP well (up-gradient to the flow of groundwater). PCE was found in soil samples taken at this facility. The SVE system was operated for several months in 1996 and a significant amount of PCE was extracted. After several months of no operation in 1997, the SVE system was restarted in 1997. However, after several weeks of operation only a slight amount of PCE was extracted. This indicated that additional SVE might not be cost effective. The

data collected to date are being reviewed to determine the remaining actions necessary to complete the remedial investigation for the site.

### **Tonto and Cherry**

**Site Boundaries:** The Tonto and Cherry site is located in Payson, approximately 400 feet west of the Beeline Highway and immediately north of Main Street. The site boundary is a north-west-trending oval, extending approximately 1,200 feet from the intersection of Main Street and Colcord Avenue.

**Contaminants:** Tetrachloroethene (PCE) has affected groundwater at the site. ADEQ detected PCE in five private drinking water wells at the site.

**Public Health Impact:** The Maximum Contaminant Level (MCL) for PCE is five micrograms per liter (g/l). The PCE concentrations in three private wells at the site exceed this standard, and drinking water from these private wells poses a threat to the public health. Bottled drinking water is being provided to these private well owners on a temporary basis.

**Community Involvement Activities:** The Superfund Programs Section will mail a factsheet containing a Community Advisory Board (CAB) application to all of the residences and businesses within the community involvement area in August 2000. The CAB that ADEQ established for the Payson PCE site will include the Tonto and Cherry site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in June 2000 with a score of 45 out of a possible 120.

### **Tyson Wash**

**Site Boundaries:** The Tyson Wash site is bounded approximately by the groundwater plume which extends 300 feet to the north of Cowell Lane to the north, 400 feet east of Washington Boulevard to the east, 300 feet south of Cowell Lane to the south and 200 feet west of Oregon

Avenue to the west. The known groundwater contamination exists northwest of the intersection of State Hwy 95 and Business Route I-10 in the town of Quartzsite, Arizona.

**Contaminants:** Tetrachloroethene (PCE), a solvent commonly used in dry cleaning, is present in the groundwater approximately 40-70 feet below the ground.

**Public Health Impact:** The PCE contamination currently appears to be limited to groundwater in the upper aquifer located approximately 40 to 70 feet below the land surface. This aquifer is used as a source of drinking water for the area with approximately 40 drinking water wells within a one-quarter mile radius of the site. The lower aquifer, 525-560 feet below ground surface, has shown no evidence of contamination to date. Additionally, ADEQ attributes the high nitrate concentrations in groundwater in the upper aquifer to historical sewage disposal practices.

The town of Quartzsite, a public water provider, provides drinking water to some residents in the Tyson Wash site. The town of Quartzsite designated "phases" in which they will hook residents up to the water system. Residents who are not connected to the water system rely on private water wells to supply drinking water. There are 835 drinking water wells within a four mile radius of the site. The population during the winter season ranges from approximately 100,000 to 500,000 people (Bureau of Land Management). The number of people served per well ranges from approximately 25 to 2000 people, based on an ADEQ Water Quality Division data report for active systems.

**Community Involvement Activities:** ADEQ established a Community Advisory Board (CAB) in January 2000. The CAB meets regularly at the Quartzsite Library. ADEQ and La Paz County held a public meeting in the town of Quartzsite on Sept. 25, 1996, to inform the community about current drinking water and

groundwater issues, including ADEQ's activities related to the Tyson Wash site. ADEQ staff participated in a public meeting in the town of Quartzsite on Nov. 29, 1999, to discuss the remedial investigation and feasibility study for the site which ADEQ initiated in March 2000.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in December 1998 with a score of 46 out of a possible 120.

### **Vulture Mill**

**Site Boundaries:** The Vulture Mill site is located just east of North Tegner (Highways 89 and 93) about one mile northwest of the center of the town of Wickenburg. The eastern boundary of the site is approximately one-quarter mile west of the Hassayampa River Channel. The site is on private land owned by four separate parties and consists of a former gold-ore milling. The tailings and affected soil are found in an area about 22 acres on up to four separate properties.

**Contaminants:** The average concentration of lead in the mill tailings (5,000 parts per million (ppm)) exceeds the concentration allowed on residential property (400 ppm) or non-residential property (2,000 ppm). The highest concentration of lead in the tailings is reported to be approximately 11,000 ppm.

**Public Health Impact:** Elevated levels of lead are found in the groundwater nearby, including areas in which private wells are used for drinking water. ADEQ has tested the water from potentially affected wells and found that properly constructed wells show no lead in concentrations known to be harmful to people. The town's drinking water supply is regularly tested and is required by law to meet all state and federal drinking water standards.

A human health risk assessment for the tailings/soils was completed in June 1999. This report documents that the site in its current condition presents an unacceptable risk. A key

factor in this determination is the fact that bioavailability tests on the tailings found the lead to be, on average, 68 percent bioavailable.

**Community Involvement Activities:** ADEQ established a Community Advisory Board (CAB) for the site in August 1998. The project manager and the contractors completing investigative work at the site provide the board with regular updates.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 65 out of a possible 120.

The Proposed Remedial Action Plan recommending the final remedy for the site was made available for public comment in October 1998. In response to public comments, a human health risk assessment was conducted. The results of the risk assessment, completed on June 25, 1999, showed that the site poses an unacceptable risk and clean-up is appropriate. The Record of Decision (ROD) for this site was signed on September 2, 1999. The ROD selected the cover alternative for the vadose zone (soil) portion of the final remedy and one year of quarterly groundwater monitoring with a follow-up evaluation for the groundwater portion of the remedy.

The 60 percent Design for the vadose zone portion of the final remedy was submitted to ADEQ in May 2000 and is expected to be finalized in November 2000. ADEQ is hiring a contractor to conduct quarterly groundwater monitoring which is expected to begin by fall 2000.

### **WCP East Grand Avenue**

**Site Boundaries:** The East Grand Avenue site is bounded approximately by Whitton Avenue on the north, 29th Avenue on the east, Osborn Road on the south and 30th Avenue on the west.

**Contaminants:** Contaminants known to be present in groundwater at levels above regulatory limits include the chlorinated solvents tetra-

chloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride.

**Public Health Impact:** To date, testing in the WCP area indicates almost no chance of human contact with the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. ADEQ has shut down contaminated drinking water wells in the area. ADEQ will conduct health risk assessments at sites where remedial investigations and feasibility studies are being conducted to evaluate potential health risks.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area. ADEQ formed a Community Advisory Board for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 26 out of a possible 120. The site remedial investigation continues. During FY 2000, ADEQ installed eight groundwater monitoring wells and conducted four rounds of groundwater sampling of all wells that are part of the monitoring network. Laboratory results for the first two rounds of groundwater sampling are currently being evaluated to determine the locations of additional monitor wells. ADEQ is also evaluating the on-site soil data obtained from the soil investigation phase of the remedial investigation.

#### **WCP West Grand Avenue**

**Site Boundaries:** The West Grand Avenue site is bounded approximately by Osborn Road on the north, 33rd Avenue on the east, Earll Drive on the south and 35th Avenue on the west.

**Contaminants:** Contaminants known to be present in groundwater at levels above regulato-

ry limits include the chlorinated solvents tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride.

**Public Health Impact:** To date, testing in the WCP area indicates almost no chance of human contact with the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. ADEQ shut down contaminated drinking water wells in the area. ADEQ will conduct health risk assessments at sites where remedial investigations and feasibility studies are being conducted to evaluate potential health risks.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area. ADEQ formed a Community Advisory Board for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 17 out of a possible 120. ADEQ shut down the interim remedy soil vapor extraction (SVE) system in May 1998. The SVE system will start up again in the near future to determine if trichloroethylene (TCE) is again present in soil vapors at the site. If TCE concentrations remain minimal, ADEQ will consider the soil remediation complete and will shut down the SVE system.

#### **WCP North Plume**

**Site Boundaries:** The North Plume site is bounded approximately by Turney Avenue on the north, 38th Avenue on the east, Indian School Road on the south and 43rd Avenue on the west.

**Contaminants:** Contaminants known to be present in groundwater at levels above regulatory limits include the chlorinated solvents tetra-

chloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride.

