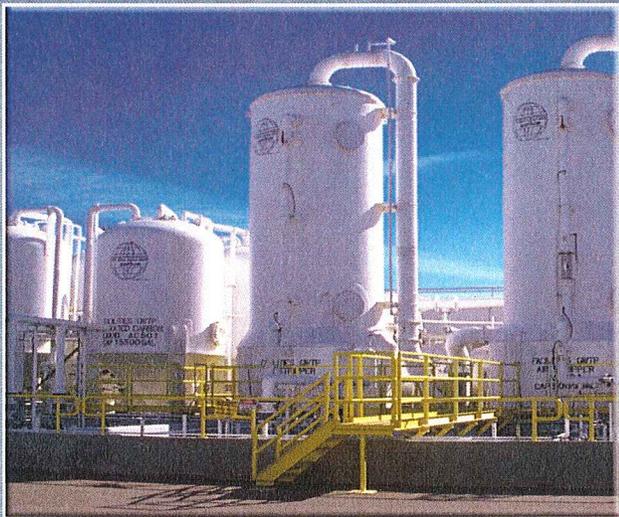


Motorola 52nd Street Superfund Site Phoenix, Arizona

Community Involvement Plan January 2009



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Motorola 52nd Street Superfund Site Community Involvement Plan

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List of Acronyms

ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
AOC	administrative order on consent
AR	Administrative Record
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BSVE	bioventing/soil vapor extraction
CAG	community advisory group
CAP	Corrective Action Plan
CD	consent decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	contaminant of concern
COP	City of Phoenix
DCA	dichloroethane
DCE	dichloroethene
ERA	ecological risk assessment
EW	East Washington
FS	feasibility study
ft	feet
GAC	granular activated carbon
gpm	gallons per minute
HARP	ATSDR Health Activities Recommendation Panel
lbs	pounds
NCP	National Oil and Hazardous Substances Contingency Plan
NPL	National Priorities List
OU	operable unit
PCE	tetrachloroethene (also known as perchloroethene)
ppb	parts per billion
PRP	potentially responsible party
PTP	pilot treatment plant
RI	remedial investigation
ROD	record of decision
RP	responsible party

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SRP	Salt River Project
SRU	Site Review and Update
SVE	soil-vapor extraction
SVM	soil-vapor monitor
SWPL	Operable Unit 1 Southwest Parking Lot
TAG	Technical Assistance Grant
TCA	trichloroethane
TCE	trichloroethene
TWG	technical work group
UAO	unilateral administrative order
UPRR	Union Pacific Railroad
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VOCs	volatile organic compounds
WQARF	Water Quality Assurance Revolving Fund
WVB	West Van Buren WQARF site

Note: Definitions are included in Appendix A – Glossary. The above words as well as additional words not listed above are included in the glossary. Words included in the glossary are highlighted in blue (first time only) in the document text.



Motorola 52nd Street Superfund Site Community Involvement Plan

Executive Summary

The Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (USEPA) prepared this **Community Involvement Plan (CIP)** for the Motorola 52nd Street Superfund Site ("the Site"), located in Phoenix, Arizona. The CIP identifies community issues and concerns and outlines community involvement activities to be conducted during ongoing investigations and **cleanup**. The CIP also provides a summary of current and planned activities as well as project background information. The CIP was prepared in accordance with the Federal **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)** and Superfund program policies. This CIP was developed as part of ADEQ and USEPA's efforts to ensure that the local communities have input to decisions regarding actions at the Site and are well informed about the progress of those actions. This CIP is an update to the July 2004 CIP prepared for this Site. A glossary of terms can be found in Appendix A of this document.

Current activities at the Site include ongoing operation of a **groundwater** extraction and treatment system at **Operable Unit 1 (OU1)** and Operable Unit 2 (OU2) and ongoing investigations at the Honeywell facility (located within OU2) and the Operable Unit 3 (OU3) Study Area, and investigations of newly identified **potentially responsible parties (PRPs)** in OU2 and OU3. ADEQ and USEPA drafted this CIP update for the following reasons:

1. Evaluate the current concerns and issues of the community by conducting personal interviews with community members;
2. Through the community interview process, evaluate ADEQ's and USEPA's community involvement efforts and make recommendations for improvement; and
3. Update the community on the Site's activities.

In July and August 2007, 33 community interviews were conducted as part of the preparation of this Community Involvement Plan. A summary of the responses and comments from the interviewees is presented in Section 3 of this document.

Information regarding community concerns is documented in the CIP, based primarily on community interviews. Interviewees included neighborhood association representatives, interested community members, agency representatives, and responsible parties. In general, all of the people interviewed had some knowledge about the Site's history and current status. Most people were aware of the two groundwater treatment systems installed to **pump and treat** contaminated groundwater within the Site's boundaries. Most of the concerns noted by the people interviewed dealt with potential health effects from existing contamination or from



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residual contamination in the treated water used for irrigation (OU2 treatment system).

In general, the community members interviewed feel that they have been kept adequately informed of the Site's activities. Also, the interviewees remarked that ADEQ and USEPA's efforts to provide Spanish translation, both on written materials and during public meetings, were welcomed. This CIP presents a program for community involvement that includes the following modes of implementation: information repositories, administrative records, mailing lists, **public comment periods**, site contacts, fact sheets, bulletins and flyers, news media, public meetings/open houses, small group meetings, language translation, and community interviews.

ADEQ and USEPA Region 9 have the responsibility for managing this cleanup effort. Both ADEQ and USEPA Region 9 oversee the implementation of all community involvement activities at the Site for their respective leads.

Current **contaminants of concern (COCs)** in groundwater for this Site are **volatile organic compounds (VOCs)**. A list of the COCs for this Site is provided in Section 1.4 of this document. Section 4.1 and Appendix R of this document provide a discussion of the COCs, including potential health effects.

Through December 2007, the OU1 groundwater treatment system has pumped over 2.8 billion gallons of groundwater for treatment and removed nearly 19,285 pounds of VOCs as **trichloroethene (TCE)** from the groundwater. As of the same time period, the OU2 extraction system has pumped over 6.8 billion gallons of water and removed approximately 9,800 pounds of VOCs as TCE from the groundwater.

For more information regarding this document or the Motorola 52nd Street Superfund Site, visit the ADEQ Web site at www.azdeq.gov/environ/waste/sps.html or the USEPA Web site at www.epa.gov/region09/waste/sfund. If you'd like to speak with someone regarding the Site, please feel free to contact the key project personnel listed on the following page. If you have other questions not related to this Site, please call the ADEQ Ombudsman, Mr. Brian Davidson, at (602) 771-4881, or visit ADEQ's main Web site at <http://www.azdeq.gov>.

In December 2004, Motorola spun off its semiconductor sector into a new independent company, Freescale Semiconductor, Inc. Freescale Semiconductor has agreed to implement the requirements of the OU1 ADEQ Consent Decree and the OU2 EPA Unilateral Administrative Order.

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1 Introduction

1.1 Purpose of the Community Involvement Plan

This Community Involvement Plan (CIP) is the foundation of the community involvement program for the Site. The CIP defines and describes the community outreach activities that the Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (USEPA) will use to identify and address community concerns and expectations. This document also discusses the various publications that ADEQ and USEPA use to distribute information regarding upcoming and ongoing activities to the community. These publications and outreach activities include, but are not limited to: fact sheets, bulletins, press releases, public notices in the newspaper, drilling notices, and public meetings. More details on community involvement implementation activities can be found in Section 2.2 of this document. A glossary of terms can be found in Appendix A of this document.

Become Involved!

You can provide valuable input to the project team that can be utilized in the decision-making process.

Interviews with various community members have been conducted to update the July 2004 CIP. More information on the community interview process can be found in Section 3 of this CIP. With requirements outlined in the **National Oil and Hazardous Substances Contingency Plan** [40 **Code of Federal Regulations (CFR)** §300.430(c)(2)(ii)(A-C)], ADEQ and USEPA have found the CIP process a way to engage the community and address community concerns.

This plan provides a framework for ADEQ and USEPA in their efforts to inform, include, and engage community members, local officials, the news media, and potentially responsible parties (PRPs). ADEQ and USEPA formed a **community advisory group (CAG)** for the Site in 2001 and facilitated CAG meetings through the end of 2007. The CAG served as a focal point for the exchange of information among the local community, ADEQ, USEPA, PRPs, and other agencies involved in the cleanup at the Site. Beginning in 2008, ADEQ and USEPA will be conducting informational public meetings, open houses, and group presentations at various locations throughout the Site. These informational meetings are designed to keep the community informed of site activities, project milestones, and improve opportunities for public feedback and awareness.

The CIP is meant to be an evolving document that changes based on the progress of the Site and/or the needs of the community. A key objective of the CIP is to facilitate the dissemination of timely, accurate, and meaningful information in such a way that it is understandable to the community it is intended to serve. ADEQ and USEPA encourage community members to seek out project personnel to ensure that concerns and questions are addressed in a timely manner.

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1.2 Description of CERCLA

1.2.1 Regulatory History

In the past, people did not understand the effects that certain wastes might have on the health of the community and the **environment**. It was common practice for many wastes to be dumped out the back door onto the ground, into **drywells**, into rivers, or placed in landfills. Some wastes were even left out in the open. After many years of these common practices, our environment has been littered with thousands of uncontrolled or abandoned **hazardous waste** sites. In addition to historical landfills, some other common hazardous waste sites include abandoned warehouses, manufacturing facilities, and processing plants.

The Superfund Program is a result of Congress enacting the **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)**. Administered by USEPA in partnership with state environmental agencies and tribal governments, the Superfund Program works to locate, investigate, and clean up hazardous waste sites throughout the United States.

In 1980, the United States Congress established the Superfund Program to evaluate, prioritize, and mitigate the growing number of health and environmental risks posed by the hazardous waste sites.

Once identified, sites are evaluated and ranked to assess the relative threat from a **release** or potential release of **hazardous substances** to surrounding groundwater, surface water, air, and soil, and the impact that the release would have on public health and the environment. The **National Priorities List (NPL)** is USEPA's published list of the most serious hazardous waste sites nationwide that have been identified as potential threats to the environment.

Superfund Cleanup Process

ADEQ and USEPA use a prescribed process to determine and implement the appropriate response to threats posed by releases of hazardous substances. A description of this process is provided in Figure 1. A general description of the steps involved is provided below:

1. **Preliminary Assessment/Site Inspection (PA/SI)**
Evaluation of the potential for a release of hazardous substances from a site into the environment
2. **Hazard Ranking System (HRS) Scoring**
Screening of sites for placement on NPL
3. **NPL Site Listing Process**
Identification of sites or releases that appear to warrant cleanup (HRS Score of 28.5 or higher)
4. **Remedial Investigation/Feasibility Study (RI/FS)**

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Collection of data to determine nature and extent of contamination; identification and evaluation of cleanup options

5. **Record of Decision (ROD)**

Explains which cleanup alternatives will be used at NPL Sites

6. **Remedial Design/Remedial Action (RD/RA)**

Preparation and implementation of plans and specifications for applying site remedies

7. **Construction Completion**

Identifies completion of cleanup activities

8. **Post-Construction Completion**

Optimization, operations, and maintenance of remedial action for the long-term protection of human health and the environment

9. **NPL Site Deletions**

Removal of sites from the NPL

Releases that require immediate or short-term response actions are addressed under the Emergency Response Program of Superfund.

1.2.2 Funding Mechanism for Superfund

The Superfund Trust Fund was set up to pay for the cleanup of these sites. The money initially came mainly from taxes on the chemical and petroleum industries. The Trust Fund was used primarily when those companies or people responsible for contamination at Superfund sites cannot be found, or cannot perform or pay for the cleanup work. Funding for Superfund investigations and cleanup now comes from **cost recovery** and general income tax revenue.

The overall goal of the Superfund Program is to protect human health and the environment through timely and effective site **remediation** at the maximum number of sites. The enforcement program plays a major role in achieving this goal. The basic principle of the Superfund enforcement program is to make the PRPs pay for the response activities needed to clean up sites. Enforcement includes the activities USEPA undertakes to encourage or, if necessary, compel PRPs to clean up a site or to recover costs of cleanup from PRPs.

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Two Principal Enforcement Goals

1. Obtain money and/or cleanups from RPs/PRPs through voluntary settlement, unilateral orders, or litigation; and
2. Oversee RP/PRP-conducted cleanups to ensure that remedies are protective of public health and environment and implemented in compliance with the terms of the settlement agreement or order.

The Superfund Program involves an integrated process of both enforcement and Superfund-financed activities aimed at achieving the overall goal of site cleanup. In general, USEPA does the following:

- searches for and identifies PRPs who may be liable for the release at a site;
- attempts to negotiate agreements with the PRPs to perform studies or cleanup;
- enters into settlements with the PRPs where possible;
- oversees the site work that the PRPs perform under the settlement;
- when USEPA is unable to reach a settlement, USEPA issues an administrative order to compel the PRPs to perform the cleanup;
- sues the PRPs to implement an administrative order, or seeks triple damages in a cost recovery action; and
- if USEPA is unable to reach a settlement or compel PRPs, USEPA conducts the cleanup, using Trust Fund monies, and later pursues cost recovery from the PRPs.

If negotiations are successful, USEPA and the PRPs sign a legal document that sets forth the requirements for study or cleanup. The type of settlement agreement differs with the type of work required at the Site. There are two general types of settlement agreements: administrative and judicial. Administrative settlements are authorized by CERCLA, initiated by USEPA, and not required to go through court approval. Even though they do not require initial court approval, administrative settlements are judicially enforceable. The Department of Justice, on behalf of USEPA, files judicial settlements in court. If settlements are not achieved, USEPA has the option of using **unilateral administrative orders (UAOs)** or litigation to compel PRPs to perform a cleanup.

1.2.3 Superfund Process at the Motorola 52nd Street Superfund Site

Due to the complexity of the Site, the Site is at various stages of the Superfund process. A brief synopsis of the history of the Site is provided in Section 1.3 of this document. Detailed site histories of each of the three operable units, including the Honeywell 34th Street Facility, are presented in Appendices B, C, D, and E of this document. An update on the Site's current activities and status is provided in Section 5 of this document.

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1.3 Site Location and History

1.3.1 Location of Motorola 52nd Street Superfund Site

The Site, USEPA identification number AZD009004177, is located in Phoenix, Arizona generally between 52nd Street on the east, Palm Lane on the north, 7th Avenue on the west, and Buckeye Road on the south. Because of the size of the Site, it has been divided into three areas called Operable Units (OUs) to better manage the cleanup efforts. Based on a series of investigations, the Site is divided into three OUs and the Honeywell 34th Street Facility located within OU2 (Figure 2). The approximate boundaries of the different OUs and the Honeywell 34th Street Facility that make up the Site are described below:

1. OU1 Boundaries: 52nd Street to the east, Palm Lane to the north, Roosevelt Street to the south, and 46th Street to the west.
2. OU2 Boundaries: Roosevelt Street to the north, 46th Street to the east, Buckeye Road to the south and 18th Street to the west.
3. Honeywell 34th Street Facility: Considered its own OU within OU2, the Honeywell facility extends from approximately 36th Street to the east to approximately 29th Street to the west, and is immediately north of the Sky Harbor Airport north runway.
4. OU3 Study Area Boundaries: McDowell Road to the north, 20th Street to the east, Buckeye Road to the south, and 7th Avenue to the west.

The Motorola 52nd Street Facility was originally constructed in 1956 and was in operation until the third quarter of 1999 when Motorola's Communications, Power and Signal Group was split off to become ON Semiconductor. Motorola, Inc. ("Motorola") remained responsible for the remediation effort related to its former operations at the 52nd Street facility.

In December 2004, Motorola spun off its semiconductor sector to form a new independent company, Freescale Semiconductor, Inc., (Freescale) who has agreed to implement the requirements of the OU1 ADEQ **consent decree (CD)** and the OU2 USEPA UAO. For the purpose of continuity, Freescale will be used to refer to both Motorola and Freescale throughout the CIP.

The Honeywell 34th Street Facility was constructed in 1951 and continues to operate today. Historically, the Honeywell facility has operated under the names of AiResearch Manufacturing Company of Arizona, Garrett Turbine Engine Company, and AlliedSignal Aerospace Company. Located on approximately 188 acres and consisting of more than 130 buildings, Honeywell and its predecessors have conducted jet engine design, assembly, testing, and repair at the site. More detailed information on the background and history of each OU and the Honeywell 34th Street



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Facility can be found in Appendices B through E of this document.

1.3.2 Site Overview

In the past, chemicals were spilled at the former Motorola plant at 52nd Street and McDowell Road, the Honeywell facility at 34th Street and Air Lane, and potentially at other facilities in the area. These chemicals seeped downward through the ground and mixed with the groundwater. The contaminated groundwater has spread toward the west. Freescale and Honeywell have been working to investigate and cleanup the contamination. ADEQ and USEPA closely monitor all work performed by Freescale and Honeywell (the Companies) at this Site.

The Site was proposed for the NPL in October 1989 and formally placed on the NPL in November 1989 to investigate the presence of soil and groundwater contamination by chlorinated **solvents**. More information on the COCs for the Site can be found in Sections 1.4 and 4.1 of this document. In 1988, prior to formal listing, the ADEQ and the USEPA approved a groundwater recovery and treatment system as an **interim remedy** known as OU1. In 1989, ADEQ and Motorola entered into a consent order requiring Motorola to design and implement groundwater and soil remedies. The full-scale treatment system was constructed in 1992 and designed to restrict contaminant migration at the Crosscut Canal along 46th Street, and to reduce the levels of contamination at the Motorola facility. Since 1992, Motorola/Freescale has been operating and maintaining the system under ADEQ oversight.

In 1992 and 2003, USEPA conducted PRP searches which identified numerous PRPs for the Site. As of January 2004, only Freescale and Honeywell have been identified by USEPA as **responsible parties (RPs)** for this Site, while the other PRPs are under investigation to determine whether they contributed to the groundwater contamination and are responsible for investigation and cleanup (Appendix F).

In 1994, ADEQ and USEPA selected a second interim remedy near 20th and Washington Streets designed to contain and treat the groundwater contamination in the OU2 area. ADEQ signed a CD with Freescale for the **remedial design** of OU2 in 1996. The design was completed and approved in December 1999. USEPA signed the Explanation of Significant Differences to the OU2 Record of Decision (ROD) in September 1999 to describe the changes in water treatment technology and end-use of the treated water. USEPA issued a UAO to Freescale and Honeywell in November 1998 for the construction of the OU2 treatment system and **operation and maintenance** of the system for two years. This UAO was amended in December 2003 to provide for long-term operation and maintenance of the system by Freescale and Honeywell. The OU2 treatment system construction began in March 2000 and was completed in October 2001.

The OU2 treatment system became fully operational in December 2001. Freescale and

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Honeywell are responsible for the operation of this system under USEPA oversight. Also in OU2, Honeywell, with ADEQ oversight, has been conducting an investigation of soil and groundwater contamination at its facility. ADEQ and Honeywell entered into an **administrative order on consent (AOC)** in September 1999 to conduct a **remedial investigation (RI)** at the 34th Street facility. The AOC requires Honeywell to investigate its potential source areas and to define the full extent of its contamination at and emanating from the 34th Street facility.

In 1997, USEPA and ADEQ established a third OU study area to address groundwater contamination downgradient of OU2. USEPA expects to enter into an AOC with Honeywell, Arizona Public Service Company, and Salt River Project to perform the remedial investigation/feasibility study (RI/FS) for the OU3 Study Area in late 2008.

Regulatory Oversight of Motorola 52nd Street Superfund Site

The USEPA delegated the lead responsibility for managing cleanup of the Site to ADEQ when the Site was added to the NPL in November 1989. However, ADEQ and USEPA share oversight responsibilities for work at different areas of the Site (Table 1).

1.4 Contaminants of Concern (COCs)

The current COCs in groundwater include the following volatile organic compounds (VOCs):

- trichloroethene (TCE);
- trichloroethane (TCA);
- dichloroethene (DCE);
- dichloroethane (DCA);
- vinyl chloride (VC);
- tetrachloroethene (PCE); and
- 1,4-dioxane.

Most of the COCs at this site are chlorinated solvents. Figure 3 provides a description of the breakdown that can occur as PCE and TCE degrade from one compound to another. The above list of COCs is a result of detailed **site investigations** conducted throughout the Site. COCs at the Site may change as new data become available. Information on health effects on COCs can be found in Section 4.1 of this document.

Groundwater at the Site is generally located from approximately 30 feet (ft) below ground surface (bgs) in the OU1 area and from approximately 110 ft bgs in the OU3 area. Although communities reside within the boundaries of the Site, the City of Phoenix (City) does not currently withdraw this water for potable water supply. More information on the City's drinking water supply can be found in Section 4.4.

Motorola 52nd Street Superfund Site Community Involvement Plan

2 Community Involvement

2.1 Community Involvement Objectives and Strategies

Objective #1

Identify and address issues and concerns of community members in and around the Motorola 52nd Street Superfund Site by maintaining open lines of communication

ADEQ and/or USEPA will work with local communities to identify questions or concerns that may arise during investigations or construction and operation of cleanup systems. Open dialogue between ADEQ, USEPA, and local communities is important to ensure community understanding of the project and ADEQ/USEPA awareness of local issues.

Strategies

ADEQ and/or USEPA will work to maintain open communication by doing the following:

1. conducting periodic public meetings and open houses; providing meeting summaries to all participants by posting meeting summaries on ADEQ's Web site;
2. providing easily understood contact information in all documents to be distributed to the public; providing language translation for written material and language interpretation at public meetings; participating in small community group meetings upon request to provide project information and opportunities to interact with project personnel;
3. encouraging active involvement and participation by community members;
4. conducting additional community interviews as Site activities or community conditions change; and
5. providing updates on Site issues at area neighborhood association meetings when requested.

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Objective #2

Provide timely information to inform the local community about investigations, construction and treatment system operations, and possible associated impacts to daily life

ADEQ and/or USEPA will distribute, or oversee distribution of, information and schedules for planned investigation, construction or operation activities, to those community members immediately around the affected areas.

Strategies

ADEQ and/or USEPA will provide immediate area of activities, including general updates to the Phoenix community outside the immediate area, including the following informational outreach efforts:

2. door-to-door distribution of investigation/construction/operations information to community members around the immediate area of planned activities;
3. periodic updates to the community via fact sheets and/or public meetings/open houses;
4. periodic news releases regarding investigation/construction/operations activities;
5. keeping the information repositories up to date on plans and progress of investigation/construction/operations; and
6. updating the community involvement plan on a regular basis and placing the document in local repositories.

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Objective #3

Inform local community members of community involvement opportunities.

Timely distribution of information about community involvement opportunities enables and encourages citizens to comment on and take part in the Superfund process.