**Public Health Impact:** To date, testing in the WCP area indicates almost no chance of human contact with the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. ADEQ shut down contaminated drinking water wells in the area. ADEQ will conduct health risk assessments at sites where remedial investigations and feasibility studies are being conducted to evaluate potential health risks.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area. ADEQ formed a Community Advisory Board for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 50 out of a possible 120. The Remedial Investigation continues. During FY 2000, ADEQ installed 18 groundwater monitoring wells. Through the installation of four angled soil vapor extraction (SVE) wells and three soil vapor monitoring (SVM) wells, ADEQ has taken initial steps to remediate the soil at the F&B facility. ADEQ also plans for a soil removal action at the F&B facility to remove PCE-contaminated soil beneath the vapor degreaser location in July 2000.

### **WCP North Canal Plume**

**Site Boundaries:** The North Canal Plume site is bounded approximately by Indian School Road on the north, 36th Avenue on the east, Clarendon Avenue on the south and 40th Avenue on the west.

**Contaminants:** Contaminants known to be present in groundwater at levels above regulatory

limits include the chlorinated solvents tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride. **Public Health Impact:** To date, testing in the WCP area indicates almost no chance of human contact with the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. ADEQ has shut down contaminated drinking water wells in the area. ADEQ will conduct health risk assessments at sites where remedial investigations and feasibility studies are being conducted to evaluate potential health risks.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area. ADEQ formed a Community Advisory Board for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in June 1998 with a score of 22 out of a possible 120. In January 2000, ADEQ awarded a contract for the conduct of an remedial investigation/FS at the WCP North Canal site. The remedial investigation field investigative activities (which include the installation of a minimum of eight monitor wells, soil sampling, geophysical testing, aquifer tests, quarterly groundwater sampling and monthly water level measurements) are expected to be completed by September 2001.

### **WCP West Osborn Complex (WOC)**

**Site Boundaries:** The West Osborn Complex site is bounded approximately by the Grand Canal on the north, 34th Drive on the east, Pinchot Avenue on the south and 39th Drive on the west.

**Contaminants:** Contaminants known to be present in groundwater at levels above regulatory limits include the chlorinated solvents tetra-

chloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA) and vinyl chloride.

**Public Health Impact:** To date, testing in the WCP area indicates almost no chance of human contact with the contamination. Sampling shows that the contaminated soils are under asphalt parking lots or asphalt-surfaced storage areas, or under the concrete floors of buildings. ADEQ has shut down contaminated drinking water wells in the area. ADEQ will conduct health risk assessments at sites where remedial investigations and feasibility studies are being conducted to evaluate potential health risks.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area. ADEQ formed a Community Advisory Board for the site.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in 1998 with a score of 47 out of a possible 120. ADEQ provides regulatory oversight and technical review of investigations and site activities performed by United Industrial Corporation. The hydrologic system beneath the site changed dramatically during FY99 due to the concrete lining of the SRP Grand Canal. Water levels beneath the site dropped approximately 20 feet. As a result of these changes, the Design for the Interim Groundwater Pump-and-Treat system approved by ADEQ in FY98 became no longer feasible nor appropriate. Contamination in the groundwater beneath the WOC facility became trapped in the soil after the drop in the water table.

In FY99, the settling party conducting the remedial investigation/FS at the site proposed an alternative approach to interim remediation: soil vapor extraction (SVE). In FY99, the settling party developed a Design Plan for a SVE system. Three SVE wells were installed during

April 1999 and the SVE system began operating August 1999. The settling party has agreed to install at least three groundwater monitoring wells to complete the remedial investigation. The remedial investigation and FS are expected to be finalized during FY 01.

### **West Van Buren**

**Site Boundaries:** The West Van Buren site is bounded approximately by Van Buren Street on the north, Seventh Avenue on the east, Buckeye Road on the south and 83rd Avenue on the west. In addition, a finger shaped plume exists between Seventh and 27th Avenues between Buckeye and Lower Buckeye Roads.

**Contaminants:** The groundwater contamination plume consists primarily of the solvents tetrachloroethene (PCE) and trichloroethene (TCE). The contamination is present in the groundwater approximately 40 to 80 feet below the surface.

**Public Health Impact:** Groundwater in the area is not used for drinking water purposes. The entire area is served by the city of Phoenix municipal water system or other regulated systems. There should be no direct exposure to people living or working in the area of the site.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in Nov. 1999 to the residences and businesses within the community involvement area 1999. ADEQ formed a Community Advisory Board, which meets regularly.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in April 1998 with a score of 50 out of a possible 120. A groundwater flow model for the area is under development. Water quality data are being collected semiannually. Water elevation information is collected monthly from approximately 60 wells. An early response action is being designed for the American Linen Supply Company site at 720 West Buchanan. A soil vapor extraction

and air sparging early response action is in operation at the Dolphin site at 740 S. 59th Avenue. Dolphin is planning to expand its groundwater monitoring network during FY 2000. A soil investigation will be conducted by Dolphin under the oversight of ADEQ's Hazardous Waste program as a result of a settlement reached by ADEQ and the Attorney General's office with Dolphin on Jan. 13, 2000.

### **Western Avenue Plume**

**Site Boundaries:** The Western Avenue Plume site is bounded approximately by the groundwater contamination plume which generally extends from Hill Drive (north of Western Avenue) to the north, Third Street to the east, approximately 1000 feet north of State Route 85 to the south and the Phoenix-Goodyear Airport to the west.

**Contaminants:** The principle contaminant at the site is tetrachloroethene (PCE), a solvent commonly used in dry cleaning. The available data suggests that the PCE is currently limited to the upper groundwater aquifer (Subunit A) which is approximately 60-110 feet below ground surface.

**Public Health Impact:** Available data suggest that the PCE contamination is currently limited to Subunit A groundwater. Due to high nitrate concentrations from historical agricultural land practices, the Subunit A groundwater is used mainly as an irrigation source.

**Community Involvement Activities:** The Superfund Programs Section mailed a factsheet in April 2000 to the residences and businesses within the community involvement area.

**Site Score and Status:** ADEQ placed the site on the WQARF Registry in December 1998 with a score of 51 out of a possible 120. PCE was first discovered in the Phoenix-Goodyear Airport (PGA) South Federal Superfund Site monitoring wells in June 1993. The highest concentrations of PCE were detected in the wells up-gradient of PGA, which indicated that the source

of contamination could be near or up-gradient of the city of Goodyear Public Works Facility. In 1995, two monitoring wells were installed to determine the quality of groundwater east and north of the vicinity of the PGA South Superfund site. ADEQ will install five additional monitoring wells by fall 2000 as part of an early response action. The data collected from these wells will assist ADEQ in monitoring the cleanup of the PCE. The PCE cleanup is occurring by way of a nearby network of extraction wells and an air stripper at the Phoenix-Goodyear Airport. The treated water is reinjected down-gradient into the same aquifer. A remedial investigation is planned for the site when additional resources become available.

### ***National Priorities List (NPL) Sites (Federal Superfund)***

The National Priority List (NPL) is EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response under Superfund. Inclusion of a site on the list is based primarily on the score the site receives under the Hazard Ranking System. Money from Superfund can be used for cleanup only at sites that are on the NPL. EPA is required to update the NPL at least once a year.

### **19th Avenue Landfill**

**Site Boundaries:** The 19th Avenue Landfill site covers approximately 213 acres and is located in Phoenix at the southeast corner of 19th Avenue and Lower Buckeye Road. Prior to its use as a landfill in the late-1950s, the site was mined for sand and gravel. The gravel pits were later filled with municipal waste from local industries.

**Contaminants:** During the remedial investigation, the groundwater was found to contain very low levels of volatile organic compounds (VOCs), heavy metals including arsenic, barium, mercury and nickel and beta radiation. Currently, the only compound that is above drinking water standards is 1,1-dichloroethene

(1,1-DCE). Sampling of soil and refuse in the landfill indicated that the contents of the landfill are similar to those expected in municipal landfills, however, industrial wastes were also disposed of at the site. During the remedial investigation, the most frequently detected VOCs were ethyl benzene, 1,4-dichlorobenzene, xylenes and toluene.

**Public Health Impact:** The baseline risk/health assessment prepared by the Agency for Toxic Substances and Disease Registry indicates that the contaminated groundwater flowing underneath the landfill is not considered to be a threat to public health. Groundwater in the area is not used as drinking water. The nearest drinking water supply well is over three miles away. An industrial well and a down-gradient agricultural well are located 200 feet and 800 feet, respectively, from the site; there is no known contamination of these wells at this time.