ADEQ and/or USEPA will work with local communities to identify questions or concerns that may arise during investigations or construction and operation of cleanup systems. Open dialogue between ADEQ, USEPA, and local communities is important to ensure community understanding of the project and ADEQ/USEPA awareness of local issues.

Strategies

ADEQ and/or USEPA will work to maintain open communication by doing the following:

1. working with local community groups to distribute information throughout the community;
2. advertising the availability of USEPA Technical Assistance Grants for community groups;
3. provide information to neighborhood groups through regular meetings;
4. advertising the availability of technical documents for public review and comment; and
5. advertising public meetings/open houses through the news media and site mailing list.

Motorola 52nd Street Superfund Site Community Involvement Plan

2.2 Community Involvement Implementation

2.2.1 Information Repositories

An information repository is a collection of project-related documents including current information, technical reports, and reference documents about a Superfund site. Repositories are usually located in public buildings that have convenient access for local residents such as public schools, city halls, or libraries. Four information repositories are available for the Site. ADEQ and USEPA will continue to update the repositories with information. Locations of these information repositories, along with their hours of operation, appear in Appendix G.



2.2.2 Administrative Record

The **Administrative Record (AR)** contains all information found in the repositories as well as any additional information that may be considered by ADEQ and USEPA in selecting **remedial actions**. Currently, the AR is located at ADEQ offices in Phoenix. The documents are available for public review by appointment. To arrange for a time to review the AR, please call the ADEQ Records Management Center (602) 771-4380 or (800) 234-5677 (Arizona toll free).

2.2.3 Mailing List

A mailing list is used to distribute news releases, fact sheets, and other types of pertinent information about the Site. The current site-wide mailing area encompasses the entire Site and extends one-quarter mile around the Site. The approximate borders of the site-wide fact sheet mailing area are Priest Road on the east, Van Buren Street on the south from 52nd Street to 44th Street, then 44th Street on the east, Buckeye Road on the south from 44th Street to 7th Avenue, 7th Avenue on the west, McDowell Road on the north from 7th Avenue to 40th Street, then 40th Street on the west, and Oak Street on the north from 40th Street to 52nd Street. ADEQ and USEPA will continue to maintain a mailing list of interested parties for the distribution of information. These parties include individual community members, local and state elected officials, government agencies, citizen and environmental groups, businesses, and local news media. ADEQ will continue to update the mailing list through the collection of name and address information at all public/agency interactions regarding this Site and by the mail-back coupons provided in Site fact sheets. Fact sheets and other notices regarding area-wide activities or overall progress at the Site will be mailed to the entire Site mailing area regardless of inclusion on the Site mailing lists. If you would like to be added to the Site's mailing list, a mailing list form is included in Appendix

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H of this document for your use.

2.2.4 Public Comment Periods

For select documents, ADEQ and/or USEPA will provide for a public comment period of at least 30 calendar days. ADEQ and/or USEPA may announce the comment period in public notices published in major newspapers in the Phoenix area, as well as through a fact sheet or bulletin distributed to the Site mailing list and posted on the ADEQ and USEPA project Web sites provided in Section 2.2.5 of this document.

2.2.5 Contacts and Web site Information

The site contacts from ADEQ and USEPA provided below have been listed and will continue to be listed on ADEQ/USEPA publications distributed to the public. A list of these individuals as well as additional contacts is contained in Appendix I. These contact people are available to answer general and technical questions regarding the Site. If you have other questions not related to this Site, please call the ADEQ Ombudsman, Mr. Brian Davidson, at (602) 771-4881, or refer to ADEQ's main Web site at www.azdeq.gov for specific program information. A list of media contacts can be found in Appendix J.

Specific project information for the Site, including meeting agendas, meeting minutes/summaries, fact sheets, site boundary maps, background information, progress information, and other site details, can also be found on the ADEQ and USEPA internet sites listed below:

1. www.azdeq.gov/environ/waste/sps/index.html
2. www.epa.gov/region09/waste/sfund

2.2.6 Fact Sheets

Joint ADEQ and USEPA fact sheets will be provided to update the community on site-wide project status, including OU1, OU2, and OU3 Study Area status information. ADEQ or USEPA may issue fact sheets on site-wide activities or individual OU activities as project conditions require. Each fact sheet will provide contact information (email and land mail addresses and telephone numbers) for Site contacts so that community members may submit questions, comments, concerns, or requests for presentations to a community group.

The following recent newsletters and fact sheets have been developed and distributed by ADEQ and are included in Appendix K of this document:

- *Motorola 52nd Street Superfund Site Announcement of the Start of the OU1 and OU2 Five-Year Reviews*, April 2006;

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- *OUI Remedial Alternatives Analysis Report Public Comment Period*, November 2006;
- *Motorola 52nd Street Superfund Site OUI and OU2 Five-Year Reviews Public Comment Period*, November 2006;
- *Motorola 52nd Street Superfund Site-wide "Site Update"*, May 2007; and the
- *Honeywell 34th Street Facility*, November 2008.

2.2.7 Bulletins and Flyers

ADEQ and/or USEPA will issue bulletins and flyers to notify residences and businesses in the immediate area of construction activities in each OU. Notices will include information about construction and changes in traffic patterns due to associated construction activities. A sample of a recent drilling notice issued in July 2007 is provided in Appendix L of this document.

2.2.8 News Media

In recognition that community members rely on local news media outlets for timely information about local activities, ADEQ and/or USEPA may distribute news releases that address investigation and construction activities, treatment system operations, as well as associated traffic impacts and diversions. ADEQ and/or USEPA may also use news media to circulate information about investigation findings, construction progress, and community involvement activities.

2.2.9 Community Advisory Group (CAG) and Other Public Meetings



As mentioned earlier, the Site's CAG was formed in 2001 and regularly met through 2007. Input from all community members is important and encouraged and may assist ADEQ and/or USEPA in community outreach activities. ADEQ, USEPA, and other technical staff meet with members of the public to discuss site issues and provide project updates for the entire Site. ADEQ and/or USEPA will continue to hold informational public meetings and open

houses that are open to the public. A listing of the previous meeting dates for CAG meetings held are provided in Appendix M. As of the end of November 2007, a total of 30 CAG meetings were held for this Site.

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ADEQ and/or USEPA will hold public meetings and/or open houses on an as-needed basis to provide community members with the opportunity to learn of project progress and interact with project personnel. Informational tools to be used at these meetings may include posters, fact sheets, and other site-specific displays or demonstrations. ADEQ and/or USEPA may hold additional public meetings or open houses if requested or if new activities warrant this type of involvement. A list of potential public meeting locations within the site boundaries is provided in Appendix N of this document.

2.2.10 Neighborhood Association and Organization Meetings

This outreach mechanism refers to a smaller meeting format that was requested through the community interviews. An agency representative will be available to give a presentation and answer questions to a small group such as a neighborhood association or civic organization. Such small group meetings often allow more individual discussion between community members and agency personnel than is possible in a larger meeting. They often allow the agency to reach people who would not attend a meeting specifically about the Superfund Site. ADEQ and USEPA will respond to requests for small group meetings. ADEQ and USEPA have participated in meetings with Sky Harbor Neighborhood Association and the Sunbeam Neighborhood Association. If you'd like ADEQ and USEPA to discuss site activities at your next neighborhood meeting, please refer to the contacts listed in Section 2.2.5 of this document.

2.2.11 Community Outreach to Local Schools

ADEQ and USEPA can inform local students and parents of students of the Site's history as well as provide updates on upcoming activities planned for the Site. A list of local schools in the area is provided in Appendix O of this document.

2.2.12 Language Translation

A large segment of the affected community speaks Spanish. For this reason, ADEQ and USEPA will provide all written community outreach materials in both English and Spanish. ADEQ and USEPA will provide oral English-Spanish interpretations at public meetings upon request and when otherwise warranted. Other language interpretation services (e.g., American Sign Language) will be provided upon timely receipt of a request.

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2.2.13 Technical Assistance Grants

2.2.13.1 Description of Technical Assistance Grants

Congress established the **Technical Assistance Grant (TAG)** Program in 1986 to help communities affected by Superfund sites understand and comment on site-related information, and thus participate more effectively in cleanup decisions. USEPA believes it is important for communities to be involved in decisions related to nearby Superfund sites. For this reason, community outreach activities are underway at each of nearly 1,300 sites on the National Priorities List (NPL). TAG funding is available for any Superfund site that is on the USEPA's NPL. A fact sheet regarding TAGs is provided in Appendix P of this document.

Decisions about a site cleanup usually are based on a range of technical information such as:

- Studies of site conditions;
- The kinds of wastes present at the site; and
- The kinds of technology available for performing necessary cleanup actions.

The TAG may be used to hire a technical advisor to:

- Review site-related documents;
- Meet with your group to explain technical information;
- Provide assistance in communicating your concerns about the site;
- Interpret technical information for your community;
- Participate in site visits, when possible, to gain a better understanding of site cleanup activities.

2.2.13.2 Technical Assistance Grant Received for Motorola 52nd Street Site

In 1992, Ms. Velma Dunn founded the Gateway Neighborhood, Inc., also known as the Gateway Neighborhood Coalition ("Coalition"). This group consisted of a coalition of residents, business managers, property owners, environmentalists, and others with an interest in the cleanup of the groundwater contamination. The group applied for the Superfund TAG and was chosen as the USEPA's TAG grantee in 1993.

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According to financial information on USEPA's **Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)** Web site, USEPA provided \$25,000 in TAG funding to the Coalition. The purpose of the TAG was to procure a technical advisor's services to enhance community awareness of and participation in the hazardous waste cleanup activities for the Site. The Coalition provided opportunities for the affected community by inviting them to public meetings and technical meetings. The Coalition also disseminated information to the community by using TAG funding to translate technical materials into understandable languages and provided comments on technical documents to ADEQ and USEPA. The Coalition managed the TAG from May 14, 1993 to December 31, 1999.

USEPA can award Technical Assistance Grants (TAGs) of up to \$50,000 per site. A TAG allows your community to hire an independent expert to help you with the following activities:

- *Interpret technical data,*
- *Understand site hazards, and*
- *Become more knowledgeable about the different technologies that are being used to clean up sites.*

TAG funding can also be used to undertake community outreach efforts for a site.

A new TAG was awarded to the Lindon Park Neighborhood Association (LPNA) in September 2004. The LPNA is a non-profit organization that represents a neighborhood that lies in an Environmental Justice area and is directly adjacent to the Motorola 52nd Street Facility. Rene Chase-Dufault and Mary Moore manage the Motorola 52nd Street Superfund Site TAG.

The LPNA covers an area that is directly adjacent to the Motorola 52nd Street Facility. LPNA has raised neighborhood concerns to ADEQ and USEPA during each phase of the clean-up process. Examples of important LPNA activities include: submitting public comments on technical documents, coordinating requests for public meetings, working with other neighborhoods and organizations to publicize public meetings, and highlighting the importance of raising questions and issues that have impacts on the surrounding community.

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3 Community Information

The community that surrounds the Site comprises a wide variety of backgrounds, interests, and community profiles. Thus, one of the best ways to obtain the consensus of the community is through speaking with members of neighborhood associations. A list of 38 neighborhood associations that lie within or around the Site can be found in Table 2 of this document. Figure 4 provides a graphical representation of 22 of these neighborhood associations whose boundaries are located near the Site. ADEQ and the USEPA also worked with the CAG, which was established for this Site in 2001 and met regularly through 2007, to obtain information about the community.

3.1 Community Interviews Conducted

To assist in the preparation of the CIP update, ADEQ and USEPA conducted informal interviews with members of the local community, local business representatives, and responsible parties. A total of 33 people were interviewed during the period from July 25, 2007 to August 31, 2007. The representation from each of the three project areas is described below:

1. OU1 interviews – six people
2. OU2 interviews – thirteen people (OU2 includes the Honeywell facility)
3. OU3 interviews – fourteen people

The interviews were conducted in person and by phone by ADEQ and USEPA. In general, there were three topics of questions asked of each interviewee:

1. history/knowledge of site (Questions #1 through #4);
2. information and materials (Questions #5 through #9); and
3. community involvement (Questions #10 through #12).

In addition to receiving input from the community, the interviewees provided names of individuals who may be interested in receiving information about the Site's activities and status. A total of seven individuals were added to the site mailing list as a result of suggestions by the thirty three community members interviewed. Several of those named included contacts with various schools and neighborhood associations in the Site area; others included business owners and residents.

Key comments or suggestions made throughout the interview process are provided below:

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- Overall, the individuals interviewed appeared to have an understanding of the scope and magnitude of the contamination at the Site as well as the efforts to treat the water at the OU1 and OU2 treatment facilities (most of the people interviewed have attended public meetings for this Site).
- Potential health effects are still a concern among community members, specifically drinking water.
- In general, the interviewees believe that the written materials provided by ADEQ and USEPA are clear and easy to understand.
- Community members appreciate receiving regular updates from ADEQ and USEPA. The consensus of the interviewees was that receiving updates every three months was sufficient to keep the community informed without overwhelming them with information. Many of the interviewees indicated that they would like new information provided to them whenever it was available.
- Materials that could be provided for distribution or use at neighborhood association meetings include: extra copies of newsletters, fact sheets, or other notices, health risks of chemicals in the groundwater, and analytical results from sampling events.
- Several interviewees requested that more visuals and graphics be used in written materials and for materials used during the public meetings.
- In general, community members felt that the level of community involvement and outreach from ADEQ and USEPA was poor and needed to be improved.



A detailed description of the responses provided by the interviewees is provided in Appendix Q of this document.

3.2 Operable Unit 1 Community Information

3.2.1 Geographic Information for OU1

The contaminated groundwater **plume** addressed by the OU1 remedy defines the OU1 area. The boundaries of OU1 are approximately 52nd Street on the east, 46th Street on the west, Palm Lane to the north, and Roosevelt Street to the south. The focus of the planned community involvement activities will be the residences and businesses in the OU1 area.

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3.2.2 Demographic Information for OU1

The OU1 area, which is in the 85008 zip code, consists of mixed residential and industrial/commercial land uses. Based on the 2000 U.S. Census figures for this zip code, residents of this area represent a variety of ethnic backgrounds, including the following approximate proportions: Caucasian (30.1%), Hispanic (58.6%), Asian (1.2%), and other, including African American and Native American (10.1%).

3.2.3 Description of Interviews and Summary of Responses for OU1

There were six people interviewed for the OU1 project area. The interviews were conducted by telephone or in person by ADEQ and USEPA. Below is a summary of the responses provided by the three people interviewed in the OU1 project area, including those having site-wide interests.

3.2.3.1 *History/Knowledge of Site*

Five people interviewed for OU1 have lived or worked in the area for 0 to 10 years. One lived or worked in the area for 11 to 30 years. Overall, the interviewees were very knowledgeable about the history of the Site as well as the current operations occurring at the OU1 treatment system. The interviewees identified numerous concerns. The most prevalent concerns revolved around potential health effects from the groundwater (as a drinking water source). The interviewees also stated that they were unaware of any attempt to address the health concerns or treatment of the groundwater.

3.2.3.2 *Information and Materials*

All of the three people interviewed are on the site mailing list and receive CAG meeting agendas, newsletters, fact sheets, and other materials distributed by ADEQ and USEPA. The interviewees stated the information is clear and easy to understand. One interviewee felt that ADEQ and USEPA have been keeping them adequately informed. The other two felt that there was information missing that was needed in order to have a clear understanding of the Site. The consensus from the interviewees was that the best way to provide information was through direct mailings. Mailings should be provided when new information was available or at least annually.

3.2.3.3 *Community Involvement*

Most of the people interviewed for the OU1 area have not participated in public meetings for this Site. The reason why they had not participated was because they were unaware the meetings existed. Two indicated that they were interested in attending future meetings. Two interviewees felt that community involvement and outreach by ADEQ and USEPA was poor because they were unaware of any activity by ADEQ and/or USEPA beyond the newsletters in the mail. The

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third person felt that the involvement and outreach was pretty good.

3.3 Operable Unit 2 Community Information

3.3.1 Geographic Information for OU2

The OU2 area is defined by the OU2 remedy that addresses the plume of contaminated groundwater down gradient of the OU1 boundary. The OU2 area of groundwater contamination is generally between Roosevelt Street to the north, 20th Street to the west, slightly north of Buckeye Road to the south, and 40th Street to the east, with a rectangular northeastern extension up to 46th Street/State Route 143.

3.3.2 Demographic Information for OU2

OU2 comprises the zip codes 85034 and 85008. Demographics of each zip code were averaged because the sizes of the zip code areas were approximately the same. The area is a mixed residential and industrial area. Based on the 2000 U.S. Census figures for these zip codes, the OU2 community consists of people from various ethnic backgrounds. The Hispanic population is the majority component at approximately 69.4%, with many community members who do not speak English. Other ethnic groups in the area include Caucasian at approximately 20.4%, Asians at approximately 0.8%, and others, including African American and Native American, at approximately 9.4%. The OU2 community comprises mainly low- and middle-income families. Most of the acreage in this area is either vacant or used for industrial purposes. Sky Harbor International Airport has the next largest amount of acreage, with single-family dwellings being next in acreage use.

3.3.3 Description of Interviews and Summary of Responses for OU2

There were thirteen people interviewed to represent community input from the OU2 project area. The interviews were conducted in person and by phone by ADEQ and USEPA. Below is a summary of the responses provided by the thirteen people interviewed in the OU2 project area.

3.3.3.1 History/Knowledge of Site

One person interviewed for OU1 has lived or worked in the area for 0 to 10 years. Five of the people interviewed have lived or worked in the OU2 area for 11 to 20 years. Two people interviewed have lived or worked in the OU2 area for 21 to 30 years. The remaining five people have lived or worked in the OU2 area for 31 or more years. All the interviewees knew that the groundwater was contaminated. Three interviewees mentioned that solvents and/or TCE were the

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contaminant.

Five community members did not have any concerns about the Site. One mentioned that ADEQ was doing a great job. Another discussed concerns that take priority including immediate personal health problems and the health problems of friends and family. Concerns about the drinking water quality were mentioned by four community members in terms of both current and future water supply. Four interviewees expressed concerns for the general health of anyone living in the area and mentioned specific cases where they themselves or someone they know have/had health problems and discussed a possible relationship between them and the contamination at the Site. Two community members were concerned about how the contamination at the Site will affect the way we live and the environmental in which we live.

Four interviewees were aware of general cleanup attempts at the Site, but were generally unaware of the results. Six interviewees were not aware that anything was being done to address the problem. One member suggested a tour or video to show community members what has been and is currently being done.

3.3.3.2 *Information and Materials*

In general, all people interviewed have been receiving the CAG meeting agendas, newsletters, and fact sheets regarding site activities. Five people discussed receiving additional information regarding the Site from the newspaper and media in the past but have not heard or read anything about it in newspapers or media reports more recently. Eight people felt that the information was clear and easy to understand. One requested a video to help understand the Site better. Three individuals felt the information was not clear enough. Five of the individuals felt they have been kept adequately informed; three were not sure if they knew all the information they should; four people felt they needed more information and clarification; one individual stated there is room for improvement; and one individual felt information was provided adequately early on in the Site characterization, but felt there has been a dramatic decrease in information over the years.



The interviewees generally agreed that newsletters were the best way to inform community members about site activities. Any and all information available was requested by three interviewees; one individual would like to receive a timeline of the future of the Site and when the remediation will be completed; four of the people interviewed requested general updates including recent analytical results from groundwater testing and a summary of background

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information. Two individuals felt that not all the information was being provided by ADEQ and USEPA. Seven of the interviewees suggested information to be provided whenever new information is available pertaining to the Site. Three individuals suggested quarterly updates. One person suggested monthly updates of information. One person suggested email could be used, too.

3.3.3.3 Community Involvement

Three of the thirteen people interviewed for the OU2 area have participated in public meetings for the Site. Five individuals had difficulty attending the meetings because of age or disabilities. Six people felt that the public meetings were either not productive or had no interest in attending them. Several interviewees believe the community involvement and outreach by ADEQ and USEPA is poor and the only outreach they were aware of was the most recent newsletter to which they responded. Three individuals felt the community involvement and outreach was good/fair. Several suggestions for individuals or groups that should be contacted or added to the mailing list were made.

3.4 Operable Unit 3 Community Information

3.4.1 Geographic Information for OU3

The OU3 Study Area extends from 20th Street to about 7th Avenue to the west, McDowell Road to the north, and Buckeye Road to the south. More exact boundary information will result from additional investigations.

3.4.2 Demographic Information for OU3

The OU3 Study Area has a wide range of communities and types of land use. The OU3 comprises the zip codes 85006, 85034, 85003, and 85004. Demographics of the zip codes from the 2000 U.S. Census were averaged because the sizes of the zip code areas were approximately the same. This area is mixed residential, commercial, and industrial. The ethnic composition of this area is primarily Hispanic at approximately 60.8%, Caucasian at approximately 28.6%, Asian at approximately 0.7%, and others, including African American and Native American, at approximately 9.9%. The OU3 Study Area comprises mainly low- and middle-income families. Most of the acreage in this area is used for single-family dwellings, industrial uses, and commercial uses.

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3.4.3 Description of Interviews and Summary of Responses for OU3

There were fourteen people interviewed to represent community input from the OU3 Study Area. The interviews were conducted in person by ADEQ and USEPA. Below is a summary of the responses provided by the fourteen people interviewed in the OU3 Study Area.

3.4.3.1 *History/Knowledge of Site*

Of the people interviewed for the OU3 Study Area, two people have lived or worked in the area less than ten years and the other four have lived or worked in the area for over 21 to 30 years. Three individuals indicated that they had a general understanding of the Site issues. Three had very little understanding other than the knowledge that the groundwater was contaminated. In general, the individuals responded that they were concerned about the cleanup of the Site and prevention of further contamination to the land and groundwater. Five interviewees were unaware of any effort to address the groundwater contamination at the Site. One community member interviewed was aware that clean up at OU1 and OU2 was being addressed.

3.4.3.2 *Information and Materials*

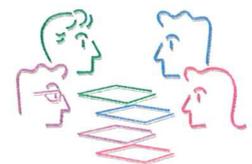


Two people interviewed indicated that they are receiving CAG meeting agendas, newsletters, and fact sheets from ADEQ and USEPA, though not on a regular basis. Three interviewees have only received the May 2007 newsletter. One individual received information from the South Phoenix Planning Committee meetings as well as from other individuals living in the area. Although the materials are easy to understand, the community members would like to see more details on what chemicals are involved, the potential health effects of these chemicals, and what plans are in place

for remediation. Four individuals indicated they were interested in attending public meetings. The interviewees indicated that the newsletters and other mailings are good. The preference on the frequency of the information provided varied from every month to semiannually, although three people suggested quarterly updates.

3.4.3.3 *Community Involvement*

None of the people interviewed have participated in public meetings held for this Site. Five stated that they were unaware of the meetings and one does not have time. Two of the individuals interviewed felt that the community involvement was poor/limited. Four interviewees felt that the community involvement was very good.



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4 Health Information

Currently, there are no municipal drinking water supply wells affected by the Site. The following section provides toxicological information about the various COCs currently identified for this Site. A summary of the health assessments conducted in 1988, 1990, 1992, 1993, 1996, and 2002 is also provided as well as a description of planned health assessments. Finally, a brief discussion regarding the City of Phoenix's water supply is provided as a result of specific comments received during the community interview process.

If anyone has any knowledge of private wells located within the Motorola 52nd Street Site, please contact Sherri Zendri, ADEQ Project Manager, at (520) 770-3126.

4.1 Toxicological Information

To help assist the community understand the potential health effects of the various COCs, copies of fact sheets prepared by the **Agency for Toxic Substances Disease Registry (ATSDR)** have been included in Appendix R. Toxicological information is provided by the **ATSDR ToxFAQs™** fact sheets. The ATSDR ToxFAQs™ is a series of summaries about hazardous substances developed by the ATSDR Division of Toxicology.

- 1,1-DCE;
- 1,2-DCE;
- 1,1-DCA;
- 1,2-DCA;
- 1,1,1-TCA;
- 1,1,2-TCA;
- TCE;
- PCE;
- VC;
- 1,4-Dioxane;
- Automotive Gasoline; and
- Jet Fuel.

While all of these chemicals or compounds listed above are not COCs for the Site, several community members expressed an interest in seeing toxicological information concerning chemicals or compounds that may be otherwise related to the Site.

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4.2 Previous Health Assessments

Throughout the history of the Site's regulatory history, several health assessments have been completed by the **Arizona Department of Health Services (ADHS)** and the ATSDR. A summary of these assessments, along with their major conclusions, is provided in the following sections.

4.2.1 1988 Public Health Assessment for OU1

In 1988, a Public Health Assessment for the OU1 area (the only area that was defined at that time) was completed by ATSDR that concluded the following:

- “The site is unlikely to pose any threats to human health”; and
- “Although on-site and off-site groundwater is contaminated, contaminant levels at the point of extraction were below the levels of concern.”

4.2.2 1990 Cancer Incidence & Mortality Study for East Phoenix Area

In 1990, ADHS completed a health study entitled: Cancer Incidence and Mortality in an East Phoenix Area Overlying Groundwater Contaminated with Volatile Organic Compounds. The study found no elevated rates of cancer as compared to the rest of Maricopa County.

4.2.3 1992 Baseline Risk Assessment

In 1992, ADHS completed a Baseline Risk Assessment that concluded: “The risk of public exposure to groundwater is limited, and therefore groundwater causes no imminent health hazard.”

4.2.4 1993 Update to 1988 Health Assessment to Include OU2

In 1993, ATSDR completed an update to the 1988 Health Assessment which included the area of OU2. Below is a summary of the findings of the 1993 Update.

- The original conclusions and recommendations of the 1988 Public Health Assessment were valid for the data available at the time. Community health concerns were not mentioned in the 1988 Public Health Assessment.
- On-site soil, soil gas, groundwater, and fugitive dust (from bare areas, future

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construction and remediation) are a potential public health concern until remediation at the Site is completed.

- The Motorola 52nd Street off-site contaminated groundwater remains a potential public health concern, although only two known exposure points (private Well 4626G and Salt River Project [SRP] Well 18E-5N) currently exist. These wells are periodically monitored. The public drinking water is not affected and institutional controls are in place.
- Because the groundwater contamination plume remains a potential health concern, present and future monitoring of the groundwater contamination should be maintained and institutional controls should remain in place.
- Due to the existing groundwater contamination plume, more frequent monitoring of Well 4626G and the SRP Well 18E-5N may need to be considered for the future.
- Due to continued community concern, community education should be considered for the Site.
- When the final **feasibility study (FS)** is available, ATSDR will acquire the document for review and determine whether further action is required.
- The data and information contained in the **Site Review and Update (SRU)** have been evaluated by the ATSDR **Health Activities Recommendation Panel (HARP)** for appropriate public health actions. HARP has determined that community health education and health professions education are indicated. Community health education is indicated to assist the community in understanding their potential for exposure to contaminated drinking water. Health professional education is indicated to improve the knowledge, skill, and resources of health professionals in screening, surveillance, diagnosing, treating, and preventing injury or disease due to exposure to hazardous substances.

4.2.5 1996 Update to 1988 and 1993 Public Health Assessments

In 1996, ATSDR completed an update to the 1988 Public Health Assessment and the 1993 update to the Public Health Assessment. This report addressed five recommendations offered from the ATSDR. They are broken down into those that have been addressed, those that are currently being addressed, and those that have not been addressed.

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Recommendations that had been addressed as of 1996

- Recommendation #3: ASTDR recommended that community education be considered at this site.
 - In 1994, USEPA issued a TAG to the Gateway Neighborhood Coalition. This group keeps the community informed about activities at the Site and holds meetings on a regular basis.
 - ADEQ holds public meetings to inform the public of site activities. However, according to the Gateway Neighborhood Coalition, attendance at these meetings is usually low, due to poor advertising and inconveniently scheduled times.
 - ADEQ distributed a fact sheet to 550 individuals in October 1995.
 - ADEQ plans to hold an Open House after the CD is negotiated.
- Recommendation #5: HARP recommended that education be provided to the community to assist them in understanding their potential for exposure and that education can be provided to health officials to assist them in screening, diagnosing, treating, and preventing injury or disease due to exposure of hazardous substances.
 - As mentioned above, the community is educated by the Gateway Neighborhood Coalition and by ADEQ.
 - See recommendations that have not been addressed for health care professional training.

Recommendations that were currently being addressed as of 1996

- Recommendation #1: ATSDR recommended that present and future monitoring for groundwater contamination be maintained and institutional controls remain in place.
 - Motorola collects groundwater samples from OU1 on a quarterly basis. Other PRPs collect groundwater samples from OU2 on a quarterly, semiannual, or annual basis. The State collects groundwater samples from OU2 on a semiannual basis.
 - See recommendations that have not been addressed for information on institutional controls.
- Recommendation #2: ATSDR recommended that more frequent monitoring of Well

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4626G and SRP Well 18E-5N be considered for the future.

- According to ADEQ, Well 4626G originally belonged to Jerry Morgan and had not been sampled since 1990. Due to the fact that his original well went dry, Mr. Morgan drilled a new well. According to Ms. Sandra Omer, current owner of the property, the new well is used for irrigation purposes. It is ADEQ's understanding that in the past, this well was also used to fill up Mr. Morgan's private swimming pool. ADEQ has contacted Ms. Omer and has negotiated an access agreement to conduct sampling of this well. The first sampling event under this access agreement was conducted on July 13, 2007.
- The SRU reported that Well SRP-18E-5N was sampled on an annual basis. According to an SRP representative, the well is still (as of 1996 Update) only sampled on an annual basis.

Recommendations that had not been addressed as of 1996

- Recommendation #1: ATSDR recommended that present and future monitoring for groundwater contamination be maintained and institutional controls remain in place.
 - See recommendations that are currently being addressed for information on groundwater monitoring.
 - None of the agencies contacted were aware of any institutional controls.
- Recommendation #4: In the SRU, it was recommended that the ATSDR review the final FS and determine whether further action is required.
 - The FS has been completed. According to ATSDR representative Sven Rodenbeck, ATSDR has not reviewed the FS.
- Recommendation #5: HARP recommended that education be provided to the community to assist them in understanding their potential for exposure and that education can be provided to health officials to assist them in screening, diagnosing, treating, and preventing injury or disease due to exposure of hazardous substances.
 - See recommendations that have been addressed for information on community education.
 - According to the Gateway Neighborhood Coalition, ATSDR wrote a letter recommending that an ATSDR representative be sent to educate and train the

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health care professionals in the area. The letter was written in 2003, but no action has been taken since then.

4.2.6 2002 Health Consultation

In April 2002, ATSDR and ADHS completed a **health consultation**. The purpose of the health consultation was to document a status verification of private drinking water wells.

4.2.7 Ecological Risk Assessment

In addition to the health assessments described above, an **ecological risk assessment (ERA)** was completed by USEPA in 1992. Below is a summary of the ERA's findings:

- Because of [the VOCs'] high volatility and low toxicity relative to freshwater aquatic criteria, exposure of biota to acute or chronic levels of TCA and TCE may not be a concern.
- Exposure of biota to inorganics (arsenic and lead) would be of most concern because of their exceedance of the fresh water criteria, persistence in the environment, and potential for bioaccumulation.

4.2.8 Focused Health Assessment for Honeywell Facility

Honeywell conducted a health assessment as part of their focused RI. The results of the health assessment were presented in the *Final Focused Remedial Investigation Report, Honeywell 34th Street Facility, Phoenix, Arizona* dated December 2005. The health assessment focused on the Honeywell 34th Street Facility and the neighboring properties. The general area of the assessment is a one-mile radius from the Honeywell facility. Honeywell identified potential receptors and potential pathways of exposure. The results from Honeywell's health assessment are summarized as follows:

- Groundwater in the Honeywell area is not being used for drinking water purposes.
- A well search was conducted for the area surrounding the Honeywell facility and determined that no known wells were currently being used for drinking water or irrigation purposes.
- Results of the indoor air evaluation for offsite residents indicate that there is a potential for vapor intrusion through soil to offsite residences. However, the potential cumulative excess lifetime cancer risks (ELCRs) associated with exposure to VOCs in indoor air are within the risk management range and hazard indices (HIs) are below the threshold of 1.

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- Results of the indoor air evaluations for the onsite workers indicate that there is a potential for vapor intrusion into buildings at the facility. Eleven locations have potential risks that exceed the risk management range based on the screening level version of the Johnson and Ettinger model. However, using the advanced version of the Johnson and Ettinger model and site-specific input parameters, potential risks are within the risk management range for benzene, the major risk driver.
- Some concentrations of methane measured at depth were between the lower explosive limit (LEL) and upper explosive limit (UEL), indicating a potential explosion hazard. Methane is currently being produced because of anaerobic biodegradation of the free-phase hydrocarbon pool in an oxygen-starved environment. A *Revised Corrective Action Plan* that describes Honeywell's approach for remediating free product, contaminated soil, and groundwater at the facility was submitted to ADEQ in July 2004. The prominent remedial technology featured in Honeywell's approach is bio-enhanced soil-vapor extraction (BSVE). Honeywell received final approval from ADEQ on the *Revised Corrective Action Plan* on October 7, 2005.
- Honeywell will complete revised focus human health assessment that will incorporate all the focused RI related sampling conducted since the *Focused RI Report* was completed. The revision will also discuss sampling conducted to support Honeywell's approved petroleum hydrocarbon remedy, a bioventing soil vapor extraction system.

4.3 Planned Health Assessments

In previous studies, ADHS quantified estimated migration of TCE into homes using measured soil-vapor levels and the best model that was available at the time (Farmer Model). Based on that study, ADHS predicted negligible migration of TCE into homes from the contaminated groundwater. Currently, however, ATSDR is re-evaluating the toxicity of TCE, and the USEPA has developed draft guidance for estimating potential exposure from vapor intrusion. Vapor intrusion is the migration of volatile chemicals from the soils and groundwater into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface solid and into air spaces of overlying buildings. In extreme cases, the vapors may accumulate in dwellings or occupied buildings to levels that may pose near-term safety hazards, acute health effects or aesthetic problems. In most cases, however, the chemical concentrations are low, or depending on site-specific conditions, vapors may not be present at detectable concentrations. USEPA's draft guidance to evaluate the vapor intrusion pathway, entitled *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002* (USEPA Draft Guidance), can be found on the following USEPA Web site: www.epa.gov/correctiveaction/eis/vapor.htm

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4.3.1 Vapor Intrusion/Indoor Air Study for OU1 Area

ADEQ is currently evaluating the methodology for assessing the indoor air risks and will implement the methodology once a methodology can be agreed upon by ADEQ and USEPA. In the meantime, ADEQ requested Freescale to conduct a study in 2005 using soil gas data collected during a 1995 soil gas investigation at OU1.

Freescale submitted the *Potential Indoor Air Vapor Intrusion Risks for Motorola 52nd Street Superfund Site Operable Unit 1 Memorandum* to ADEQ on December 6, 2005 (Sciences International, 2005). The memorandum evaluated the risks from potential vapor intrusion into residences within the OU1 Area using soil gas data collected in 1995. Shallow soil gas samples were collected from a depth of approximately five feet bgs from twenty three locations. Screening levels were generally based on USEPA's published cancer and non-cancer potency factors. If no USEPA factors were available, California EPA inhalation potency factors were used. The results show low total potential risk levels that are within the presumptively acceptable risk range of 10^{-6} (or lower) to 10^{-4} . Most of the results were below the 10^{-6} risk level. TCE and PCE were the only COCs detected at concentrations above soil gas risk-based screening level concentrations. Only 2 of the 23 locations show estimated values above the 10^{-5} risk level. ADEQ and USEPA do not view this evaluation as a complete assessment of the vapor intrusion pathway at OU1. Additional data will need to be collected in order to more accurately determine the potential health risks posed by vapor intrusion in this area.

If you would like more information about Freescale's plans to conduct a vapor intrusion/indoor air study in the area of OU1 (with ADEQ oversight), please contact Ms. Sherri Zendri, ADEQ Project Manager, at (520) 770-3126. If you would like more information on the toxicity of TCE and other chemicals or about the USEPA Draft Guidance, please contact Mr. Will Humble, ADHS, at (602) 364-3855 or via email at whumble@hs.state.az.us or Mr. Stan Smucker, USEPA, at (415) 972-3056 or via email at smucker.stan@epa.gov.

4.4 Drinking Water Supply for City of Phoenix (City)

Drinking water is supplied by the City distribution system primarily from surface water sources located outside the Site. According to the City Web page (*2006 Water Quality Report*), the City uses groundwater, pumped from 18 groundwater wells operated by the City, for about 2% of the drinking water supply. Most of the water (98-plus percent) comes from the Salt, Verde, and Colorado Rivers and is treated at one of the City's five water treatment plants.



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The drinking water supplied to homes is regularly tested by the City to ensure compliance with all state and federal standards. For more information about the drinking water in the vicinity of the Site or in the City, please visit the City's Water Services Department Web site at www.phoenix.gov/WATERSERVICES/index.html.

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5 Site Status

5.1 Search for Potentially Responsible Parties

USEPA and ADEQ have conducted Potentially Responsible Party (PRP) searches for the Site, and believe that parties who may be potentially liable for response costs at the Site have been identified. The parties located within Operable Unit 2 (OU2) and Operable Unit 3 (OU3) who have received USEPA **General Notice and/or Special Notice Letters** are identified in Appendix F. Of the 42 parties who received a *General Notice Letter*, one party (Freescale Semiconductor, Inc. on behalf of Motorola, Inc.) is located in OU1 and ADEQ is the **lead agency**. Twenty parties (including Honeywell International, Inc.) are located in OU2, and 21 parties in OU3. A total of 25 separate facilities are represented by these PRPs: one facility in OU1, twelve facilities in OU2, and twelve facilities in OU3.

The OU3 parties which received *Special Notice Letters* were invited to participate in negotiations with USEPA (lead agency) to conduct a focused facility RI/FS to determine if their facilities may have released hazardous substances into the environment.

For the OU2 parties, the USEPA Special Notice Letter also informed the recipients that ADEQ would act as the lead agency in oversight of each focused facility RI/FS in OU2.

ADEQ and USEPA are overseeing facility investigations being conducted by OU2 and OU3 parties, as well as negotiating Administrative Orders on Consent and work plans to guide those parties that have yet to commence their facility site work. After several years of litigation, ADEQ entered into a Consent Judgment with Honeywell International, Inc. in 2008 over the State's allegations of non-compliance with the terms and conditions of the September 19, 1999 Administrative Order on Consent (which required Honeywell to conduct a focused RI of its 1111 S. 34th Street Facility) in *State of Arizona v. Honeywell International, Inc.* (Maricopa County CV-2008-018396). ADEQ has also completed an Administrative Order on Consent with ITT Cannon, Inc. to conduct an investigation of its former plant at 2801 E. Air Lane in Phoenix and is negotiating the terms of facility investigations with several other OU2 parties.

Further information regarding PRP activities will be provided at the community informational meetings and in fact sheets, newsletters, and public notices. If you would like to be added to the Motorola 52nd Street mailing list, please complete and mail the mailing list coupon provided in Appendix H.

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5.2 Site-Wide Evaluation

Beginning in 2004, ADEQ has begun its analysis of evaluating the Site as a whole in preparation of determining a final remedy for the Site. ADEQ issued its Bedrock Contour Map of the OU2/Honeywell/OU3 area using data recently collected. On May 18, 2004, ADEQ produced site-wide cross sections. In June 2004, a Technical Work Group (TWG) meeting was held with ADEQ, USEPA, Freescale, and Honeywell to discuss the lithology throughout the Site and how it correlates from one OU to another. ADEQ issued a revised hydrostratigraphic conceptual model in August 2005. ADEQ issued the September 2003 site-wide groundwater elevation and concentration maps on September 30, 2005. ADEQ issued the September 2005 site-wide groundwater elevation and concentration maps on October 2, 2006. ADEQ is currently preparing the September 2008 site-wide groundwater elevation and concentration maps.

5.3 Recent and Planned Activities for Operable Unit 1

Freescale submitted a *Groundwater Remedial Alternatives Analysis (GRAA) Report* on September 30, 2005 and an *Addendum to Groundwater Remedial Alternatives Analysis* in December 2005. The GRAA provided a focused evaluation of groundwater remedial alternatives at the former Motorola 52nd Street Facility based on current contaminant distribution and remediation progress. Freescale also developed a groundwater flow model to analyze future system effectiveness under continuing groundwater decline. The model evaluated the following future scenarios: (1) continued current conditions, (2) continued regional drought, (3) continued current conditions with additional bedrock pumping at the Old Crosscut Canal, (OCC) (4) bedrock pumping only at the Old Crosscut Canal, (5) increased on-site pumping, and (6) continued current conditions with reinjection. The only simulation that did not predict that capture would be maintained in the future was the “*bedrock pumping only at the Old Crosscut Canal scenario.*” ADEQ met with Freescale on March 7, 2006 to discuss the reports. At that meeting, Freescale agreed to prepare a work plan for a pilot **aquifer** test in bedrock.

Freescale submitted an *OUI Evaluation Model Report* dated September 28, 2005. The purpose of the report was to (1) simulate groundwater flow in the vicinity of the 52nd Street facility and calibrate the model to conditions from 1992 through 2003, and (2) provide a tool to evaluate future changes in the operations of the OUI system. The model was constructed based on field data collected over many years and using the knowledge from several previous models of the Site. The model looked at the following future scenarios:

- continued current conditions;
- continued regional drought;
- continued current conditions with additional bedrock pumping at the Old Crosscut Canal;

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- bedrock pumping only at the Old Crosscut Canal;
- increased on-site pumping; and
- continued current conditions with reinjection.

The conclusions drawn from the model results indicated that “with the exception of bedrock pumping at the OCC simulation all the scenarios predict that capture will be maintained into the future. The continued current conditions and the continued regional drought scenarios are essentially the same with respect to operations and show that the current operations will continue to be adequate for at least the next several years regardless of the drought.” The report goes on to say in summary that “the model predictions indicate that the OUI system will continue to maintain capture with current rates or gradually reduced rates into the foreseeable future. Increasing on-site pumping would enhance mass removal. The other scenarios are feasible, but do not significantly enhance the current system.”



Operable Unit 1
Groundwater Treatment System
5005 E. McDowell Road, Phoenix, Arizona

Freescale submitted the *Potential Indoor Air Vapor Intrusion Risks for Motorola 52nd Street Superfund Site Operable Unit 1 Memorandum* to ADEQ on December 6, 2005 (Sciences International, 2005). The memorandum evaluated the risks from potential vapor intrusion into residences within the OUI Area using soil gas data collected in 1995. Shallow soil gas samples were collected from a depth of approximately five feet bgs from 23 locations. Screening levels were generally based on USEPA’s published cancer and non-cancer potency factors. If no USEPA factors were available, California EPA inhalation potency factors were used. The results show low total potential risk levels that are within the presumptively acceptable risk range of 10^{-6} (or lower) to 10^{-4} . Most of the results were below the 10^{-6} risk level. TCE and PCE were the only COCs detected at concentrations above soil gas risk-based screening level concentrations. Only two of the 23 locations show estimated values above the 10^{-5} risk level. ADEQ and USEPA do not view this evaluation as a complete assessment of the vapor intrusion pathway at OU1. Additional data will need to be collected in order to more accurately determine the potential health risks posed by vapor intrusion in this area.

In March 2006, Freescale submitted the *2005 Annual Effectiveness Report* for operations of the groundwater treatment system. The conclusions presented in the report indicated that OU1



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extraction systems maintained a capture zone adequate to contain the entire width and depth of the plume. Freescale indicated that the extent of vertical capture was at least 400 feet in depth. On-site **extraction wells** maintain capture in the alluvium and bedrock in the Courtyard area to a depth of approximately 150 to 200 feet bgs.

In September 2006, ADEQ completed the third **five-year review** of the OU1 remedy. The purpose of a five-year review is to evaluate the effectiveness of the remedy and whether it remains protective of human health and the environment. ADEQ identified several issues in the review of the OU1 treatment system. The assessment identified several issues in the review of the OU1 treatment system. Based on a conservative interpretation of the data, using converging lines of evidence, it appears that the target capture zone (TCZ) in bedrock and to the north is questionable. ADEQ is also concerned that the source area interim remedy is not significantly effective in reducing the levels of contaminants due to the dense non-aqueous phase liquid (DNAPL) in the fractured bedrock and that high concentrations of TCE will continue in the source area wells for a long period of time. In addition, groundwater concentrations in the shallow bedrock ports of DM-125 and DM-601 appear to be increasing suggesting that the on-site groundwater extraction system may not be reducing or eliminating contaminant migration from the source area. Several **data gaps** need to be filled in order to fully evaluate the OU1 capture effectiveness. As the OU1 Area conditions continue to change, additional groundwater elevation and quality data are needed to adequately evaluate the OU1 interim remedy. The monitoring network needs to be evaluated and updated based on current site conditions and issues. A review of applicable or relevant and appropriate requirements (ARARs) determined that there are no newly promulgated standards; however, new ARARs and To Be Considereds (TBCs) are likely to be determined for the final remedy. Because site conditions have changed in the last few years, mainly the de-watering of the alluvium, ADEQ is concerned whether the remedy will continue to be effective in the future. A copy of the five-year review is available for review at any of the information repositories referenced in Appendix G.