**Community Involvement Activities:** No community involvement activities are planned at this time.

**Site Status:** The site was placed on the EPA National Priority List in September 1983. ADEQ was assigned oversight authority of the project in 1988. A Consent Decree entered in June 1992 required capping of the landfill cells, removal and treatment of methane gas, monitoring of groundwater, flood control improvements and bank stabilization, and a contingency plan to treat groundwater if standards are exceeded. This project is in the operations and maintenance phase. Quarterly groundwater monitoring, monthly methane monitoring and inspections of the landfill cap, flood control structures and landscaping continue. By the end of September 2000, ADEQ and EPA will complete the five-year review for the site.

### **Apache Powder**

**Site Boundaries:** The Apache Powder Superfund site is located in Cochise County, Arizona,

approximately seven miles southeast of the incorporated town of Benson and 2.5 miles southwest of the unincorporated town of St. David. The site study area covers approximately nine square miles and includes 945 acres of land owned by Apache Nitrogen Products, Inc. (ANP), formerly known as the Apache Powder Company. The San Pedro River bounds the eastern side of the site, running from the southeast corner of the property towards the northwest.

**Contaminants:** Contaminants of Concern (COCs) found at the Apache Powder site include: arsenic, fluoride and nitrate in the perched groundwater; nitrate in the shallow groundwater aquifer; arsenic, antimony, barium, beryllium, chromium, lead, manganese and nitrate in the inactive pond soils and sediments; as well as 2,4-DNT, 2,6-DNT and lead in Wash Area 3. Soil contaminants include metals, nitrate-N, spent catalyst material (vanadium pentoxide) and 2,4-dinitrotoluene (DNT). Additionally, ADEQ found the vanadium pentoxide and TNT in soils on the site and perchlorate in the perched and shallow aquifer.

**Public Health Impact:** Currently there are no known human exposures to groundwater contamination at this site. In 1994 ANP replaced a number of shallow aquifer domestic wells that had nitrate contamination with deeper regional aquifer wells. ADEQ has not detected perchlorate in any domestic wells.

**Community Involvement Activities:** EPA recently developed and distributed the following newsletters and factsheets: *Status of Apache Cleanup Activities – May 1999*, *TNT Removal Action Planned for December 1999 – November 1999*. EPA and ADEQ participated in a community meeting in St. David, Ariz on Oct. 14, 1999.

**Site Status:** The site was listed on the National Priorities List (NPL) on Aug. 30, 1990. Apache Nitrogen Products, Inc. (ANP) is conducting

CERCLA remedial design/remedial action activities under a unilateral administrative order issued by the EPA in December 1994.

The remedial investigation revealed nitrate-nitrogen (nitrate-N) contamination in perched groundwater exceeding 1000 parts per million (ppm) as well as concentrations up to 220 ppm in the San Pedro River. The federal drinking water standard for nitrate-N is ten ppm.

Groundwater samples were analyzed for perchlorate at the site in November 1998. These samples showed perchlorate contamination ranging up to 670 parts per billion (ppb) in the perched aquifer and 300 ppb in the shallow aquifer. More extensive sampling of the San Pedro River is planned to confirm that there are no perchlorate impacts. At this time, the perchlorate contamination appears to be confined to the southern area of the site. Although neither EPA nor ADEQ have a drinking water standard for perchlorate, the Arizona Department of Health Services issued a Health Based Guidance Level for perchlorate in drinking water of 14 ppb in May 2000.

EPA's Record of Decision (ROD) for the site issued in September 1994 addresses cleanup of the perched aquifer, the shallow aquifer and contaminated soils currently being regulated under the CERCLA program. In addition, ADEQ has completed an EPA-mandated Removal Action for TNT-contaminated soils. DNT, vanadium pentoxide and arsenic contaminated soils were also excavated and removed.

Construction of a Northern Area Treatment Wetland to treat nitrate-N contaminated groundwater in the northern portion of the site was completed in September 1997. The wetland was planted with aquatic vegetation and contaminated water (high-nitrate-N groundwater from the shallow alluvial aquifer) was added to establish the vegetation. The wetland is in the establishment phase.

### **Hassayampa Landfill**

**Site Boundaries:** The Hassayampa Landfill site is located about ten miles west of Buckeye, Arizona and is approximately six miles east of the Palo Verde Nuclear Generating Station. The site consists of about ten acres used for historical hazardous waste disposal which lies within a 47-acre landfill. The industrial waste disposal operations were independent of sanitary landfill activities.

**Contaminants:** Contaminants of Concern (COCs) detected at Hassayampa Landfill which exceeded the Federal Maximum Contamination Levels (MCLs) for groundwater include: 1,1-dichloroethene; trichlorotrifluoroethane; 1,1,1-trichloroethane; 1,1-dichloroethane; trichloroethene; tetrachloroethene; trichlorofluoromethane; 1,2-dichloroethene; 1,2-dichloropropane; and toluene. Ambient air contains very low levels of volatile organic compounds (VOCs). Groundwater sampling results also identified various VOCs. Soils beneath the waste pits contain VOCs, heavy metals, pesticides and lime wastes.

**Public Health Impact:** Risk assessment results indicate that potential health risks may exist for individuals who ingest the contaminated groundwater or come into direct contact with hazardous wastes present in several of the trenches.

**Community Involvement Activities:** The site is located in a sparsely populated area. ADEQ distributed a factsheet in December 1999 to residents and commercial businesses in the vicinity of the site.

**Site Status:** Prior to 1977, the landfill permitted the disposal of industrial wastes (predominantly empty pesticide drums). When the 19th Avenue Landfill was closed by the city of Phoenix, industrial waste was transported and disposed of at the Hassayampa Landfill. The Hassayampa Landfill received industrial waste under this manifest system from approximately

February 1979 to October 1980. The site was placed on the National Priorities List (NPL) on July 22, 1987.

EPA and certain Respondents entered into an administrative consent order in February 1988 requiring the Respondents to conduct a remedial investigation and feasibility study. The remedial investigation and feasibility study were completed in 1991 and 1992, respectively. EPA selected remedial actions in the Record of Decision (ROD), dated August 1992, which included groundwater extraction, treatment by air stripping and reinjection (began operation in March 1994), construction of a cap over the hazardous waste area to prevent direct contact with contaminated waste and soil left in place (constructed in June 1994), a soil vapor extraction system and treatment system with thermal oxidation to remove contaminants from the vadose zone in areas where waste and soil contamination is a threat to groundwater (began operation in July 1996), and access and deed restrictions.

In September 1997, EPA certified that construction was complete by issuing a Preliminary Closeout Report. The groundwater system continues to operate. The soil vapor extraction system was turned off due to mechanical difficulties and dioxin emission concerns. Groundwater is monitored semi-annually, the soil vapor treatment system is monitored monthly, and the soil cap is inspected annually and after severe rain storms for erosion.

### **Indian Bend Wash - North**

Site Boundaries: North Indian Bend Wash (NIBW) is the northern part of the area designated by EPA as the Indian Bend Wash (IBW) Superfund Site. The approximate boundaries of the site are Chaparral Road to the north, Pima Road to the east, Scottsdale Road to the west and just south of Curry Road to the south. In some locations, groundwater contamination extends beyond these boundaries, and those locations are considered part of the Superfund

site. The area consists primarily of residential and commercial areas and developed open areas such as parks.

Contaminants: In 1981, volatile organic compounds (VOCs) were discovered in area wells in concentrations exceeding Arizona Department of Health Services action levels. VOCs were used as degreasing agents and solvents at various industrial facilities located in the study area.

Public Health Impact: Groundwater at the site is used to irrigate various crops and feed livestock. In addition, contaminated groundwater is being treated to drinking water standards and supplied to the city of Scottsdale's municipal water supply.

Community Involvement Activities: ADEQ formed a Community Involvement Group, which meets regularly.

Site Status: The Indian Bend Wash site was listed on EPA's National Priorities List in September 1983. The majority of the clean-up activities are being addressed by Motorola and Siemens Corporations, the Participating Companies (PCs). In the September 1988 Record of Decision (ROD), EPA selected a remedy for the Lower and Middle Alluvial Units of the groundwater. The Scottsdale Operable Unit (OU I) involves operation of a groundwater treatment facility located at Pima Park (Thomas Road and 88th Street). The treated water is added to Scottsdale's public water distribution system. In September 1991, EPA issued a ROD for Operable Unit II (OU II), to address contamination in the upper alluvial unit of groundwater and contaminated soils. This ROD required soil vapor extraction systems at several source areas.