On January 5, 2007, Freescale submitted a monitor well installation report for **monitor wells** DM-609 and DM-610 located on Monta Vista Road, east of 47th Place. The monitor wells were installed in October/November 2006 north of EW-18 in order to better delineate the extent of contamination along the northern boundary of the Site plume.

In March 2007, Freescale submitted the *2006 Annual Effectiveness Report* for operations of the groundwater treatment system. Freescale indicated they felt **containment** of the highest VOC concentrations in the vicinity of OU1 has been achieved through operation of the OU1 groundwater extraction and treatment system. However, the conclusions relied largely on empirical data obtained from the monitor well network that was relatively sparse in the vicinity and downgradient of the depicted capture area (stagnation point) where a groundwater divide may exist. Additionally, the vertical extent of capture in the bedrock remained undefined,

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particularly in the vicinity of wells DM-601 and DM-606 where downward vertical gradients were observed. Freescale agreed at the time to install additional monitor wells to help address the data gaps identified by ADEQ.

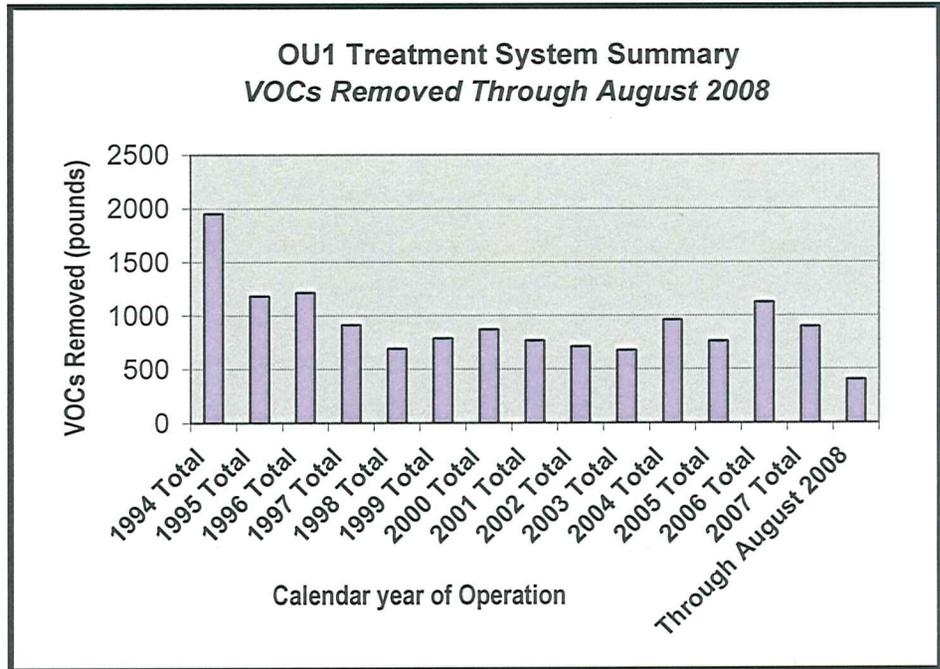
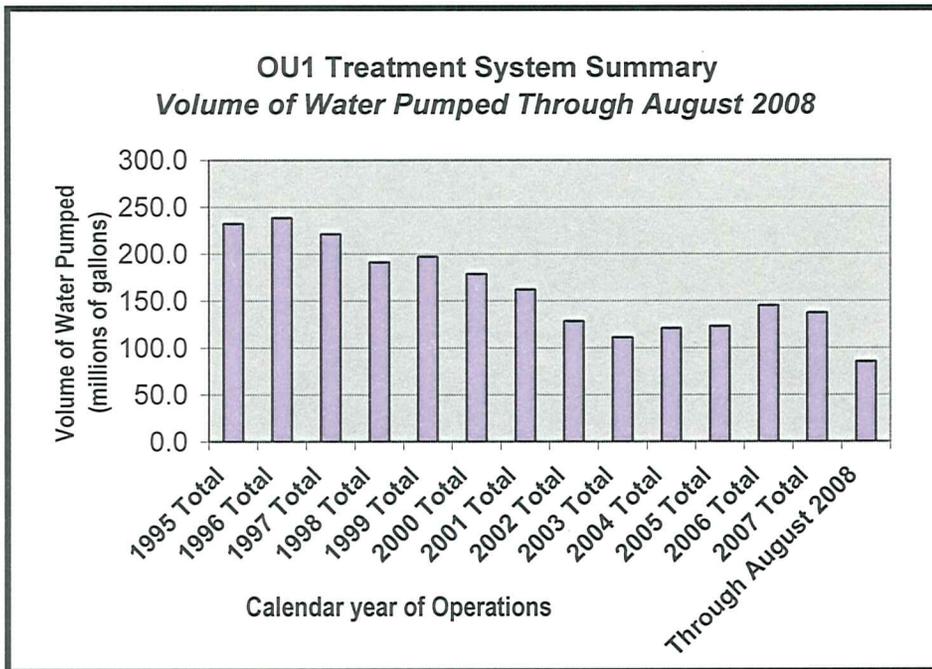
In April 2007, Freescale submitted a monitor well installation report for monitor well DM-607 located just east of the intersection of Willeta Street and 44th Street. The monitor well was drilled and installed between February 27, 2006 and March 10, 2006 in order to evaluate the effectiveness of the extraction well network along the OCC. The well was completed with four sampling ports.

In March 2008, Freescale submitted the *2007 Annual Effectiveness Report* for operations of the groundwater treatment system. Through December 2006, approximately 2.79 billion gallons of water had been extracted and treated and an estimated 19,285 pounds of VOCs as TCE have been recovered. Approximately 189 pounds of free product solvent have been removed from one monitor well on site. The majority of the groundwater elevation and groundwater quality data continue to indicate that containment of the highest VOC concentrations in the vicinity of OU1 has been achieved through operation of the OU1 groundwater extraction and treatment system.



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OU1 Groundwater Treatment System Data



Before 1992, the Pilot Treatment Plant (PTP) removed a significant mass of VOCs from the Courtyard area. The PTP began treating groundwater from two wells in fall 1986. The mass of VOCs removed by the PTP is estimated based on historical chemical data and available totalized flow readings

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In May 2008 Freescale submitted a monitor well installation report for monitor wells DM-611, DM-612, and DM-613, located along the OCC Canal, just east of State Route 143. The three monitor wells were drilled and installed between October, 2007 and January, 2008 in order to monitor both the alluvium and the bedrock aquifers to better delineate the depth of the of the OU1 plume.

In July 2008, Freescale submitted the *Final Bedrock Extraction Pilot Test Workplan*. This work plan set forth the requirements for a bedrock pilot study to collect additional bedrock permeability information and to evaluate bedrock groundwater extraction and its potential to remove mass and enhance the extent of vertical capture in the bedrock aquifer. The plan includes the installation of one bedrock extraction well and two bedrock monitoring wells, along with geophysical logging of the boreholes, short-term bedrock extraction well pumping tests, and extended extraction testing and water level and water quality monitoring.

Throughout the 2009 calendar year, the following activities in OU1 are expected to occur:

- ADEQ will evaluate soil remediation efforts in the Courtyard area. The **soil vapor extraction (SVE)** system is currently not in operation. In 1997, Motorola presented a report evaluating the Courtyard SVE operations indicating that it believed that no further action was necessary. Motorola provided supplemental information to ADEQ in 1998 to support its no further action request.
- The 1989 consent order identified the Acid Treatment Plant area as an area requiring soil vapor extraction. Subsequent soil gas investigations conducted on the facility, however, suggest that SVE may not be warranted. ADEQ will evaluate the existing information and assess the need for additional investigation or remedial action.
- Because the OU1 groundwater remedy is interim, a final FS will need to be completed. Freescale submitted the *Groundwater Remedial Alternatives Analysis (GRAA)* and Addendum to the GRAA in September and December 2005, respectively. ADEQ has reviewed these documents and provided comments in an October 18, 2006 letter. Freescale is also implementing a pilot scale bedrock extraction program to collect additional information to support the groundwater remedial alternatives analysis evaluation. After the pilot bedrock extraction program is complete, ADEQ will select the final remedy, establish cleanup goals, and issue the final ROD.
- Freescale previously prepared a work plan to evaluate the vapor intrusion to indoor air pathway. However, USEPA is developing a new guidance document regarding indoor air risk evaluations. Once the guidance is finalized and USEPA and ADEQ can agree on the process for evaluating the pathway, an indoor air risk evaluation will be performed for

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the OU1 Area. The work plan will be updated to meet these requirements.

- Groundwater monitoring reports are submitted semi-annually.
- OU1 effectiveness reports are submitted annually.

5.4 Recent and Planned Activities for Operable Unit 2

The OU2 groundwater treatment system became fully operational, designed to pump at a rate of approximately 5,000 gallons per minute (gpm), on December 13, 2001. During the first year of operations, the pumping rates of the OU2 system were reduced several times. The steadily declining regional groundwater levels have reduced the saturated thickness of the Salt River gravels (the primary groundwater aquifer), thereby reducing the amount of groundwater available for pumping. As of June 2007, the pumping rate had been reduced to 2,150 gpm.

The Companies installed additional monitor wells near the OU2 Treatment System as requested by ADEQ and USEPA to provide further information on site lithology and groundwater conditions. Four rounds of drilling have occurred since 2003. Monitor wells NW04-S, NW04-D, NW05-S, NW06-S, NW06-D, NW07-S, NW07-D, NW08-S, NW08-M, and NW08-D were installed between June and July 2003. NW09-D was installed in January 2004. Monitor wells NW09-D2, NW10-D, NW11-D, and NW12-D were installed between January and February 2005. Monitor wells NW07-M, NW09-M, NW13-M, NW13-D, NW14-M, and NW14-D were installed between November and December 2005.



Operable Unit 2 Groundwater Treatment System
NW Corner of 20th St. & Washington St., Phoenix, Arizona

In April 2006, the Companies submitted the 2005 *Effectiveness Report* for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2005. During 2005, the OU2 treatment system removed approximately 1,268 pounds of VOCs.



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In September 2006, ADEQ completed the second five-year review of the OU2 interim remedy. The purpose of a five-year review is to evaluate the effectiveness of the interim remedy and whether it remains protective of human health and the environment. ADEQ identified several issues in the review of the OU2 treatment system. The assessment identified several issues in the review of the existing OU2 system capture analyses. These problems include non-conservative interpretation of groundwater data, failure to use all available data, and failing to effectively evaluate the results of specific analyses in conjunction with the **conceptual site model**. Several data gaps have been identified that need to be filled in order to fully evaluate the OU2 capture effectiveness. A review of **applicable or relevant and appropriate requirements (ARARs)** determined that there are no newly promulgated standards that affect OU2; however, new ARARs and **To Be Considereds (TBCs)** are likely to be determined for the final remedy. A copy of the five-year review is available for review at any of the information repositories referenced in Appendix G.

In April 2007, the Companies submitted the *2006 Effectiveness Report* for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2006. During 2006, the OU2 treatment system removed approximately 1,277 pounds of VOCs.

As of June 30, 2007, approximately 6.3 billion gallons of groundwater had been treated and approximately 9,205 pounds of VOCs had been removed from the groundwater. In 2006, an average of 2.7 million gallons of treated water was discharged each day to the SRP canal under an agreement between Motorola and SRP. In accordance with this agreement, all water released to the canal must meet drinking water standards.

The OU2 treatment system does not produce sludge or other waste as a groundwater treatment byproduct. The spent carbon is returned to the vendor for reactivation and reuse at the facility. Sludge generated from carbon backwashing of new carbon and from facility wash down water is analyzed prior to disposal to verify that it is non hazardous. Sludge with significant carbon fines is returned to the carbon reactivation facility for reactivation and reuse at the facility. Sludge not amenable to carbon reactivation is disposed of at a sanitary landfill.

There are periodic change-outs made when the carbon is no longer effective; this occurs every few months. Each vessel contains 20,000 lbs of carbon, which is regenerated off site. Progress reports are submitted on a monthly basis and groundwater monitoring reports are submitted on a quarterly basis.

In 2007, the Companies installed additional groundwater monitor wells (NW15S, NW16-D/S, NW17-S, NW18-S&M, and NW19-M&D, NW20). Data from these new wells filled several data gaps related to the evaluation of groundwater containment and capture of the OU2 groundwater

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extraction system. These wells will assist ADEQ, USEPA, and the Companies in evaluating the effectiveness of the OU2 containment system.

In April 2008, the Companies submitted the *2007 Effectiveness Report* for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2007. During 2007, the OU2 treatment system removed approximately 1,150 pounds of VOCs.

Aviall Industries

In late 2008 ADEQ began negotiations with Aviall Industries on an AOC and schedule of work to complete facility specific investigations on the property.

Former ITT Cannon Facility

In 2007 ADEQ enter into an AOC with ITT to conduct additional soil gas sampling and groundwater sampling on the property. ITT submitted a draft workplan in September 2008. ADEQ has commented on the workplan and expects the final workplan to be submitted in late January 2009.

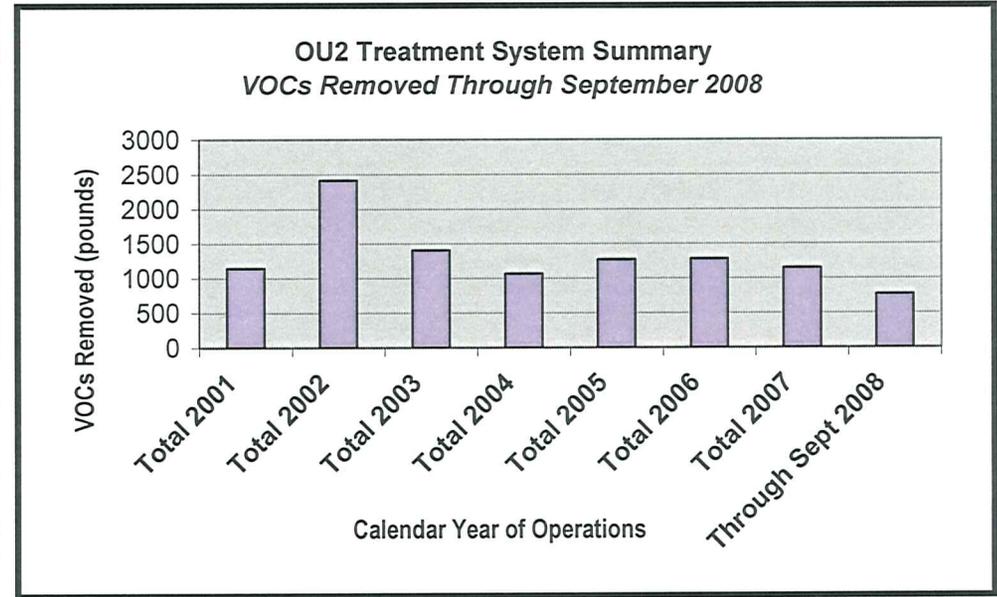
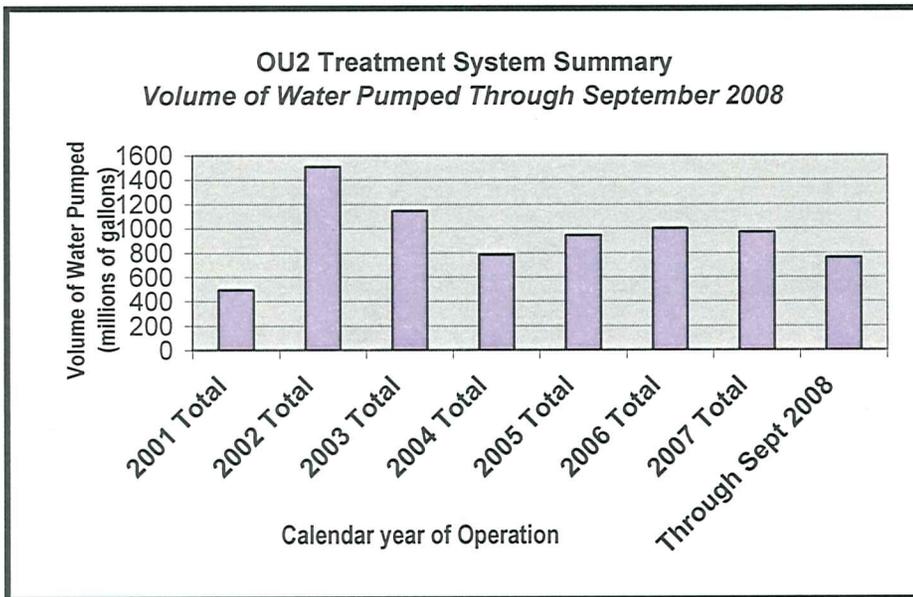
Former Joray/Kachina Facility

In 2005 Joray/Kachina entered into a UAO with ADEQ. A draft remedial investigation and feasibility study workplan was submitted to ADEQ in June 2008. In October 2008 ADEQ approved a final remedial investigation and feasibility study workplan. Joray/Kachina expects to start field activities in the first months of 2009.



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OU2 Groundwater Treatment System Data



Routine maintenance on the SRP Canal that receives the treated water was being conducted January 2002, January-February 2003, January-February 2004, January-February 2005, January 2006; therefore, there was minimal treatment with subsequent discharge allowed. Also, due to heavy rainfall, the SRP Canal was flooded in March 2003, November 2004, and December 2004; thus, the OU2 Treatment System was not operating at full capacity during this time.

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Throughout the 2008/2009 calendar year, the following activities in OU2 are expected to occur:

- Once the USEPA and ADEQ can agree to the process for evaluating the pathway, an indoor air risk evaluation should be performed for the OU2 Area.
- Because the OU2 groundwater remedy is interim, a final FS will need to be completed. ADEQ and USEPA will coordinate with the Companies on the preparation of the final FS;
- Negotiations with newly identified PRPs will continue;
- Monthly system operation reports are submitted by the Companies for review by USEPA;
- Continuous monitoring and adjusting of OU2 treatment system as necessary to meet the cleanup requirements; and
- Groundwater monitoring reports are submitted quarterly and effectiveness reports are submitted annually.

5.5 Recent and Planned Activities for Honeywell 34th Street Facility

In May 2002, the *Potential Source Area Investigation Report* was submitted pursuant to the AOC. ADEQ determined that additional work was needed to identify and characterize potential source areas at the 34th Street facility. In response, Honeywell submitted a work plan that was approved by ADEQ in July 2002. From July through August 2002, a soil-gas survey (shallow and deep) was conducted throughout the facility, including the interior of buildings, to identify potential source areas.

From August through September 2002, 20 multiport **soil vapor monitor (SVM)** wells were installed where known releases had occurred and/or where historical VOC concentrations in soil gas were elevated. The purpose of the SVM wells is to characterize known sources at the 34th Street facility and to determine if these sources continue to contaminate groundwater. The SVM wells were sampled for VOCs in October, November, and December 2002. In September 2003, Honeywell submitted a report with the results of using two different models (VLEACH and GPL) that predict if contaminated soil continues to be a threat to groundwater. The results of Honeywell's modeling efforts will aid in ADEQ's determination of requiring soils cleanup.

On January 15, 2003, Honeywell submitted the *Draft Additional Site Characterization Work Plan* to conduct additional monitor well installations on and off the facility property to define the lateral and vertical extent of its contamination. On March 3, 2003, Honeywell began the



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installation of 32 groundwater monitor wells, in clusters of up to three, at 14 general locations. Using a dynamic work plan that allows for real-time review and interpretation of data to guide placement of the next monitoring well, an additional four wells have been installed. The majority of the 36 groundwater monitoring wells were installed in the fall of 2003.

In February 2003, Honeywell conducted a bioventing **pilot study** to collect information to assess whether this technology is appropriate to remove the floating free product jet fuel/solvent mixture. On May 7, 2003, Honeywell submitted the *Summary of Results Report* that documents the bioventing/SVE pilot study. In May, 2003, Honeywell submitted a preliminary proposal to clean up the jet fuel contamination.

On July 18, 2003, Honeywell submitted a **Corrective Action Plan (CAP)** to ADEQ that evaluates three **remedial alternatives** to clean up jet fuel. In a letter dated October 15, 2003 entitled *Corrective Action Plan Preliminary Approval*, ADEQ's Underground Storage Tank (UST) Section determined that Honeywell's preferred remedial method of bioventing would not adequately remediate the free product at the site. Thus, ADEQ approved a different method proposed in the CAP – Multi-Phase Extraction (with modifications).

An informal appeal of ADEQ's decision on Honeywell's July 2003 CAP was filed by Honeywell on November 5, 2003. During the Informal Appeal Meeting on January 6, 2004, ADEQ offered Honeywell the opportunity to perform a bioventing pilot project at the facility. ADEQ never received a response from Honeywell indicating its willingness to perform the bioventing/soil vapor extraction pilot project in accordance with ADEQ's conditions. Thus, on April 15, 2004, ADEQ issued its *Final Determination* regarding Honeywell's Informal Appeal, affirming ADEQ's preliminary approval of multi-phase extraction as the appropriate remedial method, as modified in ADEQ's October 15, 2003 *Corrective Action Plan Preliminary Approval Letter*.

Honeywell installed three additional monitor wells in December 2003 to further define the southern extent of groundwater contamination. With these three wells in place, the activities defined in the *Additional Site Characterization Work Plan* have been completed, and production of the RI Report had begun. The *Draft Focused RI Report* was submitted to ADEQ on September 30, 2004. In response to ADEQ comments, Honeywell submitted its *Final Focused RI Report* on December 30, 2005. An *Addendum to the Final Focused RI Report* was submitted to ADEQ in August 2008 and was approved by ADEQ in September 2008. Work on the focused FS is planned to begin by the end of 2008.

On May 13, 2004, Honeywell filed a *Formal Appeal of ADEQ's Final Determination*. During an Informal Settlement Conference held on May 28, 2004, ADEQ agreed to allow Honeywell the opportunity to submit a revised CAP due July 30, 2004 to include Bioventing/Soil Vapor Extraction (BSVE) and active free-product removal.

Motorola 52nd Street Superfund Site Community Involvement Plan

In October 2005, ADEQ approved Honeywell's CAP to remediate fuel floating on groundwater and soil contamination resulting from releases of fuel from their 34th Street LUSTs. Prior to approval, the CAP was subject to a 30-day public notice period. Additionally, a public meeting was held to solicit comments on June 29, 2005.

On October 13, 2006, Honeywell submitted a revision of the BSVE air permit application to the Maricopa County Air Quality Department (MCAQD). The Title V Air Permit Revision was approved on December 27, 2007. The system includes redundant air treatment technologies and monitoring to provide multiple safeguards ensuring that the treated air emitted will meet permit conditions and be protective of public health. The technologies include five separate treatment steps: thermal oxidation, quenching, scrubbing, carbon filtration and potassium permanganate filtration.

In October 2006, Honeywell reported to ADEQ that an interceptor had been discovered on the west side of Building 112. Subsequent sampling of the liquid and sludge in the interceptor identified high concentrations of VOCs. An investigation is currently being conducted regarding this discovery.

Because in some portions of the fuel release, the groundwater is also impacted by chemicals of concern of the 52nd Street Superfund Site, primarily chlorinated solvents, the technology to address the petroleum and solvent contaminated groundwater will be evaluated during the FS for the Honeywell facility and OU2. The final groundwater remedy (cleanup) will address all the chemicals of concern for both the Superfund site and the UST releases.

Throughout the upcoming calendar years, the following additional activities have occurred or are expected to occur at the Honeywell 34th Street Facility:

- ADEQ is working with Honeywell on a work plan for the focused FS. A draft work plan is expected to be completed in early 2009. Additional field activities will be conducted throughout 2009 with a *Final Focused FS Report* submitted to ADEQ in early 2010.
- Honeywell is continuing work with ADEQ and USEPA to finalize the Human Health Assessment for the RI.
- Honeywell will complete construction and begin start-up procedures on the BSVE system in late 2008.
- Honeywell continues to remove the free product jet fuel that is floating on top of the water table. As of June 30, 2008, approximately 7,262 gallons of fuel have been removed since recovery began in 1999.

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- Continuous submission of quarterly status reports by Honeywell.
- Continuous submission of semiannual groundwater monitoring reports.

5.6 Recent and Planned Activities for Operable Unit 3

USEPA has conducted two phases of groundwater investigations in the OU3 Study Area. Fifteen groundwater monitoring wells were installed from February 2002 to May 2002. In 2003, the USEPA installed 16 monitor wells (known as the OU3 Phase II wells) in the OU3 Study Area to further define the nature and extent of groundwater contamination. Monitor wells in clusters of up to two were installed at seven general locations. Three of USEPA's 15 Phase I wells were abandoned by the City. As a result, the City installed three replacement wells in June and July 2003. The results of the Phase I and Phase II groundwater investigations were presented in the *Final Groundwater Investigations Report, Phase I and II Well Installation, Motorola 52nd Street Superfund Site, Operable Unit 3 Study Area, Phoenix, Arizona Report* dated January 2005. USEPA collects groundwater samples from the monitor wells in March and September of each year and the results are reported in semiannual groundwater monitoring reports.

USEPA identified eight facilities in 2003 and four facilities in 2005 that may be potential sources to soil and groundwater contamination. USEPA initiated negotiations with PRPs for investigations of soil and groundwater conditions at the facilities identified in 2003. In 2004 USEPA entered into AOCs to conduct site-specific RI/FS with 5 companies in the OU3 Study Area. The companies are AdobeAir, Arizona Public Service, Baker Metal Products, Phoenix Newspapers, and Salt River Project.

In March 2006, USEPA entered into an AOC for a focused RI/FS with Paul McCoy Laundry. In June 2007 USEPA issued one Unilateral Administrative Order (UAO) to Walker Power Systems, Inc., Union Pacific Railroad Company and Tiernay Properties. USEPA is in the process of negotiating an AOC with Wabash/Fruehauf. The AOCs and UAO require the PRPs to investigate their potential source areas and to define the extent of contamination in soil, soil gas and groundwater. The information from these site-specific studies as well as the data gathered from the groundwater monitoring wells installed by USEPA will be incorporated into an OU3 site-wide RI/FS. The OU3 site-wide RI/FS will be conducted by the OU3 PRPs Working Group under USEPA oversight. Members of the Working Group include Honeywell, Arizona Public Service Company, and Salt River Project. USEPA expects to negotiate the OU3 site-wide RI/FS AOC in late 2008.

Arvin Meritor / AdobeAir / Cooper Industries

In 2004, USEPA, Arvin Meritor, AdobeAir, and Cooper Industries entered into an



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Administrative Order to conduct a focused RI/FS at the 500 S.15th Street Facility. The *Draft Quality Management Plan* was submitted on November 9, 2004 and the *Final Quality Management Plan* that addresses USEPA comments was submitted on January 12, 2005. The *Draft Remedial Action Objectives Technical Memorandum* on December 2, 2004 and the *Revised RAO Memorandum* that addresses USEPA comments were submitted January 27, 2005.

The *Draft Research Report* was submitted on November 11, 2004. The *Final Research Report* was submitted on June 10, 2005.

On January 27, 2005, the *Revised Draft Remedial Action Technical Objectives Memorandum* was submitted. The *Quality Management Plan* was submitted on January 12, 2005. A *Final RI/FS Work Plan* was submitted on December 21, 2005.

The Phase I RI/FS soil gas investigation was completed and the *Technical Memorandum Report* has been submitted. The Phase II RI/FS was completed in 2007 and consisted of additional soil gas sampling, indoor sampling and installing groundwater monitoring wells.

APS

On July 29, 2004, USEPA and APS entered into an Administrative Order on Consent to conduct a focused RI/FS at the APS facilities located at 505 S. 2nd Avenue, 502 S. 2nd Avenue, 501 S. 2nd Avenue. On August 26, 2004, APS submitted its *Quality Management Plan*. APS submitted its *Communications and Community Outreach Plan* on August 2004. APS submitted the *Remedial Action Objectives Technical Memorandum* on September 20, 2004 and the *Revised RAO Memorandum* on November 22, 2004 that addresses USEPA comments. On September 20, 2004, APS submitted the *Draft Research Report*. The research report describes the historical operations including the uses and disposal of chlorinated solvents, a summary of environmental investigations conducted to date, and identifies potential source areas that warrant further investigation.

APS submitted the *Draft RI/FS Work Plan* on November 24, 2004. On December 21, 2004, APS submitted the *Draft Health and Safety Plan* and the *Draft Sampling and Analysis Plan*.

The *Revised Research Report* was submitted January 20, 2005. The report was finalized on April 22, 2005.

APS has installed and sampled 17 groundwater monitoring wells and six soil vapor monitoring wells, and collected soil samples. They have completed characterization of most of their site. They expect to submit a *Draft RI Report* summarizing their findings in Winter 2008.

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Baker Metal Products

A report entitled *Historical Environmental Data at Former WAMCO and Opinion Regarding Listing as a PRP in the Motorola 52nd Street Superfund Site* was submitted on December 9, 2003.

On February 4, 2004, the *Draft Quality Management Plan* was revised to address January 20, 2004 USEPA comments. *Notification to Start Field Work and Request for Schedule Extension*, dated November 18, 2004, and prepared by Smith Consultants was submitted.

The *Draft Research Report* was submitted on April 14, 2004 by Smith Consultants, and the *Revised Research Report* that addresses USEPA comments was submitted on June 25, 2004. The *Draft Remedial Action Objectives Technical Memorandum* was submitted on April 14, 2004 and the *Revised RAO Memorandum* that addresses USEPA comments was submitted on July 7, 2004. The *Draft RI/FS Work Plan* was submitted on May 17, 2004 and the *Revised RI/FS Work Plan and Field Sampling Plan (Quality Assurance Project Plan & Health and Safety Plan)* that addresses USEPA comments were submitted on July 8, 2004. Smith Consultants submitted responses to September 14, 2004 USEPA Comments to the *Revised Work Plan* on September 23, 2004. Another *Draft RI/FS Work Plan* (includes FSP, QAPP, and HSP) was submitted on September 20, 2004, with the *Final RI/FS Work Plan* (includes FSP, QAPP, and HSP) submitted on November 2, 2004. On August 24, 2004, Smith Consultants submitted the *Revised Baker Metal Products Site Work Plan* which addresses USEPA comments. On November 23, 2004, Smith Consultants submitted the *Revised Draft RI/FS Work Plan*. The *Quality Management Plan* was submitted on November 29, 2004.

The *Draft Soil Gas Sampling Technical Memorandum* was submitted on January 14, 2005. USEPA provided comments on February 3, 2005. Additional drilling and sampling that was recommended in the *Draft Soil Gas Sampling Technical Memorandum* began on February 22, 2005.

Baker Metal Products submitted a *Draft RI Report* in February 2007. No COCs were detected above screening levels and USEPA has determined that no additional investigation is required at the facility. A *Final RI Report* was submitted on May 1, 2008.

Fruehauf

On February 12, 2004, the report entitled *Evaluation of Environmental Conditions* was submitted by Wabash National Corporation. The *Historical Research Report* was submitted on May 3, 2004. The *Site Investigation Sampling and Analysis Work Plan* was submitted on May 6, 2004. Revised work plans were submitted on May 28, June 16, and June 23, 2004. A *Focused Site Investigation Report* was submitted on June 23, 2004. The *Revised Focused Site Investigation Report* addressing USEPA comments was submitted on August 6, 2004.

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McCoys Laundry

In 2006, McCoys Laundry entered into an AOC to conduct a focused RI/FS at the facility. While McCoy's Laundry completed much of the work required by the AOC, the company indicated that it could not comply with future requirements due to financial constraints. McCoy's submitted an Ability to Pay (ATP) application in 2007. The USEPA signed an agreement with McCoys Laundry that requires the company to pay \$26,000 to settle their liability in the cleanup based on a limited ability to pay. The USEPA will place the \$26,000 in an interest bearing account to be used for work on the Site.

Phoenix Newspaper, Inc.

Phoenix Newspaper Inc. (PNI) submitted a *Research Report, Focused RI Work Plan for Soil Gas Investigation*, and a *Draft Soil Gas Investigation Technical Memorandum*. USEPA is currently reviewing and commenting on the technical memorandum.

SRP

USEPA and SRP signed a Consent Order in 2004 to conduct a focused RI/FS at the 16th Street Facility. SRP submitted the *Quality Management Plan* on July 1, 2004 and the *Final Quality Management Plan* (addresses USEPA comments) on December 2004. SRP submitted the *RI/FS Remedial Action Objectives Technical Memorandum* on August 12, 2004. On August 27, 2004, SRP submitted a *Draft Research Report* and a *Revised Research Report* on December 3, 2004 to address USEPA comments. On September 28, 2004, the *Draft Focused RI/FS Work Plan* was submitted by SRP, and the *Final Work Plan* was submitted January 2005.

On January 19, 2005, SRP submitted the *Revised Technical Memorandum for Remedial Action Objectives*. SRP submitted the *Final RI/FS Work Plan* on September 26, 2005.

SRP has collected indoor air samples (no action was needed), completed removal of a sump (no chemicals of concern found), and completed installation and sampling of two soil vapor monitoring wells. They submitted a *Draft Phase I RI Report* summarizing their findings in February 2008. They expect to submit a *Draft Phase II RI Report* in late 2008.

Union Pacific Railroad

Union Pacific submitted a *Draft Site Inspection Work Plan* on February 11, 2004 and the *Final Work Plan* on April 22, 2004. Union Pacific submitted a *Draft Field Sampling Plan* on May 14, 2004 and the *Final Field Sampling Plan* was submitted on June 2, 2004. In July 2004, Union Pacific submitted the preliminary soil gas results, and the final soil gas survey analytical data was submitted on October 5, 2004.



Motorola 52nd Street Superfund Site Community Involvement Plan

Union Pacific submitted the Soil Gas Inspection Report on November 9, 2004.

Walker Power Systems

On November 23, 2004, Walker Power submitted its *Research Report*.

Walker Power Systems conducted a survey of Site characteristics and submitted a *RI/FS Work Plan* in late 2007. Field work will commence in 2008.

Table 1
Agency Roles & Responsibilities Matrix

OPERABLE UNIT	Potentially Responsible Party Search	Community Involvement Activities	Remedial Investigation	Feasibility Study	Record Of Decision	Remedial Design	Remedial Action	Operations And Maintenance	Site Close-Out¹	Site Deletion¹
OU1 <i>52nd Street to 44th Street</i>	N/A	ADEQ	ADEQ	ADED	ADEQ	ADEQ	ADEQ	ADEQ	N/A	N/A
OU2 <i>44th Street to 20th Street</i>	EPA & ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	N/A	N/A
Honeywell <i>34th Street Facility</i>	N/A	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	N/A	N/A
OU3 <i>20th Street to 7th Avenue</i>	EPA & ADEQ	EPA	EPA	EPA	TBD	TBD	TBD	TBD	N/A	N/A
Sitewide	N/A	ADEQ	N/A	N/A	N/A	N/A	N/A	N/A	TBD	EPA

1 Only applies to the entire site.

2 ADEQ conducted PRP Searches from 1985-1989 in the OU2 and OU3 areas when it was known as the EW Area WQARF Site.

ADEQ = Arizona Department of Environmental Quality

EPA = United States Environmental Protection Agency

TBD = To Be Determined

N/A = Not Applicable

TABLE 2
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
January 2009

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Arcadia/Camelback Mountain		NORTH: Camelback Mountain SOUTH: Indian School Road (north side) EAST: 64 th Street (west side) WEST: 44 th Street (east side)	Mr. Roger Brevoort Chair - Planning & Zoning Com 4340 E. Indian School Rd. Phoenix, AZ 85018 DAY: (480) 942-4352 ALT: (602) 690-8080	Yes	8,800	2/18/1988
Arcadia Park Neighborhood Association (Subdiv A)		NORTH: Indian School Road SOUTH: Osborn Road EAST: 54 th Street WEST: 52 nd Street	Ms. Karen Cheifetz Co-Chair 3442 N. 53rd St. Phoenix, AZ 85018 Day: (602) 840-5846	Yes	121	9/14/1995
Arizona Black United Fund		NORTH: Thomas Road SOUTH: Dobbins Road EAST: 48 th Street WEST: 19 th Avenue	Ms. Carolyn T. Lowery DAY: (602) 268-0666	Yes	1,500	5/19/1985
Balsz Neighborhood Partnership	*	NORTH: McDowell Road SOUTH: Van Buren Street EAST: 56 th Street WEST: 40 th Street	Ms. Amy Martinez Welcome Center Coordinator 4309 E. Belleview St. Phoenix, AZ 85008 DAY: (602) 629-6519 FAX: (602) 629-6504	Yes	1,030	8/1/1996
Balsz School	*	NORTH: Belleview Street SOUTH: Portland Street EAST: 42 nd Street WEST: 40 th Street	Ms. Patty Solis 4309 E. Belleview St. Phoenix, AZ 85008 DAY: (602) 273-7203	Yes	1,900	NIF ³
Barrios Unidos	*	NORTH: Grant Street SOUTH: University Drive EAST: 16 th Street (west side) WEST: 7 th Street (east side)	Mr. Rick Cortez Chairman 1300 S. 10th St. c/o Wesley Community Center Phoenix, AZ 85034 DAY: (602) 252-5609 ALT: (602) 712-9858 FAX: (602) 252-5768	Yes	4,500	8/1/1998

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Brunson-Lee Neighborhood Partnership		NORTH: Thomas Road SOUTH: North Bank of Salt River EAST: 56 th Street WEST: 46 th Street	Ms. Mary Moore Chair 4839 E. Brill St. Phoenix, AZ 85008 DAY: (602) 686-7267 FAX: (602) 296-0103	Yes	8,712	1/1/2005
Bumbalow Heights	*	NORTH: Roosevelt Street SOUTH: Van Buren Street EAST: 24 th Street WEST: 21 st Street	Ms. Madora B. Moore Block Watch Leader 2245 E. Garfield St. Phoenix, AZ 85006-3880 DAY: (602) 244-1085	Yes	250	4/1/1994
Casa Buena	*	NORTH: Thomas Road SOUTH: McDowell Road EAST: 24 th Street WEST: 20 th Street	Ms. Roberta Terrazas Contact Person 2140 E. Virginia Ave. Phoenix, AZ 85006 DAY: (602) 381-6120	Yes	4,200	8/11/1999
Central Park	*	NORTH: Van Buren Street SOUTH: Buckeye Road EAST: 7 th Street WEST: Central Avenue	Mr. Mychael Buelena Chairman 2407 E. Meadow Brook Phoenix, AZ 85016 DAY: (602) 271-9642	Yes	NIF ^{2,3}	1/1/1992
Central Phoenix Alliance		NORTH: Jackson Street SOUTH: Salt River EAST: 16 th Street WEST: 15 th Avenue	Ms. L. Mychael Marilyn-Buelna IV Chairman 2407 E. Meadowbrook Ave. Phoenix, AZ 85016 DAY: (602) 271-9642 ALT: (602) 954-7665 FAX: (480) 854-5617	Yes	2,000	1/13/1995
Coalition of East Phoenix		NORTH: Lincoln Drive SOUTH: McDowell Road EAST: Scottsdale Road WEST: Central Avenue	Ms. Deborah Cookson President 5950 E. Orange Blossom Ln Phoenix, AZ 85018 DAY: (480) 990-9555	Yes	100,000	9/25/2006

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Coronado Fight Back East		NORTH: Thomas Road SOUTH: I-10 Freeway EAST: State Route 51 WEST: 16 th Street	Ms. Christina Henrie Fight Back Chair 1721 E. Oak Street Phoenix, AZ 85006 DAY: (602) 255-0244	Yes	NIF ^{2,3}	1/24/2005
Coronado Neighborhood Association Fight Back Southwest		NORTH: Thomas Road SOUTH: I-10 Freeway EAST: 20 th Street WEST: 7 th Street	Ms. Diane Brennan President	Yes	15,000	5/1/1985
Crossroads		NORTH: Thomas Road SOUTH: I-10 Freeway EAST: 24 th Street WEST: Central Avenue	Mr. Steve Lappen Director 916 E. McKinley St. Phoenix, AZ 85006 DAY: (602) 254-1272	Yes	80 - 100	1/29/2007
Delano Estates	*	NORTH: 202 Freeway SOUTH: Van Buren Street EAST: 48 th Street WEST: 46 th Street	Ms. Carol Moore 622 N. 47 th Pl. Phoenix, AZ 85008 DAY: (602) 273-0407	Yes	170 Households	3/7/2000
Downtown Neighborhood Listing "Downtown Southwest Neighborhood Association"	*	NORTH: Grant Street (South side) SOUTH: Buckeye Road (North side) EAST: 14 th Avenue (East side) WEST: 17 th Avenue (East side)	Ms. Ethel Lane Chairperson 730 S. 15th Ave. Phoenix, AZ 85007 DAY: (602) 495-1952 FAX: (602) 495-1954	Yes	200	11/13/1997
Downtown Phoenix Partnership		NORTH: Fillmore Street (North side) SOUTH: Railroad (North side) EAST: 7 th Street (West side) WEST: 3 rd Avenue (East side)	Ms. Terry Madeksza Director of Operations 541 E. Van Buren Street Phoenix, AZ 85004 DAY: (602) 254-8696 FAX: (602) 254-8788	Yes	30,000	1/1/1991
Eastlake Park/Special	*	NORTH: Van Buren Street (alley south of) SOUTH: Madison Street EAST: 7 th Street WEST: 16 th Street (16 1/2 Street)	Dr. Philip Blair President 1401 E. Van Buren St. Phoenix, AZ 85006 DAY: (602) 955-8362	Yes	36	12/1/1990

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Elsinore	*	NORTH: McDowell Road SOUTH: Van Buren Street EAST: 32 nd Street WEST: 24 th Street	Mr. George Hill Executive Director 1016 N. 32 nd Street Phoenix, AZ 85008 DAY: (602) 244-9757 FAX: (602) 244-8667	Yes	40	1/1/1901
Evans Churchill	*	NORTH: I-10 (Deck Park) SOUTH: Fillmore Street EAST: 7 th Street WEST: Central Avenue	Mr. Greg Esser	Yes	300	12/2/2003
Garfield Organization	*	NORTH: Moreland Avenue (Papago Freeway) SOUTH: Van Buren Street EAST: 16 th Street WEST: 7 th Street	Mr. Steve Swanson President 1029 E. Garfield St. Phoenix, AZ 85006 DAY: (602) 534-7333 FAX: (602) 254-5816	Yes	9,000	5/25/1990
Grant Park	*	NORTH: Lincoln Street SOUTH: Buckeye Road EAST: Central Avenue WEST: 7 th Avenue	Mr. Julian Sodari 821 S. Montezuma Ave. Phoenix, AZ 85003 DAY: (602) 253-7326 ALT: (602) 410-1882	Yes	300	10/1/2004
Grant Park Fightback		NORTH: Lincoln Street SOUTH: Maricopa Freeway EAST: Central Avenue WEST: 6 th Avenue	Mr. Armando Gandarilla 809 S. 5 th Avenue. Phoenix, AZ 85003 DAY: (602) 525-1764	Yes	30	7/1/1990
Greater Orangedale	*	NORTH: Thomas Road SOUTH: McDowell Road EAST: 52 nd Street WEST: 48 th Street	Mr. Richard L. Avellone Organizer 4951 E. Sheridan St. Phoenix, AZ 85008 DAY: (602) 952-0611	Yes	1,000	5/27/1992
Greater Green Gables		NORTH: Thomas Road SOUTH: McDowell Road EAST: 25 th Place WEST: 20 th Place	Ms. Faye Dargan 2130 E. Harvard Street Phoenix, AZ 85006 DAY: (602) 231-0305	Yes	4,200	8/30/2005

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Green Gables	*	NORTH: Thomas Road SOUTH: McDowell Road EAST: 32nd Street WEST: 20th Street (Squaw Peak Parkway)	Ms. Alma Williams President 2816 N. 29th Pl. Phoenix, AZ 85008 DAY: (602) 956-1546 FAX: (602) 956-8979	Yes	4,000	10/9/1991
Greater Roosevelt	*	NORTH: McDowell Road SOUTH: Van Buren Street EAST: 7 th Street WEST: 7 th Avenue	Mr. Lance Rampy President 721 W. Earll Dr. Phoenix, AZ 85013 DAY: (602) 252-3600 FAX: (602) 252-3344	Yes	1,500	9/20/2005
Jackson Manor	*	NORTH: McDowell Road (south side) SOUTH: I-10 Freeway (Culver Street, north side) EAST: 13 th Street (east side) WEST: 16 th Street (west side)	Ms. Brenda Chacon 1422 E. Culver St.. Phoenix, AZ 85006 DAY: (602) 254-6828	Yes	475	3/10/1996
Lindon Park	*	NORTH: Brill Street (North Side) SOUTH: Portland Street (South Side) EAST: 50th Street (East Side) WEST: 48th Street (East Side)	Ms. Mary Moore 4839 E. Brill St. Phoenix, AZ 85008 DAY: (602) 256-9155 ALT: (602) 686-7267 FAX: (602) 285-1199	Yes	50	8/5/01
Marcos de Niza Community Block Watch	*	NORTH: Buckeye Road SOUTH: Interstate 17 EAST: Central Avenue WEST: 7th Avenue	Ms. Grace Salinas President 305 W. Pima Street Phoenix, AZ 85003 DAY: (602) 463-8130 FAX: (602) 534-1898	Yes	374	8/13/2002
Neighborhood Coalition of Greater Phoenix		City wide	Mr. Paul Barnes President 5518 E. Mariposa St. Phoenix, AZ 85018 DAY: (602) 840-1579 ALT: (602) 376-6446 FAX: (602) 840-6070	Yes	All Citizens of Phoenix	1/1/1985