The OUI remedy failed to contain the lower alluvial unit groundwater plume. Hydrogeologic data indicated that the plume was migrating to the north and would threaten the Paradise Valley well field. In 1994, the PCs in cooperation with the Paradise Valley Water Company, con-

structed the Miller Road Treatment Facility at the northern end of the groundwater plume. The OUI Consent Decree requires the PCs to conduct a feasibility study addendum (FSA) to determine the effectiveness of the OUI remedy and to recommend a final remedy. Upon completion of the FSA, approximately fall 2000, EPA will issue the proposed plan which will state the selected final remedy for the site. The proposed plan will announce a 30-day public comment period on the selected remedy. Thereafter, EPA will issue an amended record of decision for OUI.

### **Indian Bend Wash - South**

**Site Boundaries:** The South Indian Bend Wash (SIBW) study area encompasses approximately four square miles in Tempe. SIBW adjoins the ten square mile area of North Indian Bend Wash. The site is primarily commercial/industrial north of University Avenue and residential to the south.

**Contaminants:** The groundwater in the SIBW area is mainly contaminated with volatile organic compounds (VOCs). Soil is contaminated with VOCs, cyanides, acids and heavy metals including chromium and lead.

**Public Health Impact:** All drinking water supply wells in the site boundary are inactive. Groundwater in the area is used for industrial purposes only. Drinking water is served by the city of Tempe municipal service from wells outside of the site boundaries.

**Community Involvement Activities:** No community involvement activities are planned at this time.

**Site Status:** The Indian Bend Wash site was listed on EPA's National Priorities List in September 1983. EPA issued administrative orders to five responsible parties within the site; soils and groundwater investigations are ongoing at these facilities. EPA issued a Record of Decision (ROD), dated September 1993, for VOCs in

soil. This ROD requires a "plug-in" remedy of soil vapor extraction systems (SVE). EPA and ADEQ are in the process of completing these "plug in" determinations. EPA issued a ROD for the groundwater operable unit in September 1998 for VOCs in groundwater. The groundwater remedy requires monitored natural attenuation for the central and eastern portions of the plume and a groundwater extraction and treatment system for the western portion of the plume. On March 30, 1999, EPA issued an administrative order to the potentially responsible parties for the work outlined in the groundwater ROD.

### **Luke Air Force Base**

**Site Boundaries:** Luke Air Force Base (LAFB) is located 13 miles west of downtown Phoenix on 4,198 acres. The base is bordered by Northern Avenue on the north, Dysart Road on the east, Camelback Road on the south and Reems Road and 159th Avenue on the west. The cities of Sun City, Sun City West and Litchfield Park are located northeast, north and south of the base, with the White Tank Mountains to the west.

**Contaminants:** Contaminants at the site include organic solvents and paint strippers, waste oil spills, petroleum spills, metal plating wastes, hydraulic fluids and radiological wastes. Soil is contaminated with waste oils and volatile organic compounds (VOCs) resulting from the diverse processes on the site. Groundwater is potentially contaminated with waste oils and VOCs.

**Public Health Impact:** Currently, there is no indication of groundwater contamination. Potential human health hazards include accidental ingestion or direct contact with contaminated materials. A base-wide risk assessment has shown that contaminants left in place will not pose a risk to human health or the environment.

**Community Involvement Activities:** LAFB has an active Restoration Advisory Board (RAB).

Recently, the RAB was changed to a Community Advisory Board due to the anticipated Base de-listing from the National Priorities List.

**Site Status:** The EPA added LAFB to the National Priorities List (NPL) in 1990. The base is divided into two operable units: (OU-1) is Luke Air Force Base site-wide final remedy, and (OU-2) includes remediation and investigation of soils at eight sites. Two sites in OU-2 required a remedy selection. One site used biodegradation for remediation of polycyclic aromatic hydrocarbons (PAHs) in the soil. The other site required a soil cap and cap maintenance. Only two out of 25 sites in OU-1 require active remediation. Seven of the 25 sites have institution controls as the selected remedy. The rest of the sites do not require remediation; a base-wide risk assessment has shown that contaminants left in place will not pose a risk to human health or the environment. The two sites that require active remediation are the Petroleum, Oil and Lubricants (POL) area and the old construction debris landfill adjacent to the skeet range. The POL area was being remediated by a soil vapor extraction - internal combustion engine (SVE-ICE) system through November 2, 1998. The skeet range is still active and lead shot that has migrated onto the landfill was remediated in December 1999. The OU-1 Record of Decision (ROD) was signed by ADEQ on Aug. 16, 1999, the OU-2 ROD was signed by ADEQ in January 1994. Currently LAFB is in the process of being de-listed from the NPL. The Waterdog Recreation Annex, at Apache Lake, was passed on to Luke Air Force Base from the closed Williams AFB in order to continue the investigation and remediation of the area. Three new monitoring wells were installed in July 1999.

### **Motorola 52nd Street**

**Site Boundaries:** The Motorola 52nd Street site is located in a residential and commercial area in the central and eastern parts of the city of Phoenix. Major geographic features are the Papago Buttes to the east of the former Motoro-

la plant, the Salt River flowing westerly about one mile to the south, the Old Crosscut Canal located along 46th Street and the Grand Canal which flows northwesterly through the area west of 40th Street and Van Buren Street. Phoenix Sky Harbor Airport is located approximately 1½ miles to the southwest. ADEQ has divided the site into three operable units. The boundaries for Operable Unit 1 are 52nd Street to the east, Palm Lane to the north, Roosevelt Street to the south and 46th Street to the west. The boundaries for Operable Unit 2 are Roosevelt Street to the north, 46th Street to the east, Buckeye Road to the south and 14th Street to the west. The approximate study area of Operable Unit 3 is McDowell Road to the north, 14th Street to the east, Buckeye Road to the south and Seventh Avenue to the west.

**Contaminants:** The major contaminant of concern is trichloroethene (TCE) contamination of the groundwater.

**Public Health Impact:** The site has not affected any drinking water supply wells. Drinking water is currently supplied by the city of Phoenix distribution system from surface water located outside of the site. The contaminated groundwater in this area is not being used for drinking water.

**Community Involvement Activities:** EPA developed and distributed the following newsletters and factsheets : *Construction of Groundwater Treatment System Plant Planned* (English/Spanish) – November 1999, *Construction Plans for Motorola, Inc. (52nd St. Plant) Superfund Site Cleanup* – February 2000. ADEQ held a public meeting to provide a site update on March 2, 2000 at the Wilson School District Offices Board Room, located at 3025 E. Fillmore Street, in Phoenix.

**Site Status:** The Motorola 52nd Street site was proposed for the National Priorities List (NPL) in October 1984 and placed on the NPL in September 1989. Since 1988, ADEQ has had the lead enforcement role at the site. The

Motorola plant was originally constructed in 1956 and was in operation until the third quarter of 1999 when an investment group, led by Texas Pacific Group, purchased Motorola's Semiconductor Components Group. Motorola remains responsible for its share of the remediation effort. The Honeywell facility was constructed in 1951 and continues to operate today. Historically, the Honeywell facility has operated under the names of Garrett and AlliedSignal. Motorola signed a Consent Order on June 20, 1989 agreeing to implement a groundwater and soil remedy for Operable Unit 1 (OU1). OU1 consists of on-site soil gas recovery and treatment, plus on-site and off-site groundwater recovery which is conveyed to an on-site facility. These remedies provide containment of groundwater contamination (mainly TCE) detected east of the Old Crosscut Canal. ADEQ is in the process of conducting a five-year review of the OU1 area to evaluate whether the remedy at the site remains protective of human health and the environment. The five-year review report will be available to the public by December 2000.

On Oct. 22, 1996, Motorola and the city of Phoenix signed a Consent Decree with ADEQ to implement the design of a groundwater containment and treatment system for the second operable unit, Operable Unit 2 (OU2). The interim remedy selection was finalized in the OU2 Record of Decision in July 1994. The purpose of the interim remedy is to provide additional containment of highly contaminated portions of the groundwater. The interim remedy includes groundwater extraction near 20th Street and Washington, treatment of the water by ultraviolet oxidation and granular activated carbon, and discharge of the treated water to the Grand Canal for irrigation use. A unilateral administrative order was issued by EPA to Motorola and AlliedSignal on November 30, 1998 for construction, start up and two years of operation and maintenance of the groundwater treatment system. Construction of the treatment system began in March 2000 and is

expected to be completed in December 2001.