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Northeast Village	*	NORTH: Thomas Road SOUTH: Oak Street EAST: 40th Street WEST: 36th Street	Mr. John Moats 2410 N. 39th Pl. Phoenix, AZ 85008 DAY: (602) 243-6075	Yes	368	1/1/1995
Nuestro Barrio/El Campito	*	NORTH: Southern Pacific Drive SOUTH: Buckeye Road EAST: 14th Street WEST: 7th Street	Ms. Flora B. Arroyo Representative 801 E. Sherman St. Phoenix, AZ 85034 DAY: (602) 258-0919	Yes	15	5/7/1993
Papago Vista	*	NORTH: Oak Street SOUTH: McDowell Road EAST: 40th Street WEST: 36th Street	Mr. Mike Rodgers DAY: (602) 220-9140	Yes	359 Households	6/24/1993
Phoenix Community Alliance		NORTH: Camelback Road SOUTH: Buckeye Road EAST: 44 th Street WEST: 19 th Avenue	Ms. Jo Marie McDonald Vice President 502 E. Monroe St. Phoenix, AZ 85004 DAY: (602) 254-7477 FAX: (602) 253-9192	Yes	195+	9/7/1984
Phoenix Revitalization Corporation		NORTH: Jackson Street SOUTH: Maricopa Freeway EAST: Central Avenue WEST: W. Maricopa Freeway	Ms. Eva O. Olivas Program Director 1310 W. Hadley St. Phoenix, AZ 85007 DAY: (602) 253-6895 FAX: (602) 334-5982 ALT: (602) 256-0712	Yes	8,400	12/1/1990
Pierce United		NORTH: Thomas Road SOUTH: McDowell Road EAST: 48th Street WEST: 44th Street	Ms. Ginnie Ann Sumner President 4739 E. Lewis Ave. Phoenix, AZ 85008 DAY: (602) 275-0587 ALT: (602) 840-3881	Yes	700 Households	11/1/1991
Rancho Ventura	*	NORTH: Thomas Road SOUTH: McDowell Road EAST: 44th Street WEST: 40th Street	Mr. David Nance President 4141 E. Thomas Rd. Phoenix, AZ 85018	Yes	1,000	3/2/1992

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Roosevelt Action Association	*	NORTH: McDowell Road SOUTH: Van Buren EAST: Central Avenue WEST: 7th Avenue	Mr. Mike Hall Roosevelt Action Association P.O.Box 2788, Phoenix, AZ 85002 mhall@rooseveltnighborhood.org	Yes	650	10/9/1981
The Rose Room Safety and Education Association		NORTH: Van Buren Street SOUTH: South Mountain Avenue EAST: 24 th Street WEST: 19 th Avenue	Mr. Irvin C. Tate 6434 S. 17 th Street Phoenix, AZ 85042 DAY: (602) 268-3481	Yes	100,000	2/1/1999
Sky Harbor	*	NORTH: Van Buren Street SOUTH: Washington Street EAST: 32nd Street WEST: 24th Street	Ms. Hilaria Lopez Representative 2833 E. Monroe St. Phoenix, AZ 85034 DAY: (602) 275-4670 ALT: (602) 273-6001 FAX: (602) 273-4675	Yes	50	11/15/1993
Sunbeam Neighborhood /Crockett Fight Back	*	NORTH: Red Mountain Freeway SOUTH: Van Buren Street EAST: 36th Street WEST: 32nd Street	Mr. Jon Matousek Vice President 3216 E. Pierce St. Phoenix, AZ 85008-6241 DAY: (602) 273-0010 ALT: (602) 202-9069	Yes	1,750	12/7/1992
The Watchers		NORTH: McDowell Road (south side) SOUTH: Van Buren Street (north side) EAST: 46th Street (west side) WEST: 40th Street (east side)	Mr. Terry Temnick President 7114 N. 20th St. Phoenix, AZ 85020 DAY: (602) 331-4639 FAX: (602) 331-1803	Yes	50-60	12/13/1993
Townsend Park Community	*	NORTH: McDowell Road (north side) SOUTH: I-10 Freeway (north side) EAST: 7th Street (west side) WEST: Central Avenue (east side)	Ms. Maggie Long Secretary/Treasurer 532 E. Lynwood St. Phoenix, AZ 85004 DAY: (602) 254-6672	Yes	260	7/17/1997

TABLE 2 (Continued)
NEIGHBORHOOD ASSOCIATIONS NEAR THE MOTOROLA 52ND STREET SUPERFUND SITE
November 2007

Neighborhood Associations	Shown on Figure 3 ¹	Boundaries ²	Primary Contact ²	Active ² (Yes/No)	Represented People ²	Date Formed ¹
Van Buren Civic Association		NORTH: I-10 Freeway/202 Freeway SOUTH: Southern Pacific Railroad Tracks (South of Washington/Jefferson Streets) EAST: Central WEST: 7 th Avenue	Dr. Philip Blair President 1401 E. Van Buren St. Phoenix, AZ 85006 DAY: (602) 955-8362	Yes	3,500	9/1/1975
Wesley Community Center		NORTH: Van Buren Street SOUTH: Salt River EAST: 16 th Street WEST: Central Avenue	Ms. Betty Mathis Executive Director 1300 S. 10 th Street Phoenix, AZ 85034 DAY: (602) 252-5609 FAX: (602) 252-5768	Yes	10,000	5/1/1950
Westward Ho Manor		NORTH: Monte Vista Road SOUTH: Monte Vista Road EAST: 34 th Street WEST: 32 nd Street	Ms. Virginia E. Reilly Secretary 3329 E. Monte Vista Road Phoenix, AZ 85008 DAY: (602) 275-0587	Yes	NIF ^{2,3}	5/20/1993
Wilson Coalition	*	NORTH: Fillmore Street SOUTH: University Drive EAST: 40 th Street WEST: 16 th Street	Mr. Antonio Sanchez 3025 E. Fillmore St. DAY: (602) 681-2207	Yes	50+	2/1/1993

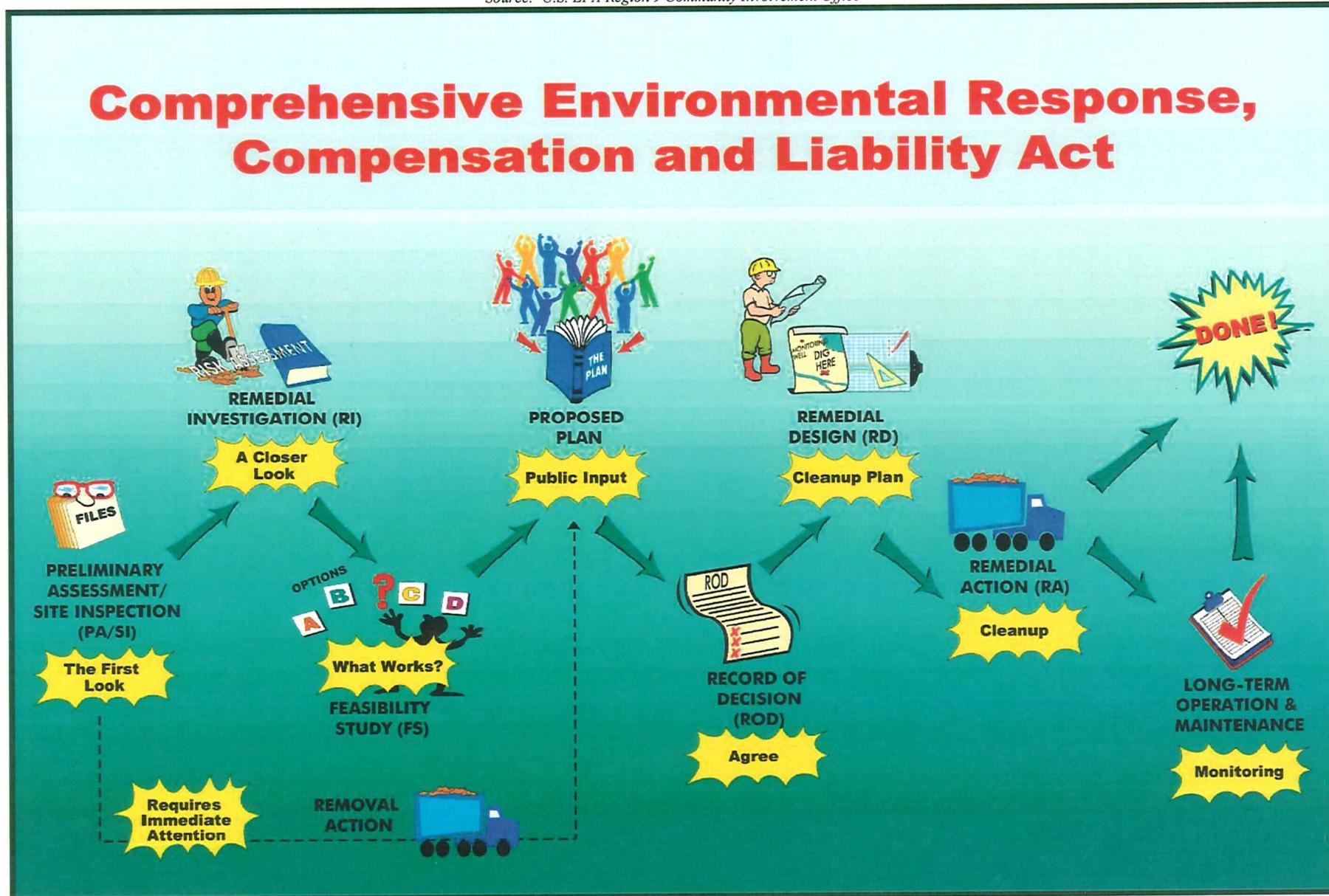
Notes:

- 1 Figure 4 of the Community Involvement Plan dated September 2007 identifies boundaries of Neighborhood Associations which are located entirely within Site boundary. If they are shown on this figure, then there is a "*" in this column.
- 2 Source: City of Phoenix website for Neighborhood Associations: <http://www.phoenix.gov/NBHDPGMS/nbassidx.html>
- 3 NIF = No information listed in City of Phoenix Neighborhood Association on-line database.

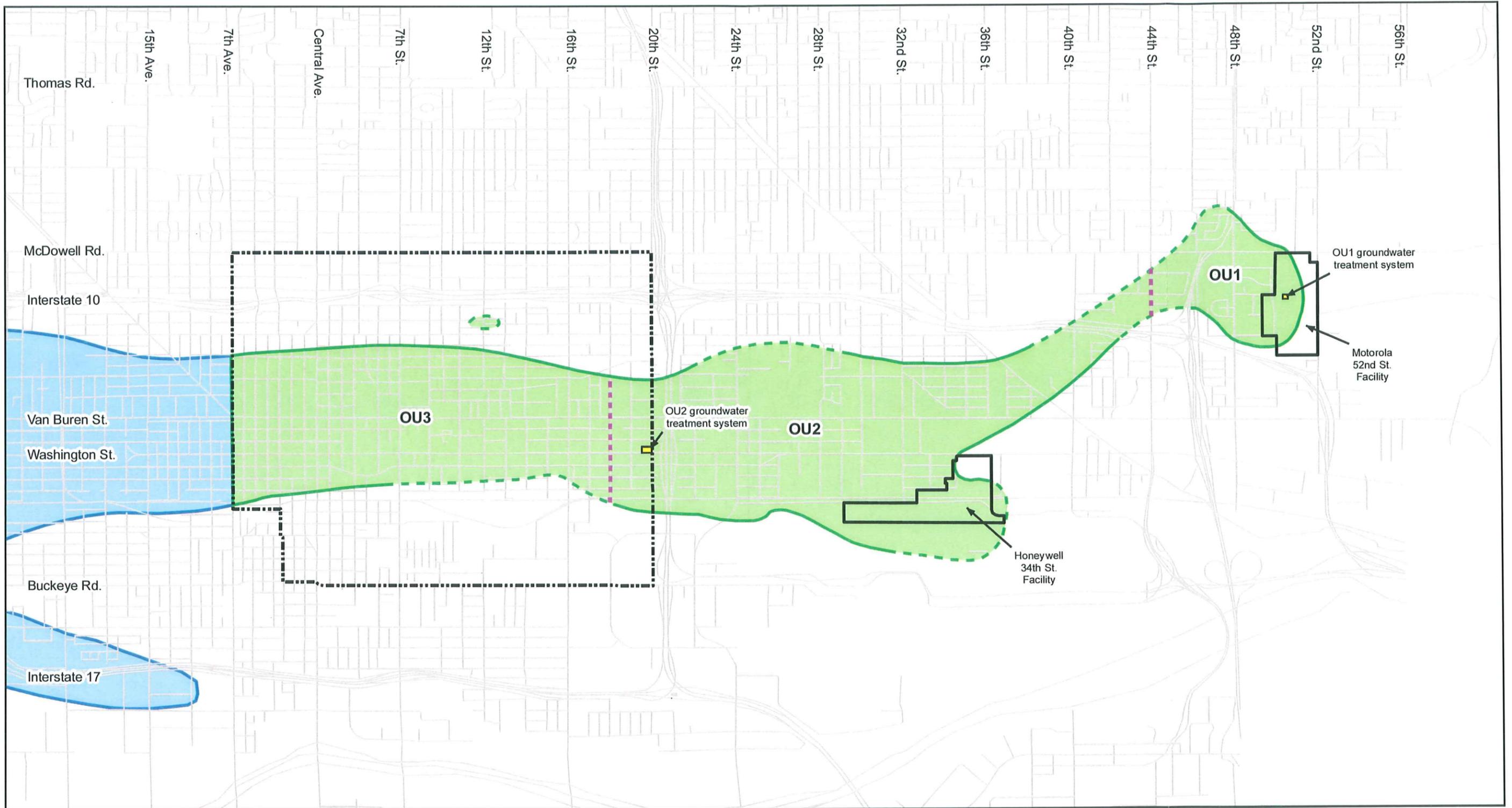
FIGURE 1
SUPERFUND CLEANUP PROCESS

Source: U.S. EPA Region 9 Community Involvement Office

Comprehensive Environmental Response, Compensation and Liability Act



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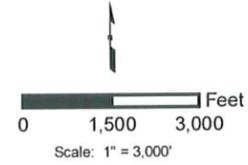


LEGEND

-  Estimated Motorola 52nd Street site boundary: Contour represents area of volatile organic compounds in alluvial groundwater that exceed the Arizona Aquifer Water Quality Standards (dashed line = inferred boundary).
-  Estimated West Van Buren WQARF site boundary
-  Facility boundary
-  OU3 study area boundary
-  Operable unit boundary
-  Streets

NOTES

- Plume source data: September 2006



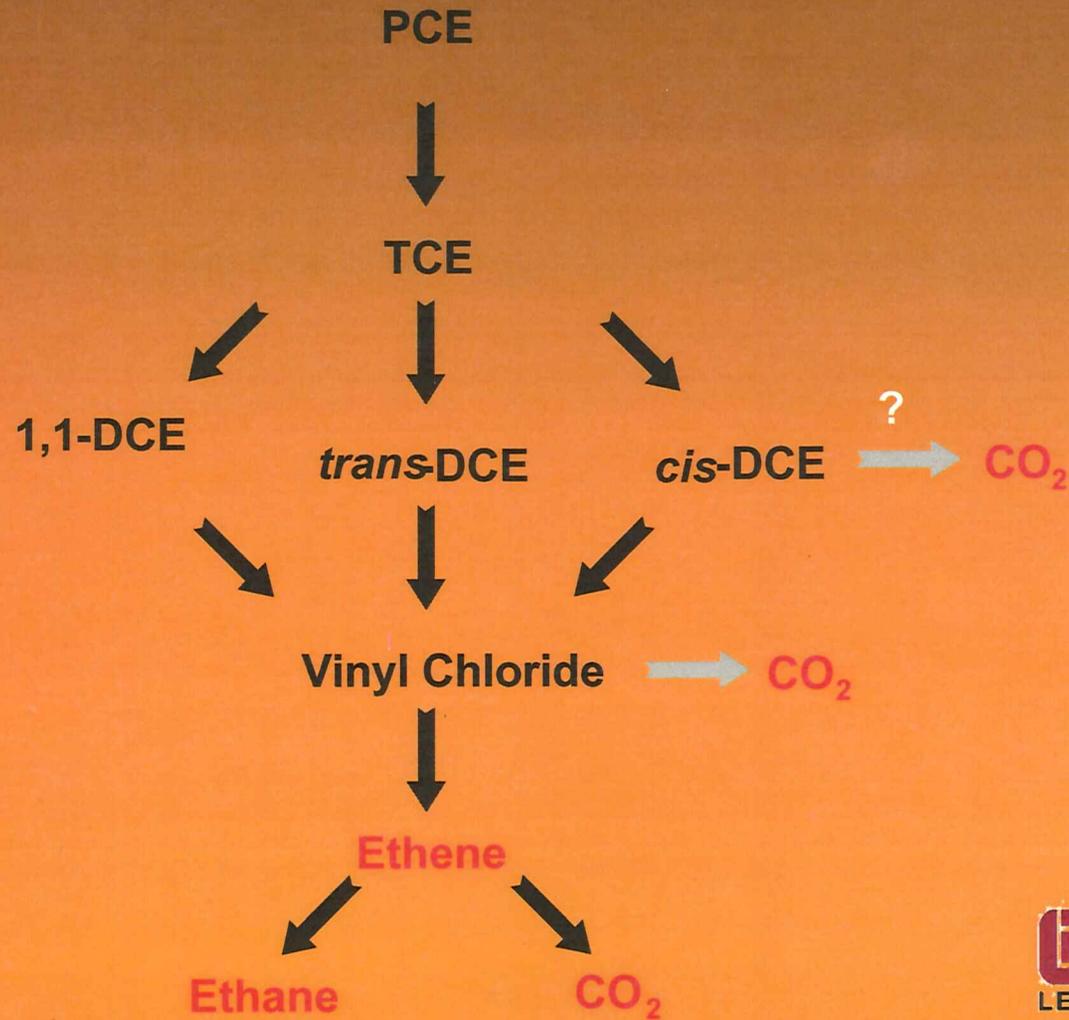
**Site Boundary Map,
September 2006**

Motorola 52nd Street Superfund Site, Phoenix, Arizona



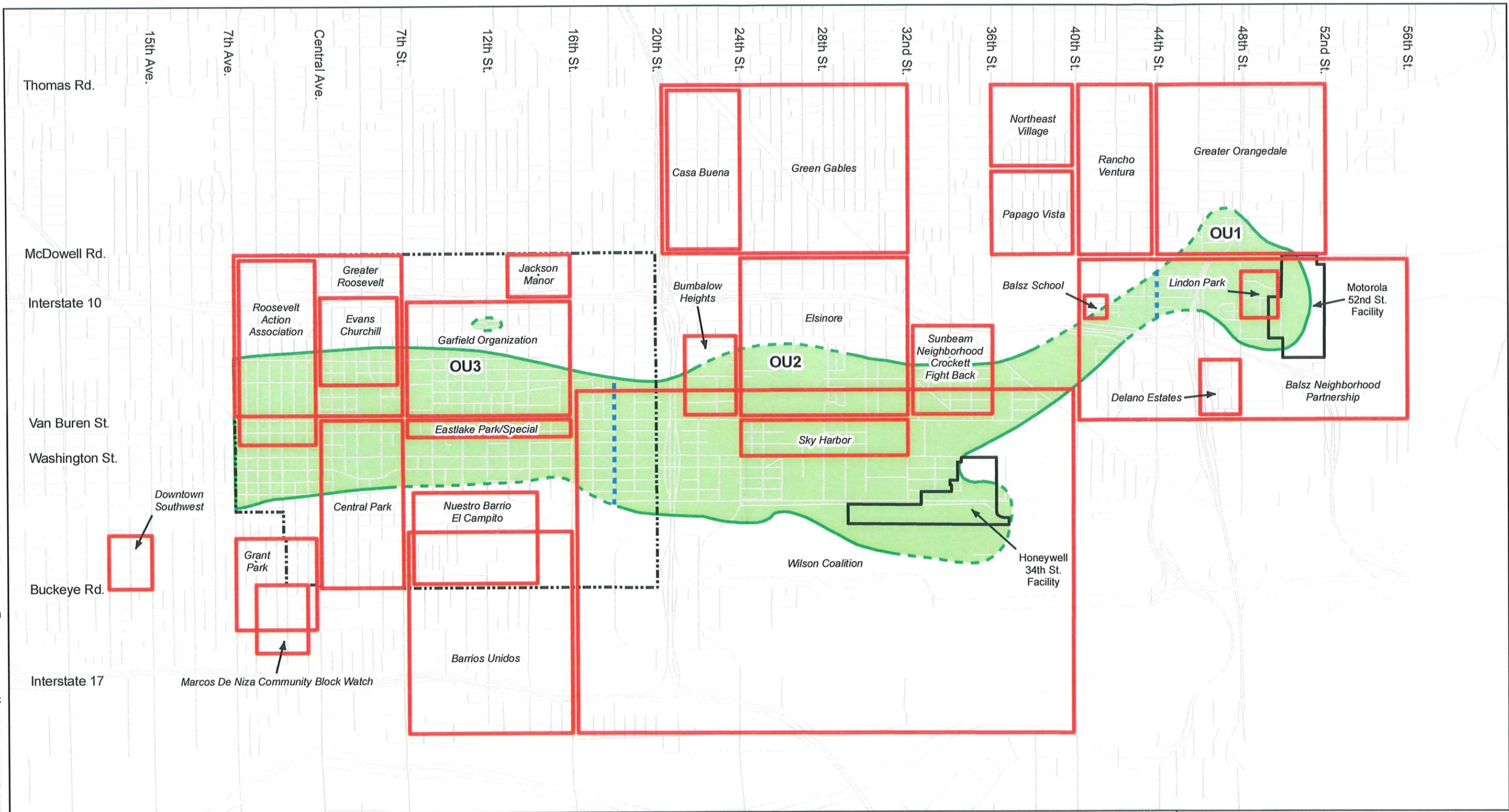
Figure 2

Figure 3 Breakdown of PCE and TCE by Reductive Dechlorination



PCE – Tetrachloroethene
TCE – Trichloroethene
DCE – Dichloroethene
CO₂ – Carbon Dioxide

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LEGEND

Estimated site boundary: Contour represents area of volatile organic compounds in alluvial groundwater that exceeds the Arizona Aquifer Water Quality Standards (dashed line = inferred boundary).



Approximate neighborhood association boundary



Facility boundary



OU3 study area boundary



Operable unit boundary

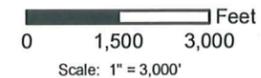


Streets

NOTES

Plume source data: September 2006

Neighborhood Association Boundaries Source: City of Phoenix website (<http://www.ci.phoenix.az.us>)



Neighborhood Associations Located Near Motorola 52nd Street Site

Motorola 52nd Street Superfund Site, Phoenix, Arizona



Figure 4

Appendix A: Glossary

Administrative Order on Consent (AOC): A legal document that formalizes an agreement reached between ADEQ and/or USEPA and one or more potentially responsible parties (PRPs) to address, in whole or in part, the PRPs' responsibility for a site. An AOC is legally enforceable, but does not have to be approved by a court. AOCs are commonly used when PRPs agree to conduct a removal or remedial investigation/feasibility study, reimburse the agencies' past costs (where the cost of the response action does not exceed \$500,000), or enter a *de minimis* settlement. An AOC may not be used for an agreement to conduct a remedial action. *NOTE: The term "de minimis" means "of minimum importance." Essentially, it refers to something or a difference that is so little, small, minuscule or tiny that the law does not refer to it and will not consider it, e.g., a \$10 mistake in a million dollar deal is de minimis.*

Administrative Record (AR): The body of documents that forms the basis for the selection of a particular response at a site. For example, the AR for remedy selection includes all documents that were "considered or relied upon" to select the response action. A duplicate file is held in a central location, such as an USEPA regional office. An AR must be available at or near every site to permit interested individuals to review the documents and to allow meaningful public participation in the remedy selection process. The requirement does not apply to other ARs, such as those for deletion.

Agency for Toxic Substances and Disease Registry (ATSDR): This organization, established under section 104(i) of CERCLA, provides technical support and assistance to protect human health and worker safety, determines the toxicological and human health impacts associated with hazardous substances, develops a priority-order list of hazardous substances most frequently found at sites on the CERCLA National Priorities List, and produces toxicological profiles of chemicals.

Air Stripping: Air stripping is a treatment system that removes or "strips" VOCs from contaminated groundwater or surface water as air is forced through the water, causing the compounds to evaporate. Often the compounds are then captured using air filters.

Applicable or relevant and appropriate and requirements (ARAR) - "Applicable requirements" are those cleanup standards, standards of control, and criteria promulgated under Federal or State law that specifically address a hazardous substance, remedial action, location, or other circumstance at a CERCLA environmental restoration site. "Relevant and appropriate requirements" are those same standards mentioned above that, while not applicable at the CERCLA site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

Identification of ARARs at CERCLA sites is the major prerequisite for setting cleanup goals and selecting a remedy that are protective of human health and the environment

Aquifer: An aquifer is an underground geological formation composed of sand, soil, gravel, or porous rock that can store and supply groundwater to wells and springs. In aquifers, groundwater occurs in sufficient quantities to be used for drinking water, irrigation, and other purposes.

Cleanup: Cleanup is the term used for actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term is sometimes used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA): The federal law, also known as “Superfund,” that was passed in 1980. It established a program to (1) identify sites where hazardous substances have been, or might be, released into the environment; (2) ensure that these sites are cleaned up by the responsible parties or the government; (3) evaluate damages to natural resources; and (4) create a claims procedure for parties who have cleaned up sites to recover their costs from a responsible party or parties

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS): CERCLIS is a database that serves as the official inventory of Superfund hazardous waste sites. CERCLIS also contains information about all aspects of hazardous waste sites, from initial discovery to deletion from the National Priorities List (NPL). The database also maintains information about planned and actual site activities and financial information entered by USEPA regional offices. CERCLIS records the targets and accomplishments of the Superfund program and is used to report that information to the USEPA Administrator, Congress, and the public. See also National Priorities List and Superfund.

Community Advisory Group (CAG): A diverse group of community members interested in or affected by the presence of an USEPA NPL site. The USEPA forms a CAG for each NPL site where it is initiating a remedial investigation. The USEPA seeks the CAG’s input in the decision-making process and works with them from the onset of the RI/FS process until the requirements of the record of decision have been fulfilled.

Community Involvement Plan (CIP): A document that identifies techniques used by ADEQ and USEPA to communicate effectively with the public during the Superfund cleanup process at a specific site. This plan describes the site history, nature and history of

community involvement, and concerns expressed during community interviews. In addition, the plan outlines methodologies and timing for continued interaction between the Agencies and the public at the site.

Conceptual Site Model: As described in American Standard for Testing & Materials (ASTM) Standard Guide for Developing Conceptual Site Models for Contaminated Sites, E1689-95, the conceptual model is a written or pictorial representation of an environmental system and the biological, physical and chemical processes that determine the transport of contaminants from potential sources through environmental media to Receptors within the system. There are six basic activities associated with developing a conceptual model. Not necessarily listed in the order in which they should be addressed, they are:

1. Determination of the limits of the study area;
2. Identification of potential Contaminants;
3. Identification and environmental sampling to characterize potential Source(s) of Contaminants;
4. If needed, as part of assessing the ecological concerns, or for portions of Sites in area-wide contamination Sites, establishment of Background Concentrations for each contaminated medium;
5. Identification of potential migration pathways and exposure routes through environmental media, such as Groundwater, Surface Water, Soils, sediment, biota, particulates in air; and
6. Identification and quantification of potential Receptors (human and ecological).

Consent Decree (CD): A legal document, approved by a judge that formalizes an agreement reached between ADEQ, USEPA, and one or more potentially responsible parties (PRPs). The CD outlines the terms on which the PRP(s) will conduct all or part of a response action, pay for all or part of a response action, pay past costs, cease or correct actions or processes that are polluting the environment, or otherwise comply with regulations where the PRPs' failure to comply caused ADEQ and USEPA to initiate regulatory enforcement actions. The CD describes the actions PRPs will take, is subject to a public comment period prior to its approval by a judge, and is enforceable as a final judgment by a court.

Containment: A remediation method that seals off all possible exposure pathways between a hazardous disposal site and the environment, which generally includes capping (putting an engineered soil cover over a contaminated area) and institutional controls, e.g., deed restrictions.

Corrective Action Plan: The corrective action plan (CAP) is a comprehensive approach proposed to remediate the effects of a release of regulated substances from a LUST system in a site specific, technically feasible, cost-effective manner. Guidelines on preparing a CAP can be found on ADEQ's website. These CAP guidelines have been

developed to comply with Arizona Revised Statutes (ARS) § 49-1005 and 40 Code of Federal Regulations (CFR) 280.66 and 40 CFR 280.67. There are eight (8) basic elements to a CAP:

1. Assessment of impacts.
2. Exposure assessment which is required by 40 CFR §280.66 (see Appendix B).
3. Determination of applicable cleanup levels (Appendix C).
4. Cost and technical effectiveness (feasibility analysis) of at least three (3) remedial alternatives, one of which must be natural attenuation.
5. Proposal of preferred remedial alternative with rationale.
6. Plan, conceptual design, and time schedule for implementing and completing the preferred remedial alternative.
7. Plan and schedule for the operations and maintenance (O&M) and periodic reporting on the effectiveness of the system(s).
8. Plans for confirmation sampling and decommissioning of the system(s) after case closure.

Cost Recovery: A legal proceeding, authorized under CERCLA, that allows the government to proceed against potentially responsible parties (PRPs) for recovery of both administrative and actual cleanup costs expended in either emergency removal or remedial activities at hazardous waste sites.

Data Gap: A data gap exists where the extent of contamination or type of contamination has not been fully defined. In this instance, additional information/sampling is required to evaluate the nature and extent of contamination.

Dichloroethane (DCA): A manufactured chemical not found naturally in the environment. This chemical can be manufactured as either 1,1-DCA or 1,2-DCA. 1,1-DCA was historically used as a surgical anesthetic. Today, 1,1-DCA is used primarily to make other chemicals and as a solvent used to dissolve substances such as paint, varnish, and finish removers, and to remove grease. 1,2-DCA is primarily used in the production of vinyl chloride, which is used to make a variety of plastic and vinyl products including polyvinyl chloride (PVC) pipes, furniture and automobile upholstery, wall coverings, housewares, and automobile parts. It is also used as a solvent and is added to leaded gasoline to remove lead. DCA can also be a degradation by-product of trichloroethene (TCE).

Dichloroethene (DCE): DCE can be manufactured as either 1,1-DCE or 1,2-DCE. 1,1-DCE is a colorless liquid with a mild, sweet smell. It is used to make certain plastics, such as flexible films like food wrap, and in packaging materials. It is also used to make flame-retardant coatings for fiber and carpet backings, and in piping, coating for steel pipes, and adhesive applications. 1,2-DCE is a highly flammable, colorless liquid with a sharp, harsh odor used to produce solvents and in chemical mixtures.

Drywells: A bored, drilled, or driven shaft or hole whose depth is greater than its width, and disposes of unwanted **water**, most commonly **storm water runoff**, by dissipating it into the ground, where it merges with the local **groundwater**.

Ecological Risk Assessment (ERA): Ecological risk assessments are conducted to provide information about the potential diverse effects of different management decisions. The risk assessment is a process for systematically evaluating how likely it is that adverse ecological effects may occur as a result of exposure to one or more stressors.

Environment: The environment includes the air, water, and land, and the relationship that exists between them and all living things, including plants, man and other animals.

Extraction Well: An extraction well is a well specifically designed to withdraw groundwater or soil gas for treatment.

Feasibility Study (FS): The Feasibility Study (FS) is the evaluation of potential remediation methods for achieving the remedial goals determined during the Remedial Investigation. Under the federal Superfund program, the alternative methods are evaluated using the following criteria:

1. overall protection of human health and the environment
2. ability to achieve regulatory standards or site-specific standards developed during a site-specific risk assessment
3. short-term effectiveness [The remedial action needs to reduce the present health risks to people and the environment as promptly as warranted AND the method employed must not increase health risks to people.]
4. long term effectiveness or permanence of result
5. reduction of toxicity, mobility, or volume of hazardous substance through treatment
6. feasibility and reliability
7. community acceptance

Five-Year Review: A periodic review of a Superfund site conducted after a response action has been initiated; the purpose of a five-year review is to evaluate whether the response action remains protective of public health and the environment.

Gallons per minute (GPM) – a unit of volume flow rate; the number of gallons of water that pass through in one minute

Granular Activated Carbon (GAC): Activated carbon is manufactured from a variety of raw materials, including wood, coal, and coconut shells, making it plentiful, relatively inexpensive, and versatile. Activated carbon is an effective absorbent primarily due to its

extensive porosity and very large available surface area. By definition, granular activated carbon (as opposed to powdered activated carbon or PAC) is composed of particles with sizes greater than 0.8 mm, about the size of coarse sand.

General Notice: Once USEPA has identified the potentially responsible parties (PRPs) associated with a site, USEPA typically sends a General Notice Letter to the PRP. The General Notice Letter lets the recipients know that USEPA has reason to believe that they are potentially liable or responsible for cleaning up the site. The General Notice Letter also informs PRPs that they may have to pay for past and future response costs and tells them about the negotiations process. When USEPA is ready to negotiate with the PRPs to get them to clean up a site, it sends out a Special Notice Letter (See Special Notice in Glossary).

Groundwater: Water located beneath the ground surface in soil pore spaces and in the fractures of geologic formations. A formation of rock or soil is called an aquifer when it can yield a usable quantity of water.

Health Consultation: A review of available information or collection of new data to respond to a specific health question or request for information about a potential environmental hazard. Health consultations are focused on a specific exposure issue. A health consultation is therefore more limited than a public health assessment, which reviews the exposure potential of each pathway and chemical (compare with Public Health Assessment definition).

Hazard Ranking System (HRS): A scoring system used to evaluate potential relative risks to public health and the environment from releases or threatened releases of hazardous substances. USEPA and states use the HRS to calculate a site score (0-100) based on the actual or potential release of hazardous substances from a site through air, surface water or groundwater. A score of 28.5 or higher places the site on the National Priorities List.

Hazardous Substance: Any material that, because of its quantity, concentration, physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.

Hazardous Wastes: Those wastes that are regulated under the Resource Conservation and Recovery Act (40 CFR Part 261) either because they are "listed" or because they are ignitable, corrosive, chemically reactive, or toxic. As such, they are hazardous substances under CERCLA.

Interim Remedy: An interim remedy is a remedial action that is performed prior to the final remedy and often prior to the completion of the Remedial Investigation because timeliness of response is particularly important in order to do the following:

1. address a current risk to public health or the environment,
2. protect or provide a supply of water,
3. prevent further release of a contaminant source into the environment, or
4. control or contain contamination where such actions are expected to reduce the scope or cost of the final remedy at the site.

Lead Agency: The agency that provides the personnel who primarily plan and implement cleanup actions conducted under the National Contingency Plan. This includes USEPA, state or political subdivisions, other federal agencies, or Indian tribes. Other agencies may be extensively involved in the process, but the lead agency directs and facilitates activities related to a site, often including enforcement actions. A state lead agency carries out the same responsibilities delineated for Federal On-Scene Coordinators (OSCs) and/or Remedial Project Managers (RPMs) except coordinating and directing federal agency response actions (40 CFR 300.5).

Monitor Wells: Monitor wells are wells which are installed for the purpose of obtaining information about the groundwater at a specific location such as water quality, depth to water, and groundwater flow direction. Data is usually gathered over a period of time to help determine trends in flow direction and contaminant plume movement. Monitor wells may be used as sentinel wells for an “early warning system” to protect drinking water wells. See also “Soil Vapor Monitoring Well.”

National Contingency Plan, or National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The basic policy directive for federal response actions under CERCLA. It sets out the organizational structure and procedures for responding to releases of hazardous substances, pollutants, and contaminants, and contains the Hazard Ranking System and the National Priorities List as appendices.

National Priorities List (NPL): The NPL is the USEPA’s list of the most serious hazardous waste sites identified for possible long-term remedial response under the Federal Superfund (CERCLA).

Notice Letter: USEPA’s formal notice by letter to potentially responsible parties (PRPs), also called a Section 104(e) letter, that CERCLA-related action is to be undertaken at a site with those PRPs being considered responsible. This letter is a request for information about the facilities current and past history, including information concerning the following:

- use, storage, and disposal of hazardous substances
- releases of hazardous substances
- facility permits
- facility operational history

Operable Unit (OU): A designation for a portion of a site with defined boundaries and at which site actions are uniquely planned, executed, and tracked. A discrete part of the entire response action that decreases a release, threat of release, or pathway of exposure (40 CFR 300.5).

Operation and Maintenance (O&M): 1. Activities conducted after a Superfund site action is completed to ensure that the action is effective. 2. Actions taken after construction to ensure that facilities constructed to treat waste water will be properly operated and maintained to achieve normative efficiency levels and prescribed effluent limitations in an optimum manner. 3. On-going asbestos management plan in a school or other public building, including regular inspections, various methods of maintaining asbestos in place, and removal when necessary.

Part Per Billion (ppb): Part per billion (ppb) is a unit of concentration commonly used to express low concentrations of contaminants. For example, 1 ounce of TCE in one billion ounces of water is 1 microgram per liter ($\mu\text{g/L}$) or ppb. If one drop of TCE is mixed in a competition-size swimming pool, the water will contain about 1 ppb of TCE.

Perchloroethene (PCE): PCE is a clear, colorless, liquid with a chloroform or sweet odor and a low boiling point. PCE is a solvent used for dry-cleaning; degreasing and drying metals and other solids; dissolving waxes, greases, oils, fats, and gums, and in other industrial applications. PCE is a potential occupational carcinogen. Evaporation increases as temperature increases. Also called tetrachloroethene.

Pilot Test: Demonstrations of technologies/systems to evaluate performance under field conditions. The results are used to develop plume response alternatives and design full-scale treatment systems.

Plume: A well defined area of contamination in groundwater, soil or the air, often used to describe the dispersion of contamination in soil and/or groundwater.

Potentially Responsible Party (PRP): A PRP is an individual or company that is potentially responsible for all or part of the contamination problems at a State or Federal Superfund site. Whenever possible, ADEQ requires PRPs, through administrative and legal actions, to cleanup or pay for the cleanup of their portion of hazardous substances sites they have contaminated.

Preliminary Assessment and Site Investigation (PA/SI): A preliminary assessment (PA) is the process of collecting and reviewing available information about a known or suspected hazardous waste site or release. The PA usually includes a visit to the site. If it is determined that a site requires further study, a more extensive site investigation is undertaken to gather technical information and laboratory samples. The information is used to score the site using the hazard ranking system to determine whether the site will be placed on the National Priorities List (NPL).

Public Comment Period: A period during which the public can formally review and comment on various documents and ADEQ actions.

Pump and Treat: A pump and treat system is a remedial action that involves installing wells at strategic locations to extract contaminated groundwater, treating it aboveground to remove the contaminants, and reinjecting it into the aquifer. Other uses for the water or part of the water may be an option such as watering golf courses and dust control.

Record of Decision (ROD): The ROD is based on information and technical analysis generated during the remedial investigation and feasibility study, and on consideration of comments received during the public comment record for the proposed remedial action plan.

Release: A release is any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance as defined under RCRA. Arizona's WQARF statute defines a release similarly, but with several exceptions which are defined in statute according to A.R.S. 49-281 (11).

Remedial Action (RA): Any action taken to investigate, monitor, assess and evaluate the release or threat of release of hazardous substances or contaminants to the environment. It may also refer to the actual "cleanup" of the environment by various removal, treatment, monitored remediation, or corrective actions. The term cleanup is sometimes used interchangeably with the terms remedial action, removal action, response action, remedy, remediation, or corrective action.

Remedial Alternative: an option outlining a specific design for treatment to be compared and evaluated with other cleanup options.

Remedial Design (RD): This is an engineering phase that follows the record of decision (ROD) when detailed designs, technical drawings, and specifications are developed for the subsequent remedial action stage.

Remedial Action Plan (RAP): A plan that details the technical approach for implementing the remedial response. It includes the methods to be followed during the entire remediation process, from developing the remedial design to implementing the selected remedy through construction.

Remedial Investigation (RI): Establishes the nature and extent of the contamination and the sources; identifies current and potential impacts to public health, welfare, and the environment; identifies current and reasonable foreseeable uses of land and waters of the state; and obtains and evaluates any information necessary for identification and comparison of alternative remedial actions.

Remedial Project Manager (RPM): The state or federal official in charge of a Superfund site on behalf of the state or federal agency.

Remediation: Cleanup or other methods used to remove or contain a toxic spill or hazardous materials.

Responsible Parties (RPs): Those parties (individuals, corporations) identified by state or federal authorities as potentially liable for cleanup costs at a contaminated site.

Site Investigation: Samples are taken and research conducted to determine if the site has polluted soil and/or water.

Soil-Vapor Extraction (SVE): SVE is a commonly used technique for cleaning up contaminated soils. Soil-vapor extraction draws/vacuums gases from the contaminated soils and through the extraction system where they are treated or discharged into the air. Whether or not the extracted gas is treated prior to being discharged into the air depends on the amount and type of contamination present. Soil-vapor extraction removes VOCs and some SVOCs from soil beneath the ground surface. The term soil-vapor extraction is often used interchangeably with soil-gas extraction.

Soil-Vapor Monitoring (SVM) Well: Similar to a groundwater monitoring well (also see Monitor Wells), soil-vapor monitoring wells are installed for the purpose of obtaining information about potential contaminant concentrations in soil vapor. Data from soil-vapor monitoring wells are usually gathered over a period of time to help evaluate trends in contaminant migration in the vadose zone or unsaturated zone.

Solvent: A substance, usually a liquid, which is capable of dissolving or dispersing one or more other substances. PCE is a common solvent used in the dry cleaning business and in cleaning auto and airplane parts.

Special Notice: Once USEPA has identified the potentially responsible parties (PRPs) associated with a site, USEPA typically sends a General Notice Letter to the PRP (See General Notice in Glossary). When USEPA is ready to negotiate with the PRPs to get them to clean up a site, it sends out a Special Notice Letter. The Special Notice Letter gives the PRPs information on why USEPA believes they are liable and on USEPA's plans for upcoming response actions (that is, cleanup work) at the site. The letter also invites the PRPs to participate in negotiations with USEPA to conduct future cleanup work and to pay USEPA for any site-related costs that USEPA has incurred. The Special Notice Letter also triggers the start of a "negotiation moratorium," which means that USEPA agrees, for a certain period of time, not to unilaterally order the PRP to conduct the cleanup. This moratorium period is intended to encourage the PRPs to negotiate a settlement agreement promptly, within a limited period of time.

Technical Assistance Grant (TAG): A grant of up to \$50,000 to enable citizens to hire independent technical advisors to help them understand information related to cleanup of a specific Superfund site (see Appendix P of this document).

To be considered (TBC) - Since conditions vary widely from Superfund site to Superfund site, ARARs alone may not adequately protect human health and the environment. When ARARs are not fully protective, USEPA may implement other federal or state policies, guidelines, or proposed rules capable of reducing the risks posed by a site. Such TBC standards, while not legally binding (since they have not been promulgated), may be used in conjunction with ARARs to achieve an acceptable level of risk. TBCs are evaluated along with ARARs as part of the risk assessment conducted for each CERCLA site to set protective cleanup levels and goals. Proposed concentration-based action levels under RCRA could, for instance, be used as TBC guidelines to trigger treatment of soils contaminated with hazardous wastes. Because TBCs are not potential ARARs, their identification is not mandatory.

ToxFAQs™: An ATSDR fact sheet, typically two pages, which answers the most frequently asked health questions about a hazardous substance.

1,1,1-Trichloroethane (TCA): A colorless liquid with a sharp, sweet odor. It is a chlorinated solvent similar to TCE and used mainly for the degreasing/drying of metals and electronic components.

Trichloroethene (TCE): A non-flammable, colorless chlorinated solvent that readily evaporates at room temperature. TCE is used mainly for degreasing/drying of metals, electronic components and cleaning of fabrics.

Unilateral Administrative Order (UAO): An order issued by USEPA, authorized by CERCLA section 106, requiring the potentially responsible parties to undertake a response action. There must be imminent and substantial endangerment to the public health or the environment before such an order can be issued.

Vapor Intrusion: Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface solid and into air spaces of overlying buildings.

Vinyl Chloride (VC): A flammable, colorless gas at room temperatures. It is used to make polyvinyl chloride (PVC), which is used to make plastic products. Also, vinyl chloride is often an end product when tetrachloroethene (PCE) and trichloroethene (TCE) chemically decompose in the environment.