Within the Motorola 52nd Street site, EPA has designated a third Operable Unit (OU3). EPA will be conducting a remedial investigation of this area and ADEQ will be investigating any suspected source areas. Honeywell was identified as a potentially responsible party (PRP) in the Motorola 52nd Street Superfund site in November 1992. In July 1992, Honeywell installed several monitoring wells at their facility located at 111 South 34th Street. Groundwater quality data from these wells indicated elevated concentrations of trichloroethene (TCE), trichloroethane (TCA), dichloroethene (DCE), dichloroethane (DCA) and other volatile organic compounds (VOCs). Based on results of soil gas investigations, Honeywell proceeded with a voluntary vadose zone cleanup using soil vapor extraction (SVE) which began operation in April 1998. At the request of ADEQ, Honeywell submitted a workplan for site characterization in September 1998. The activities were completed in January 1999, including an additional soil gas survey and the installation of groundwater monitoring wells. On September 19, 1999, Honeywell signed an Administrative Order on Consent (AOC) with ADEQ to conduct a Focused Remedial Investigation of the Honeywell facility. In December 1999, Honeywell submitted a Research Report and a work plan for investigating potential source areas at the facility. Honeywell began drilling activities on July 5, 2000 to install 12 monitor wells at potential source areas. It is expected that the installations will be completed by September 2000.

### **Phoenix-Goodyear Airport North**

Site Boundaries: The Phoenix-Goodyear Airport (PGA) Superfund site is located approximately 17 miles due west of Phoenix, in the western part of the Salt River Valley in Central Arizona. The site study area covers a total area of about 35 square miles and is divided into a southern portion (PGA-South) and a northern portion (PGA-North). Contamination from

these two areas is non-contiguous. Except for the airport, which is owned by the city of Phoenix, the PGA site lies almost entirely within the city of Goodyear, Arizona. The city of Avondale occupies about two square miles along the eastern border of the site. The physical boundaries of the PGA North site are defined by the groundwater contamination plume which is generally bounded by Thomas Road to the north, Litchfield Road to the east, the Unidynamics property on Litchfield Road to the south and Bullard Avenue to the west. The site consists of the Unidynamics property and any groundwater contamination emanating from this property.

**Contaminants:** Contaminants identified at the PGA North site are: chlorinated solvents, mainly trichloroethene (TCE) and perchlorates. TCE is present in the soils located within the Unidynamics' property as well as in the groundwater. The perchlorates were discovered in the groundwater in August 1998.

**Public Health Impact:** Potential health risks may exist for individuals who ingest the contaminated groundwater. No known drinking water wells are currently impacted by the contamination. Drinking water for the area is provided by the city of Goodyear or the Litchfield Park Service Corporation (LPSCO). The drinking water wells are monitored regularly, as required by law. The groundwater contamination is located approximately 70-130 feet below ground surface, thereby eliminating an inhalation exposure pathway. The soil contamination is restricted to the Unidynamics property where institutional controls reduce the potential of human contact.

**Community Involvement Activities:** EPA produced the following newsletters and factsheets: *Significant Environmental Cleanup Proceeds at Phoenix Goodyear Airport* – January 1999, and *Update on Cleanup Activities* – January 1999. ADEQ hosted a public meeting to provide a site update on Feb. 18, 1999 at the Agua Fria

Union High School District Offices, located at 530 E. Riley Drive, in Avondale.

**Site Status:** EPA added the PGA site to the National Priorities List (NPL) in September 1983. In 1981, the Arizona Department of Health Services discovered that groundwater in the PGA area was contaminated with solvents and chromium. In 1984, EPA began a remedial investigation of the Litchfield Airport Area (presently known as the Phoenix-Goodyear Airport). From this study, the site was divided at Yuma Road into a north and a south portion. In September 1990, the EPA issued an administrative order directing Unidynamics to proceed with soil and groundwater remediation as described in the EPA's 1989 Record of Decision (ROD). The groundwater portion of the remediation program was undertaken in three phases. The initial (Phase I) groundwater treatment system began operation in November 1994 and addresses the area of highest contaminant concentration. Phase II of the groundwater remedy was enacted and placed into operation in November 1996. Phases I and II consist of extracting the groundwater, removal of the contaminants by air stripping with emissions control and reinjecting the treated water into the same aquifer up-gradient of the plume. Phase III was implemented in October 1998 with the installation of a liquid-phase carbon adsorption system. The soil vapor extraction (SVE) system, for treatment of contaminants in the soil, began operation in 1994 to remove the volatile organic compounds from soils. The SVE treatment system includes a thermal oxidation unit which is equipped with an exhaust scrubber to reduce emissions.

### **Phoenix-Goodyear Airport South**

**Site Boundaries:** The Phoenix-Goodyear Airport (PGA) Superfund site is geographically situated approximately 17 miles due west of Phoenix, in the western part of the Salt River Valley in Central Arizona. The site study area covers a total area of about 35 square miles and is divided into a southern portion (PGA-South)

and a northern portion (PGA-North). Contamination from these two areas is non-contiguous. Except for the airport, which is owned by the city of Phoenix, the PGA site lies almost entirely within the city of Goodyear, Arizona. The city of Avondale occupies about two square miles along the eastern border of the site. The approximate physical boundaries of the PGA South site are Yuma Road to the north, Litchfield Road to the east, Broadway Road to the south and Reems Road to the west. The site consists of the Loral Defense Systems-Arizona (Loral) property and the Phoenix-Goodyear Airport property and any groundwater contamination emanating from these areas.

**Contaminants:** Contaminants identified in the groundwater at the PGA South site are: trichloroethene (TCE) and chromium. The soils containing chromium and cadmium above the Health Based Guideline Levels (HBGLs) were stabilized, thereby eliminating the risk of exposure by ingestion and inhalation and preventing migration to groundwater.

**Public Health Impact:** Potential health risks may exist for individuals who ingest the contaminated groundwater. There are no known drinking water supply wells on the site. The city of Goodyear regularly monitors their drinking water supply wells, as required by law.

**Community Involvement Activities:** EPA produced the following recent newsletters and fact sheets: *Significant Environmental Cleanup Proceeds at Phoenix Goodyear Airport* – January 1999 and *Update on Cleanup Activities* – January 1999.

**Site Status:** EPA added the PGA site to the National Priorities List in September 1983. In 1981, the Arizona Department of Health Services discovered that groundwater in the PGA area was contaminated with solvents, mainly TCE and metals, primarily chromium and cadmium. As a result, In 1984, EPA began a remedial investigation of the Litchfield Airport Area

(presently known as the Phoenix-Goodyear Airport). From this study, the site was divided into a north and a south portion. The Operable Unit Record of Decision (ROD) for PGA-South was signed in 1987.

The remedial investigation and feasibility study for the site was completed in June of 1989 and the Final Remedy ROD was signed in September 1989 for PGA North and South. A consent decree for the final remedy was entered in November 1991. This document binds Goodyear Tire to remediate the Subunit B/C aquifer and contaminated soils. In 1992, Goodyear Tire conducted a removal action of metal contaminated soils located at the sludge drying beds. The soils containing chromium and cadmium above the Health Based Guideline Levels (HBGLs) were stabilized, thereby eliminating the risk of exposure by ingestion and inhalation and preventing further migration to groundwater.

On Oct. 7, 1999, ADEQ approved the closure and decommissioning of the soil vapor extraction (SVE) system. The selected groundwater remedy involves extraction of the contaminated groundwater, treatment by air stripping and reinjection into the same aquifer. The treatment system began operation in 1989 and it has treated more than three billion gallons of groundwater. To remove chromium from the Subunit A groundwater, a full scale advanced affinity chromatography resin (AACR) system was installed in July 1999 and is currently undergoing minor modifications. The system began operation in May 2000. Goodyear Tire has proposed to accelerate the cleanup of the Subunit A groundwater through the use of air sparging and SVE in the last remaining TCE hot spot. This work is being performed voluntarily since air sparging is not a requirement of the consent decree. The full-scale treatment system should be installed and in operation by fall 2000. The remedy for the Northern and Southern Subunit C groundwater plumes involves extraction, treatment of Subunit B/C

groundwater through liquid phase granular activated carbon (GAC) and reinjection into the same aquifer. The Northern Subunit C System began operating in February 1994 while the Southern System began treating groundwater in September 1994. Currently, Goodyear Tire is investigating a TCE and chromium plume that extends just north of Yuma Road. Two monitoring wells were installed in August 1999 to further define this portion of the northern Subunit C plume. Both wells indicate TCE above the MCL and low levels of chromium. Two additional wells were installed in March 2000.

### **Tucson International Airport Area (TIAA)**

**Site Boundaries:** The Tucson International Airport Area (TIAA) is a 24-square-mile site placed on the NPL in 1983. The TIAA site contains seven major project areas including Air Force Plant 44 (AFP 44), Tucson Airport Remediation Project (TARP), the Airport Property, the Arizona Air National Guard (AANG) 162nd facility, Burr-Brown Corporation, the former West-Cap property and West Plume B. ADEQ divided the main plume for remediation purposes into southern and northern operable units along an east-west line defined by Los Reales Road.

**Contaminants:** Groundwater investigations defined a groundwater contamination plume (main plume) in the regional aquifer. The main plume, consisting primarily of trichloroethene (TCE), with smaller amounts of dichloroethene (DCE), chloroform and chromium, extends from AFP 44 north past Irvington Road. ADEQ is also investigating possible solvent, polychlorinated biphenyl (PCB) and TCE contamination at the General Electric facility.

**Public Health Impact:** ADEQ shut down all municipal wells that were contaminated with TCE. Residents have either shut down or converted to irrigation wells most of the domestic wells. A few residents with domestic wells with low levels of TCE continue to use their wells.

**Community Involvement Activities:** The Unified Community Advisory Board (UCAB) conducts public meetings to discuss the site the middle Wednesday of every other month (January, March, May, July, September, November) at 6:30 p.m. at the El Pueblo Community Center in Tucson.

Recent EPA factsheets include: *Community Involvement During Remedial Design* – February 2000, *EPA Extends Public Comment Period on Proposed Consent Decree* – July 1999, *Answers to Your Questions About the Proposed Consent Decree for Cleanup of the Airport Property Soils and Groundwater* – June 1999, *EPA Announces Second Community Meeting on Proposed Consent Decree for Cleanup of Airport Property Soils and Groundwater* – June 1999, *EPA to Conduct Removal Action at Former West-Cap of Arizona Facility* – February 1998. The U.S. Air Force also publishes a semi-annual progress report for activities at Air Force Plant 44.

**Site Status:** The southern operable unit consists of a groundwater pump, treat and reinjection system operated since 1987 by Raytheon (formerly Hughes) at AFP 44. The northern operable unit consists of a groundwater pump and treat system known as the TARP. Clean water from the TARP plant is delivered to the Tucson Water distribution system.

In addition to the main plume, ADEQ has associated less extensive areas of groundwater contamination in the regional aquifer with the AANG property, the former West-Cap property, the Burr-Brown property and West Plume B. ADEQ constructed groundwater pump and treat systems, which are operational at the AANG, Burr-Brown and former West-Cap properties. EPA constructed the groundwater extraction system for the former West-Cap property. This system delivers contaminated groundwater from the West-Cap property to the Burr-Brown treatment plant.

EPA and ADEQ are characterizing the extent

and magnitude of groundwater contamination (TCE) in West Plume B which extends from Valencia Road northwest approximately 1.5 miles to Drexel Road. In addition to the installation of numerous groundwater monitoring wells, seismic reflection data are being used to help characterize the hydrogeology in the area. ADEQ is building a computer model of West Plume B to help determine the fate and transport of TCE in the plume and to help optimize remediation strategies.

ADEQ began investigation and cleanup of soil contamination and/or shallow groundwater contamination at AFP 44, the airport property, the AANG property and the former West-Cap property. EPA recently completed a shallow soil-gas survey at the former West-Cap property which identified three possible TCE source areas. Depending on the results of planned deeper soil-gas sampling and computer modeling, either soil vapor extraction (SVE) or dual-phase extraction (DPE) will probably be used to remediate these source areas.

ADEQ recently finalized a consent decree to address cleanup of soils and shallow groundwater beneath the airport property and to provide continued funding for operation and maintenance of the TARP system and provides for the cleanup of a highly contaminated portion of the airport property near the Three Hangers Area. The consent decree calls for four separate remedies for the Three Hangers Area, including a soil vapor extraction (SVE), a pump and treat groundwater remediation system, excavation and off-site disposal of PCB and metals contaminated soils and sediments, and capping and monitoring of an abandoned landfill.

#### **162nd Air National Guard (Part of the TIAA Site)**

Site Boundaries: The Arizona Air National Guard (AANG) 162nd Tactical Fighter Group, occupies 84 acres of the TIAA site and is located at 15008 Valencia Road in Tucson. The base began operation since 1956 in training func-

tions for various tactical fighter aircraft.

Contaminants: Trichloroethene (TCE) is the primary groundwater contaminant at this site.

Public Health Impact: There are no known human exposures to groundwater contamination from this site.

Community Involvement Activities: The activities associated with the TIAA site also cover the AANG 162nd site.

Site Status: The U.S. Air Force is the lead regulatory agency at this site with ADEQ and EPA providing regulatory support and technical oversight of remedial response actions.

Past maintenance and operation practices at the base led to the contamination of subsurface soils and regional aquifer groundwater with volatile organic compounds (VOCs) including trichloroethylene (TCE). ADEQ has performed remedial investigations at numerous facilities on the base.

The groundwater treatment plant continues operation with the pumping rate set for operation at 110 gallons per minute (gpm). Influent TCE concentrations have been in the eight to 10 parts per billion (ppb) range and effluent has been non-detect. ADEQ started a soil vapor extraction system on April 3, 1997 and shut it down on November 29, 1997, after achieving complete soil remediation.

#### **Raytheon Air Force Plant #44 (Part of the TIAA Site)**

Site Boundaries: Raytheon Air Force Plant #44, located in the southern portion of the TIAA site, is a federally owned weapons manufacturing facility operated under contract by the Raytheon Corporation (formerly Hughes). The plant is bounded to the north and east by the Tucson International Airport, to the south by Hughes Access Road and to the west by the Nogales Highway (Route 89).

**Contaminants:** Historic waste disposal operations at the plant resulted in soil and groundwater contamination of metals and volatile organic compounds (VOCs), including trichloroethene (TCE). Remediation activities include a large-scale pump, treat and reinjection system; soil vapor extraction systems; dual-phase extraction systems; and soil excavation and removal.

**Public Health Impact:** Currently there are no known human exposures to groundwater contamination at this site.

**Community Involvement Activities:** The activities associated with the TIAA site also cover the Raytheon Air Force Plant #44 site. In addition, the U.S. Air Force and Raytheon are active participants in the annual Earth Day celebration in Tucson, and in education and outreach to Tucson schools.

**Site Status:** The U.S. Air Force is the lead regulatory agency at this site with ADEQ and EPA providing regulatory support and technical oversight of remedial response actions.

A large scale pump, treat and reinjection system was installed in 1987 to provide containment and remediation of regional aquifer groundwater contamination. The system has removed more than 22,000 pounds of VOCs to date.

The shallow groundwater zone is currently being remediated. In-situ (in place) bioremediation to address shallow groundwater zone contamination began in April 1997, but ceased in April 1998 because it was having no measurable effect. Soil vapor extraction (SVE) at several solvent waste disposal areas has removed over 100,000 pounds of VOCs from subsurface soils.

Nearly 13,000 tons of metals-contaminated soils (cadmium, chromium, lead, nickel and cyanide) were removed from the site and shipped to a permitted hazardous waste disposal facility Utah.

ADEQ completed an Environmental Baseline Survey to investigate potential additional source areas beneath and near Building 801. This investigation led to the installation of additional SVE wells around the building to remediate TCE soil contamination.

**Williams Air Force Base**

**Site Boundaries:** The former Williams Air Force Base (WAFB) is located in Mesa approximately 30 miles southeast of central Phoenix. It is approximately 4,127 acres in size and the study area includes the entire Base. WAFB is now utilized as the Williams Gateway Airport and the Arizona State University East and Maricopa Community College campus since the removal of military personnel and transition to educational and commercial uses.

**Contaminants:** Contaminants from base activities included organic solvents and paint strippers, petroleum spills, metal plating wastes, hydraulic fluids, pesticides and radiological wastes. Discharges and disposal at WAFB had resulted in soil and groundwater contamination. The remaining groundwater contaminant issue is a plume of jet fuel contamination.

**Public Health Impact:** There is no known risk to human health at this time. ADEQ has eliminated all exposure pathways through remediation or restricted access or use. ADEQ has not discovered any groundwater wells affected by the contamination.

**Community Involvement Activities:** ADEQ formed a Restoration Advisory Board, which meets quarterly.

**Site Status:** The former base is divided into six operable units (OUs), OU-1 through OU-6, for administrative and record keeping purposes. OU-1 contains the main Base landfill for which a Record of Decision (ROD) was signed in 1994. The remedy specified a permeable cap and monitoring wells. In 1997 contamination was found in the landfill monitoring wells and

as of January 1999 the remedy is under review. OU-2 addresses the groundwater and soil contamination at the Liquid Fuels Storage Area. The remedial investigation at the Liquid Fuels Storage Area has confirmed that the primary contaminant is jet petroleum grade 4 (JP-4, jet fuel). The groundwater plume at the Liquid Fuels Storage Area resulted from the leakage of approximately one million gallons of JP-4. Rising groundwater in the area is now covering the fuel which is smeared across many feet of deep soil making remediation difficult. OU-3 formerly addressed the vadose zone beginning twenty-five feet below land surface down to the water table at the Liquid Fuels Storage Area which is now a part of OU-2. The primary site of concern at OU-3 now is the Fire Training Area Number 2 (FT-02). The 25,000 cubic yards of contaminated deep soils at the site were treated in place by enhancing natural bacterial breakdown of contaminants with bioventing. The Record of Decision (ROD) for OU-3 was signed in June 1996. The standards agreed to in the ROD have not been achieved, but the US Air Force conducted a risk assessment, which determined that the cleanup levels that have been achieved do not pose a risk to human health or environment. A ROD amendment is now required to approve the new risk assessed standards proposed by the USAF. OU-4 includes South Desert Village (SDV) which is slated to become student housing for Arizona State University East. Beneath SDV is a former six-station skeet range which was demolished and graded in 1950, prior to construction of the SDV. Contamination in the form of lead pellets in soil associated with the former skeet range underlies 85 housing units in the SDV. OU-5 was set up to address nine soil sites which were closed out through expedited removal actions. The OU-5 ROD was signed in February 1998. OU-6 was established to address three sites requiring additional investigation. The site of primary concern (site SS-17 Old Pesticide/Paint Shop) at OU-6 has revealed soil contamination (dieldrin and volatile organic compounds). A removal action of dieldrin contaminated soil is

planned for fall 2000. Investigation of the Base Production Well No. 6 revealed lead contamination in soils below the Base water tower.

### **Yuma Marine Corps Air Station**

**Site Boundaries:** Marine Corps Air Station Yuma (MCAS Yuma) occupies approximately 3,000 acres within the city and county of Yuma, Arizona. The city of Yuma, the nearest municipality, is located approximately one mile northwest of the station.

**Contaminants:** For soil, the contaminant of concern is asbestos in the form of non-friable asbestos containing material (ACM). The ACM is scattered on top of and buried in the surface soil. For groundwater, the contaminants of concern are trichloroethene (TCE), dichloroethene (DCE) and tetrachloroethene (PCE). The main groundwater plume is approximately one mile long and 500 feet wide, and has reached the down-gradient edge of the base. The maximum concentration of total solvents is approximately 270 parts per billion (ppb). ADEQ has detected all of the groundwater contamination down-gradient of the old on-station drinking water well. The on-station drinking water well is no longer used and none of the groundwater is used elsewhere on the base.

**Public Health Impact:** There are no known public health risks at the site.

**Community Involvement Activities:** ADEQ established a Restoration Advisory Board for this site.

**Site Status:** In February 1990, YMCAS was designated a National Priority List (NPL) site by the EPA. A Federal Facilities Agreement (FFA) was signed by EPA, ADEQ and the U.S Navy on January 7, 1992. The facility is currently being used by the Marine Corps for the training of tactical aircrews.

The shop area, used for aircraft and vehicle maintenance since the 1940s, has had disposal

and spills. Disposal of waste motor oil, cleaning solvents, battery acid and anti-freeze occurred outside the base hobby shop from 1960 to the early 1980s. Routine maintenance of vehicles resulted in spills at another site. The fieldwork for the Remedial Investigation of Operable Unit 2 (OU-2), which involves areas of concern regarding soil contamination, was completed in October 1994. ADEQ signed the record of decision for OU-2 and remediation activities began in the first quarter of 1999. Remediation activities involved the offsite disposal of about 5,000 cubic yards of asbestos contaminated soil from OU-2. Fieldwork for the investigation of Operable Unit 1 (OU-1), which involves areas of concern regarding groundwater contamination, took place during January and February 1995 and is continuing. ADEQ is currently negotiating the ROD for OU-1.

The remediation pilot study for the leading edge of the groundwater contamination is in operation. The remediation consists of two vertical circulation treatment (VCT) wells.

The Navy has drilled 22 new monitoring wells at the Area 1 plume site to further characterize that area. The wells drilled were in the apron area of the runways and in the area around the leading edge of the groundwater contamination.

### ***Department of Defense Sites***

The Department of Defense sites are those sites that are located at either active duty bases or bases being closed under the Base Realignment and Closure (BRAC) regulations and Formerly Used Defense sites that are eligible for funding under the Installation Restoration Program as overseen by ADEQ.

### **161st Air National Guard**

Site Boundaries: The 161st Air National Guard is located on the southwest corner of a 50.7 acre site at Phoenix Sky Harbor International Airport between the south runway and the Salt River Channel. The Air National Guard Base, constructed in 1957, is located just south of the

airport. The facility is currently used for a refueling group in support of Air Combat Command activities.

Contaminants: Past aircraft maintenance and fueling operations at the site led to surface and subsurface soil and groundwater contamination with petroleum products and volatile organic compounds (VOCs).

Public Health Impact: The benzene groundwater plume is limited to the site and has not affected any water supply wells. There are no known health risks associated with subsurface soil contamination at the site.

Community Involvement Activities: No community involvement activities are planned at this time.

Site Status: Investigation and remediation efforts at the facility have increased as part of the expansion activities planned for the adjacent Phoenix Sky Harbor International Airport. To date, the most significant contamination appears to be associated with the Petroleum, Oils and Lubricants (POL) storage area, where soil contamination is evident. Groundwater contamination in this area includes a plume of benzene which remains well within the borders of the facility. The remediation selected for the area is a vapor extraction and air sparging treatment system (VES). A VES pilot study was conducted and then discontinued in July 1999. The underground storage tanks (USTs) at the POL area are scheduled to be removed during July 2000. ADEQ has partially installed the final VES, which will be operational after the removal of the POL USTs.

### **Barry M. Goldwater Range**

Site Boundaries: The Barry M. Goldwater Range (BMGR) is approximately 2.7 million acres in size. BMGR is a military training area formed from Bureau of Land Management (BLM) and US Fish and Wildlife Service (USF&WS) lands in southwestern Arizona.

The range is under the overall management of the United States Air Force, but is divided into two management units for the Air Force and the Marine Corps. The portion of BMGR managed by the USF&WS is the Cabeza Prieta National Wildlife Refuge (NWR), and forms about 30 percent of the BMGR area.

**Contaminants:** An Installation Restoration Program (IRP) conducted by Luke AFB on BMGR in 1992 identified 43 sites. As part of a site investigation, ADEQ has conducted additional investigations at 12 of these sites. The site investigation includes two areas at the Gila Bend Auxiliary Air Field with the remaining 10 sites dispersed at the former Ajo Air Station (within the NWR), Sentinel Navy antenna site and various locations within the range.

**Public Health Impact:** ADEQ has eliminated all exposure pathways through access and use restrictions.

**Community Involvement Activities:** No community involvement activities are planned at this time.

**Site Status:** BMGR is not a military reservation, but is a military usage area formed as a congressional withdrawal for military purposes from the BLM and USF&WS lands and subject to congressional renewal every 15 years. Luke AFB is coordinating the environmental process for the congressional renewal action, due in 2001. The Air Force has prepared a Draft Legislative Environmental Impact Statement (DLEIS), which ADEQ is reviewing.

**Camp Navajo (AZ Air National Guard)**  
**Site Boundaries:** The Camp Navajo site (formerly Navajo Depot Activity), is located in Bellemont, in north-central Arizona 12 miles west of Flagstaff and 17 miles east of Williams. The facility encompasses 28,347 acres and is situated in heavily forested to grassy, gently rolling to steep hilly terrain approximately 7,100 feet above mean sea level. Facilities at Camp Navajo

include approximately 170 buildings, of which 32 are currently used for administration, maintenance, operations and storage. There are 776 igloo structures for storage of conventional (and formerly chemical) munitions. There is a demolition area in the southern portion, and buffer zones along the eastern and western borders of the base.

**Contaminants:** Contaminants of concern include heavy metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and constituents of explosives.

**Public Health Impact:** A public health risk exists due to unexploded ordnance on the site. This risk is managed by restricting site access to Arizona Air National Guard personnel only.

**Community Involvement Activities:** ADEQ may develop a Community Action Board for this site.

**Site Status:** Environmental studies at Camp Navajo began in December 1979. Types of sites include ammunition demolition areas, ammunition workshops, munitions storage, munitions testing and training ranges, operations facilities, hazardous materials storage, and solid waste disposal.

The EPA has completed its Preliminary Assessment/Site Inspection (PA/IS) Reevaluation of Camp Navajo. The report incorporated records contained in the 1991 Master Environmental Plan (MEP) and subjected available sampling data to Hazard Ranking System (HRS) scoring. In October 1993, EPA notified the AZANG that Camp Navajo did not score high enough to be placed on the National Priorities List (NPL).

**Remediation plans for the Former Sanitary Landfill #5** is excavation of contaminated soils. The NGB intends to cap the landfill after further characterization. The remediation activity for Building 318/319 involves excavation of

contaminated soils, re-routing of run-off water away from the marsh area near Building 318/319, and the de-watering and remediation of a small perched aquifer contaminated with trinitrotoluene (TNT). Recently, the workplan and sampling and analysis plan for Building 318/319 was resubmitted to ADEQ during the meeting with the facility representatives on Sept. 2, 1998. The intended remediation for the excavated TNT-contaminated soils around Building 318/319, and the closed TNT retention ponds will be bioremediation (composting).

### **Davis-Monthan Air Force Base**

**Site Boundaries:** Davis Monthan AFB (DMAFB) is located in eastern Tucson. The northern boundary gradually descends to the south from Golf Links Road to Irvington Road. The boundary to the east is Harrison Road. Alvernon Way is the western boundary. The southern most boundary is Valencia Road on the east side of the site area. The study area consists of the entire base.

**Contaminants:** Contamination at the base includes surface soil contaminated with petroleum wastes, waste piles of hazardous aluminum dross and groundwater contaminated with jet fuel from a large volume underground jet fuel leak. ADEQ treated the aluminum dross contamination (from past melting of obsolete aircraft) on the base by solidification/stabilization and transported it to an off-site landfill.

**Public Health Impact:** Contamination at the site is limited to the subsurface soil and groundwater. There is no known risk to human health from the site.

**Community Involvement Activities:** ADEQ formed a Restoration Advisory Board for the site, which meets on a semi-annual basis.

**Site Status:** DMAFB, a 10,000-acre training base for tactical aircraft crews and the primary storage facility for obsolete or excess aircraft, began operation at this site in 1925. EPA initi-

ated the Installation Restoration Program 1982, which has identified 49 potential areas of concern.

At the area known as site ST-35/Fuel Pump-house No. J3, groundwater remediation of the jet fuel leak started in early 1994. An estimated 1.7 million cubic feet of soil contaminated with JP-4 jet fuel are present in the subsurface at this site. ST-35 is the only site on the base where deep contamination of soil and impacts to groundwater are documented. Sampling at the site revealed trace amounts of volatile components of jet fuel (BTEX) contamination (currently below drinking water standards) in groundwater below what was considered a naturally-occurring protective clay layer. Follow up sampling after a pump and treat program revealed only clean water. A soil vapor extraction study project was initiated in early 1994. Subsequent cleanup was initiated through a soil vapor extraction system.

The Main Base Landfill/LF-01 site was used from the early 1940's to 1976 for disposal of household garbage, metals, cars and aircraft, thinners, solvents, pesticides and other items. Numerous rounds of soil and groundwater samples were collected between 1983 and 1994 and tested for volatile organic compounds (VOCs), metals, pesticides, polychlorinated biphenyls (PCBs), petroleum hydrocarbons and other compounds. All compounds detected were at levels below regulatory standards. An additional groundwater monitoring well was installed in November 1998 and a landfill cover was designed and installed in 1999. ADEQ has constructed the landfill cover for LF-01, and is considering a landfill gas collection and treatment/control system.

### **Fort Huachuca**

**Site Boundaries:** Fort Huachuca is an Army post located in Sierra Vista, in southeastern Arizona. Fort Huachuca began operation in 1877.

**Contaminants:** The areas of interest, which resulted from two consent decrees with ADEQ, involve four hazardous waste sites and 18 underground storage tank or leaking underground storage tank sites.

**Public Health Impact:** There are no known health risks from this site.

**Community Involvement Activities:** No community involvement activities are planned at this time.

**Site Status:** Of the 20 sites considered to be solid waste sites from the original Consent Order, 11 sites remain. Six of these sites require no further action and are awaiting a decision document for closeout. The remaining five sites are at different stages in the evaluation process. The need for future work at the South Range Landfill is dependent upon the information obtained from split samples taken in May 2000. Work to remove a sump and take samples in the vicinity of the sump at the Vehicle Paint Spray Booth (Building 72907) is scheduled to be performed during July 2000. Results will determine the need for any additional cleanup at this site. ADEQ has approved a work plan to complete the investigation of surface and subsurface soil at the Libby Army Airfield Fire Fighting Training Area. Preparation of a work plan to determine if the presence of arsenic at the Golf Course Pesticide Mix Area is naturally occurring will be initiated shortly.

#### **Gila Bend Auxiliary Air Field**

**Site Boundaries:** The Gila Bend Auxiliary Air Field is located approximately two miles south of Gila Bend off of State Highway 85.

**Contaminants:** In 1994, the Air Force conducted site investigations of two sites at the facility, the former fire training area FT-27 and a nearby maintenance area. Limited contamination was found at the former fire training area with a determination that it did not pose a threat to groundwater. Sampling of the maintenance area

did not reveal any contamination warranting further action.

**Public Health Impact:** There are no known health risks from this site.

**Community Involvement Activities:** No community involvement activities are planned at this time.

**Site Status:** The facility dates back to the early 1940's when it was part of the Gila Bend Gunnery Range. It was an active Air Force facility until approximately 1995. It was used in support of aircraft using the adjacent Barry M. Goldwater Range and for maintenance of the range and range targets. This activity is now supported by private contractors utilizing portions of the former facility. The facility is managed by Luke Air Force Base.

#### **Yuma Army Proving Grounds (YPG)**

**Site Boundaries:** The U.S. Army Yuma Proving Ground (YPG) is located on the California-Arizona border north of Yuma. YPG is located 32 miles northeast of Yuma, and occupies approximately 870,000 acres in Yuma and La Paz counties. Its western edge is adjacent to the Colorado River.

**Contaminants:** Contaminants of concern include petroleum hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. Contaminated media are soil and groundwater.

**Public Health Impact:** Contaminated groundwater is limited to the site boundaries. There is no risk to the public drinking water supply wells of Yuma.

**Community Involvement Activities:** ADEQ developed a community involvement plan for the YPG site. Proposed activities include public meetings and open houses, factsheets and development of a Community Advisory Group.

Site Status: YPG was first used by the military in 1942 for training desert troops and the military has since used it for testing and evaluation of a variety of military equipment including boats, vehicles, well drilling equipment, tanks and munitions. In a 1984 survey of YPG by the EPA Region IX Resource and Conservation Recovery Act Corrective Action Unit, YPG did not qualify for the National Priorities List.

The army's Installation Restoration Program manages environmental investigation and cleanup at U.S. Army facilities. The army conducted an assessment of the solid waste management units (SWMUs) at YPG as part of the Installation Restoration Program and identified 19 units for investigation under the remedial investigation and feasibility study.

The determination that approximately 500,000 gallons of fuel may have been released at the site between 1965 and 1975 designated the Fuel Bladder Test Area (FBTA) was for immediate investigation. Analyses of groundwater samples from monitoring wells installed during ongoing investigation of the site show evidence of petroleum and petroleum by-products. The effectiveness of soil vapor extraction technology will be studied in July 2000. At another site, the Former Waste Disposal Area (FWDA), ADEQ is considering a fence to limit access to the site as an interim remedial action and an institutional control.

ADEQ has reviewed and approved reports for the remedial investigation sampling and analysis plan (SAP) for selected sites, as well as the quality assurance project plan (QAPP) for the YPG site. ADEQ plans to install monitoring wells for the FWDA and the FBTA.