Volatile Organic Compounds (VOCs): A large group of carbon-containing compounds that are easily dissolved into water, soil, or the atmosphere and evaporate readily at room temperature. Examples of VOCs include tetrachloroethene, trichloroethene, benzene, toluene, ethylbenzene and xylene (BTEX). These contaminants are typically generated from metal degreasing, printed circuit board cleaning, gasoline, and wood preserving processes.

Water Quality Assurance Revolving Fund (WQARF): WQARF is a program established by the Arizona State Legislature and administered by ADEQ to (1) conduct statewide surface and groundwater monitoring; (2) perform health effects studies, including epidemiological studies and risk assessments; (3) perform emergency remedial actions; and (4) conduct long-term remedial action programs. The WQARF program is funded with state monies, civil and criminal penalties, and funds recovered from responsible parties (RPs). WQARF is also known as Arizona's "State Superfund."

Appendix B: Detailed Project Background for Operable Unit 1

The Motorola 52nd Street facility was originally constructed in 1956 and was in operation until the third quarter of 1999 when Motorola's Communications, Power and Signal Group was split off to become ON Semiconductor. Motorola remains responsible for the remediation effort related to its former operations at the 52nd Street facility.

Until 1963, no municipal sewer was available, thereby requiring on-site disposal of domestic and industrial waste in underground tanks, leaching fields, dry wells, pits, sumps, and surface disposal areas. The type of wastes that were known to be released to the environment at the facility are: *solvents*, acids, cyanides, and sanitary sewage. Solvents, such as trichloroethene (TCE), trichloroethene (TCA), tetrachloroethene (PCE), and freon, were used at various Motorola operations at the facility. Three primary source areas have been identified at the Motorola 52nd Street facility: the Courtyard, the Acid Treatment Plant (ATP), and the Southwest Parking Lot (SWPL).

1. The Courtyard was the site of a 5,000-gallon TCA underground storage tank (UST) and a drywell that was approximately 3 feet in diameter and 15 feet deep. The drywell received solvents, mainly TCE and TCA, from 1963 to 1974. The solvents were used at the facility to remove greases, waxes, oils, and photoresist. Soils and groundwater have been affected with chlorinated solvents in this area. Additionally, free product solvent has been found in the bedrock at the Courtyard.
2. The ATP was built on a buried waste solvent line suspected of leaking and there were reports of solvent spills in the area.
3. From 1974 to 1976, the SWPL area was used extensively as a main staging area of waste chemicals, which were stored in 55-gallon drums that were suspected of leaking.

OUI Investigations and Activities Conducted From 1984 through 1989 NPL Listing

From October 1984 to June 1987, Motorola completed a remedial investigation and feasibility study (RI/FS) under the direction of an oversight committee. Twenty-eight potential sources were identified and investigated, such as past surface discharges, spills, tank and pipe leaks, and discharges to leach fields and dry wells. It was determined that the majority of the contamination came from sources in the Courtyard area.

An additional 21 monitor wells were installed during the RI/FS, nine of which were multiple completion wells.

In November 1984, the initial soil-gas investigation was conducted and comprised 69 soil-gas probe locations covering about one square mile.

From February through March 1985, a second soil-gas survey was conducted that comprised 177 soil-gas probe locations.

In October 1985, a third soil-gas survey was conducted to further define source areas. This soil-gas survey included 134 locations on and around the 52nd Street facility. Mostly TCE, TCA, and PCE were detected in the soil gas. The highest concentrations observed were 50 **parts per billion (ppb)**, 1,400 ppb, and 1,100 ppb, respectively.

In September 1986, a groundwater pilot treatment plant (PTP) was constructed in the Courtyard area, which included two extraction wells.

In June 1987, Motorola submitted the Draft RI and FS Reports to ADEQ. The RI Report summarized the results of source characterization and site investigation. The FS Report established remedial objectives, identified alternative approaches, and evaluated alternative remedies. These draft documents were issued for public comment. As part of the Preliminary Investigation (PI) and the RI/FS, Motorola installed monitor wells at 75 separate locations both on-site and off-site (downgradient), and many were multiple completion wells (totaling 248 ports). Four additional wells were installed specifically for testing the hydraulic properties of the aquifer (known as aquifer testing). In addition, groundwater from nine private wells was sampled and analyzed.

In June 1988, Motorola submitted a **remedial action plan (RAP)** to ADEQ that proposed a remedial alternative. The remedial alternative comprises one part of the overall remediation of soil and groundwater contamination at the Site. ADEQ and USUSEPA then held a public meeting in July 1988 on the proposed alternative.

In September 1988, ADEQ and USEPA issued official approval to implement the recommendations in the Draft RAP in the Record of Decision (ROD) for the operable unit (OU) (later designated as OU1) interim remedy. The OU is designed to provide overall protection of human health and the environment by containing migration of volatile organic compounds (VOCs) and to treat the extracted groundwater to a level that will meet both state and federal standards. The OU remedy selected consists of the following components:

- (1) on-site extraction and treatment of groundwater from the Courtyard and 50th Street area,
- (2) on-site extraction and treatment of vapor-phase organic contaminants from soils from the Courtyard, Acid Treatment Plant (ATP), and Southwest Parking Lot (SWPL) areas,
- (3) off-site extraction of groundwater designed to contain contaminant migration at the Old Crosscut Canal,
- (4) on-site treatment of groundwater extracted from off-site wells, and
- (5) use of all treated groundwater at the Motorola 52nd Street facility.

In January 1989, a fourth soil-gas survey was conducted in the Courtyard area (ten sampling locations), SWPL area (six sampling locations), and ATP area (three sampling locations).

In June 1989, Motorola and ADEQ entered into a Consent Order, lodged with the Arizona Superior Court, requiring Motorola to design and implement an interim groundwater remedy and soil remedies in the OUI area, and to continue to work on a revised remedial investigation/feasibility study (RI/FS) Work Plan to define work components leading to a final remedy.

The remedial objective as defined in the June 1989 Consent Order between Motorola and ADEQ is to contain and control the migration and reduce the level of contaminants in the groundwater through implementation of the work by Motorola.

In October 1989, the Site was proposed for placement on the USEPA's NPL. The site boundaries at this time were determined to be from 52nd Street to 48th Street. Today, this area is known as OUI. The Site was formally placed on the NPL in November 1989. Although the Site was listed on the NPL, USEPA delegated its authority to ADEQ to continue to be the lead agency.

OUI Investigations and Activities Conducted From 1990 to 1994

In August 1990, two additional extraction wells were added to the PTP located in the Courtyard area. In 1990, a sump located within a building near the SWPL was identified as another source of contamination, mainly TCA. Initial soil sample results under the sump were as high as 30,000 ppb of TCA.

In February 1991, the SWPL investigation was initiated and by March a soil-gas investigation was conducted. The investigation included five conventional monitor wells, one multiport monitor well in the SWPL area, and six off-site monitor wells. In June 1991, Motorola voluntarily initiated groundwater treatment for the SWPL area with two extraction wells located in the SWPL. From October through November 1991, another soil-gas survey was conducted in the SWPL area consisting of 29 soil-gas sampling locations.

From 1991 through 1992, Motorola installed nine wells for the off-site extraction system on the bank of the relocated Old Crosscut Canal at approximately 46th Street between McDowell Road and Roosevelt Street. Four additional monitor wells (with a total of 26 sampling ports) were installed to monitor the OUI effectiveness.

In January 1992, Motorola conducted another soil-gas survey of the SWPL area consisting of 49 soil-gas sampling locations. The extracted groundwater is sent to the PTP via double-walled underground piping.

In February 1992, Motorola submitted the Final RI Report, incorporating the SWPL RI. The investigation included a groundwater monitoring network of about 80 wells and 13 extraction wells for the SWPL remediation system (totaling 190 sampling ports). In March 1992, ADEQ conducted a soil-gas survey adjacent to Motorola, consisting of 41 soil-vapor samples and three

soil samples. In May 1992, the SWPL groundwater remedy was expanded to include an additional nine extraction wells.

A soil-vapor extraction (SVE) system was constructed in the Courtyard in May 1992 and by June was operational. As of March 1993 when the SVE system was shut down, approximately 350 pounds (lbs) of VOCs had been removed from the vadose zone by the SVE system.

In July 1992, the Pre-Design RI Work Plan was submitted and the full-scale groundwater treatment system was placed in operation. The OU is considered an interim remedy and the final remedy will be determined after the final OU1 FS and ROD are completed. The groundwater extraction system consists of 25 on- and off-site wells that pump the contaminated groundwater to a central treatment plant, located at the 52nd Street facility, via underground double-walled pipes. The plant treats groundwater by running it through two air strippers (see **air stripping**) connected in series, and is then run through four liquid phase **granular activated carbon (GAC)** vessels (two parallel sets of two vessels connected in series) for polishing. The treated water is then used by ON Semiconductor for its facility operations. The air emissions are treated by vapor-phase GAC. Approximately 95% of the air is recycled through the air strippers and approximately 5% is treated and then released to the atmosphere.

Also in July 1992, the OU1 Interim Groundwater Remedy groundwater treatment system was placed into operation. Groundwater is extracted from the aquifer by 25 on- and off-site wells that pump the contaminated groundwater to a central treatment plant, located at the 52nd Street facility, via underground double-walled pipes. The plant treats groundwater by running it through two air strippers connected in series, and then through four liquid-phase, GAC vessels (two parallel sets of two vessels connected in series) for polishing. The treated water is then used by ON Semiconductor for its facility operations. The air emissions from the groundwater treatment system are treated by vapor-phase GAC prior to release to the atmosphere.

In February 1993, an air sparging (AS)/SVE pilot program was conducted in two locations within the SWPL area. Approximately 269 lbs of VOCs were removed. Motorola submitted the final Draft SWPL RI Report in June 1993. In October 1994, Motorola issued an Addendum to the Draft SWPL RI Report. A supplemental attachment detailing the results of aquifer testing conducted in the SWPL area was submitted in December 1994.

Motorola submitted the first OU1 Effectiveness Report in October 1994. Effectiveness reports are submitted on an annual basis on March 31st.

In 1994, a program was initiated to periodically remove free product solvent from bedrock.

OU1 Investigations and Activities Conducted from 1995 to 2002

In April 1995, Motorola submitted the Remedial Design (Plans, Specifications, and Design) for the SWPL AS/SVE system. Motorola also submitted the Pilot Program Report detailing the SWPL AS/SVE pilot operations.



In August 1995, Motorola submitted the Bedrock Ridge Model Documentation and Sensitivity Analysis for the Motorola 52nd Street Model (MI52 Model) Report. Motorola then prepared the MI52 Model Documentation Report presenting models of predicted groundwater flow and contaminant transport of VOCs from the 52nd Street facility and other sources. The final report was submitted in February 1996.

In November 1995, Freescale conducted a soil-gas survey consisting of 25 sample locations of the off-site area immediately to the west of the Courtyard and the northern part of the 52nd Street facility. In December 1995, a multi-depth soil-gas investigation was conducted within the Courtyard area, consisting of 14 sample locations.

ADEQ completed the first Five Year Review of OUI in November 1995. It was determined that the OUI interim remedy was operating effectively and meeting the remedial objectives.

The SWPL SVE operations began in November 1996, and continued through April 1997. The system consisted of six SVE wells and 19 vapor monitor points. Approximately 170 lbs of VOCs were removed during the system operation in addition to the approximately 269 lbs that had been removed during the pilot AS/SVE test in February 1993.

In September 2001, ADEQ completed the second five-year review of the OUI remedy. Because site conditions have changed over the past few years, e.g., declining groundwater levels, ADEQ is concerned whether the remedy will continue to be effective in the future. Freescale responded to the issues identified in this report on March 28, 2002, by stating that additional information will need to be collected. Therefore, during the year 2002, in response to the Five-Year Review Report, Freescale conducted studies and evaluated the OUI groundwater treatment remedy in an effort to optimize the system.

In November 2002, ADEQ determined that the soil cleanup in the WPL area is complete. This is one of three areas that require soil remediation.

During the year 2002, in response to the second Five-Year Review Report dated September 27, 2001, Freescale conducted studies and evaluated the OUI groundwater treatment remedy in an effort to optimize the system. On March 28, 2002, Freescale responded to the issues identified in the second Five-Year Review Report and proposed to conduct field studies to evaluate optimizing the OUI system. ADEQ instructed Freescale to conduct a limited FS to evaluate other remedial technologies and/or re-engineer the existing pump-and-treat system.

OUI Investigations and Activities Conducted from 2003 to present

On March 31, 2003, Freescale submitted the 2002 Annual Effectiveness Report for operations of the groundwater treatment system. This report documents the results of Freescale's OUI optimization studies. The results indicate that optimization alone will not address the issue identified in the second Five-Year Review Report. Therefore, ADEQ has instructed Freescale to conduct a limited FS. On October 20, 2003, Freescale submitted a Letter of Intent to conduct an FS to evaluate other remedial alternatives.

During a routine inspection of the OU1 groundwater treatment system in April 2003, Freescale discovered small cracks in the (GAC) vessels used to treat the air emissions from the groundwater treatment system prior to their release to the atmosphere. Freescale determined that the GAC vessels could not be repaired and shut the system down immediately. In May 2003, Freescale submitted a proposal to ADEQ to remove air emission controls from the interim groundwater treatment system rather than replacing the GAC vessels. According to Freescale, the influent concentration of TCE to the GAC vessels was approximately 1.9 lbs per day. Prior to ADEQ's consideration of the proposal, ADEQ solicited public comment on Freescale's request to remove air emission controls. Largely due to public opposition to the removal of the air emission controls, Freescale replaced the GAC vessels. As of August 4, 2003, the groundwater treatment system was again fully operational with air emission controls in place.

In September 2003, at ADEQ's request, Freescale submitted a Work Plan to assess the potential for VOCs off-gassing from the groundwater, migrating through the soil, and into residential houses. ADEQ will provide oversight of Freescale's field work and assessments.

On March 31, 2004, Freescale submitted the 2003 Operations Effectiveness Report. As of December 31, 2003, over 2.2 billion gallons of water had been treated and nearly 15,546 lbs of VOCs as TCE had been removed by the OU1 Interim Remedy. The total amount of VOCs removed includes about 148 lbs of free product solvent recovered from one monitor well located on the facility. Bedrock concentrations tend to be much higher since the pure solvent sunk below the aquifer and is now deep within bedrock fractures. The OU1 treatment system does not produce sludge as a groundwater treatment byproduct. The spent carbon from the treatment facility is returned to the vendor for reactivation and reuse. Solvents recovered through on-site remediation efforts are sent to an approved hazardous waste facility.

On March 31, 2005, Freescale submitted the 2004 Operations Effectiveness Report. As of December 31, 2004, over 2.3 billion gallons of water had been treated and approximately 16,505 lbs of VOCs as TCE had been removed by the OU1 Interim Remedy. The total amount of VOCs removed includes about 155 lbs of free product solvent recovered from one monitor well located on the facility.

Freescale submitted an OU1 Evaluation Model Report dated September 28, 2005. The purpose of the Report was to (1) simulate groundwater flow in the vicinity of the 52nd Street Facility and calibrate the model to conditions from 1992 through 2003 and (2) provide a tool to evaluate future changes in the operations of the OU1 system. The model was constructed based on field data collected over many years and using the knowledge from several previous models of the Site. The model looked at the following future scenarios:

- continued current conditions;
- continued regional drought;
- continued current conditions with additional bedrock pumping at the Old Crosscut Canal (OCC);
- bedrock pumping only at the OCC;

- increased on-site pumping; and
- continued current conditions with reinjection.

The conclusions drawn from the model results indicated that *“with the exception of bedrock pumping at the OCC simulation all the scenarios predict that capture will be maintained into the future. The continued current conditions and the continued regional drought scenarios are essentially the same with respect to operations and show that the current operations will continue to be adequate for at least the next several years regardless of the drought. The Report goes on to say in summary that the model predictions indicate that the OUI system will continue to maintain capture with current rates or gradually reduced rates into the foreseeable future. Increasing on-site pumping would enhance mass removal. The other scenarios are feasible, but do not significantly enhance the current system.”*

Freescale submitted a Groundwater Remedial Alternatives Analysis (GRAA) Report on September 30, 2005 and an Addendum to Groundwater Remedial Alternatives Analysis in December 2005. The GRAA provided a focused evaluation of groundwater remedial alternatives at the former Motorola 52nd Street Facility based on current contaminant distribution and remediation progress. Freescale also developed a groundwater flow model to analyze future system effectiveness under continuing groundwater decline. The model evaluated the following future scenarios: (1) continued current conditions, (2) continued regional drought, (3) continued current conditions with additional bedrock pumping at the Old Crosscut Canal, (4) bedrock pumping only at the OCC, (5) increased on-site pumping, and (6) continued current conditions with reinjection. The only simulation that did not predict that capture would be maintained in the future was the bedrock pumping only at the Old Crosscut Canal scenario. ADEQ met with Freescale on March 7, 2006 to discuss the Reports. At that meeting, Freescale agreed to prepare a work plan for a pilot aquifer test in bedrock.

Freescale submitted the *Potential Indoor Air Vapor Intrusion Risks for Motorola 52nd Street Superfund Site Operable Unit 1 Memorandum* to ADEQ on December 6, 2005 (Sciences International, 2005). The memorandum evaluated the risks from potential vapor intrusion into residences within the OUI Area using soil gas data collected in 1995. Shallow soil gas samples were collected from a depth of approximately five feet bgs from twenty three locations. Screening levels were generally based on USEPA’s published cancer and non-cancer potency factors. If no USEPA factors were available, California EPA inhalation potency factors were used. The results show low total potential risk levels that are within the presumptively acceptable risk range of 10^{-6} (or lower) to 10^{-4} . Most of the results were below the 10^{-6} risk level. TCE and PCE were the only COCs detected at concentrations above soil gas risk-based screening level concentrations. Only two of the 23 locations show estimated values above the 10^{-5} risk level. Freescale’s evaluation is currently being reviewed by ADEQ and USEPA and no determination of risk has been determined.

In March 2006, Freescale submitted the 2005 Annual Effectiveness Report for operations of the groundwater treatment system. The conclusions presented in the report indicated that OUI extraction systems maintained a capture zone adequate to contain the entire width and depth of

the plume. Freescale indicated that the extent of vertical capture was at least 400 feet in depth. On-site extraction wells maintain capture in the alluvium and bedrock in the Courtyard area to a depth of approximately 150 to 200 feet bgs.

In September 2006, ADEQ completed the third five-year review of the OU1 remedy. The purpose of a five-year review is to evaluate the effectiveness of the remedy and whether it remains protective of human health and the environment. ADEQ identified several issues in the review of the OU1 treatment system. The assessment identified several issues in the review of the OU1 treatment system. Based on a conservative interpretation of the data, using converging lines of evidence, it appears that the target capture zone (TCZ) in bedrock and to the north is questionable. ADEQ is also concerned that the source area interim remedy is not significantly effective in reducing the levels of contaminants due to the dense non-aqueous phase liquid (DNAPL) in the fractured bedrock and that high concentrations of TCE will continue in the source area wells for a long period of time. In addition, groundwater concentrations in the shallow bedrock ports of DM-125 and DM-601 appear to be increasing suggesting that the on-site groundwater extraction system may not be reducing or eliminating contaminant migration from the source area. Several data gaps need to be filled in order to fully evaluate the OU1 capture effectiveness. As the OU1 Area conditions continue to change, additional groundwater elevation and quality data are needed to adequately evaluate the OU1 interim remedy. The monitoring network needs to be evaluated and updated based on current site conditions and issues. A review of applicable or relevant and appropriate requirements (ARARs) determined that there are no newly promulgated standards; however, new ARARs and To Be Considereds (TBCs) are likely to be determined for the final remedy. Because Site conditions have changed in the last few years, mainly the de-watering of the alluvium, ADEQ is concerned whether the remedy will continue to be effective in the future.

On January 5, 2007, Freescale submitted a Monitor Well Installation Report for monitor wells DM-609 and DM-610 located on Monta Vista Road, east of 47th Place. The monitor wells were installed in October/November 2006 north of EW-18 in order to better delineate the extent of contamination along the northern boundary of the Site plume.

In March 2007, Freescale submitted the 2006 Annual Effectiveness Report for operations of the groundwater treatment system. Through December 2006, approximately 2.65 billion gallons of water had been extracted and treated and an estimated 18,388 pounds of VOCs as TCE have been recovered. Approximately 177 pounds of free product solvent have been removed from one monitor well on site. The majority of the groundwater elevation and groundwater quality data continue to indicate that containment of the highest VOC concentrations in the vicinity of OU1 has been achieved through operation of the OU1 groundwater extraction and treatment system. However, the conclusions continue to rely largely on empirical data obtained from the monitor well network that is relatively sparse in the vicinity and downgradient of the depicted capture area (stagnation point) where a groundwater divide should exist. Additionally, the vertical extent of capture in the bedrock remains undefined, particularly in the vicinity of wells DM-601 and DM-606 where downward vertical gradients are observed. Freescale has agreed to install additional monitor wells to help address the data gaps identified by ADEQ.



Motorola 52nd Street Superfund Site Appendices for the Community Involvement Plan



In April 2007, Freescale submitted a Monitor Well Installation Report for monitor well DM-607 located just east of the intersection of Willetta Street and 44th Street. The monitor well was drilled and installed between February 27, 2006 and March 10, 2006 in order to evaluate the effectiveness of the extraction well network along the OCC. The well was completed with four sampling ports.

In March 2008, Freescale submitted the 2007 Annual Effectiveness Report for operations of the groundwater treatment system. Through December 2006, approximately 2.79 billion gallons of water had been extracted and treated and an estimated 19,285 pounds of VOCs as TCE have been recovered. Approximately 189 pounds of free product solvent have been removed from one monitor well on site. The majority of the groundwater elevation and groundwater quality data continue to indicate that containment of the highest VOC concentrations in the vicinity of OU1 has been achieved through operation of the OU1 groundwater extraction and treatment system.

In July 2008, Freescale submitted a Final Bedrock Extraction Pilot Test Workplan. This work plan set forth the requirements for a bedrock pilot study to collect additional bedrock permeability information and to evaluate bedrock groundwater extraction and its potential to remove mass and enhance the extent of vertical capture in the bedrock aquifer. The plan includes the installation of one bedrock extraction well and two bedrock monitoring wells, along with geophysical logging of the boreholes, short-term bedrock extraction well pumping tests, and extended extraction testing and water level and water quality monitoring.

Appendix C: Detailed Project Background for Operable Unit 2

In 1983, the Arizona Department of Environmental Quality (ADEQ) discovered groundwater contamination in the area known today as OU2. trichloroethene (TCE) was detected at the Desert Hills Well (Monroe and 27th Street) at 640 parts per billion (ppb), at the Security Center Well (Central Avenue and Van Buren) at 202 ppb, and at the Eastlake Park Well (Jefferson and 16th Street) at 44 ppb. At the time of discovery, it was not known that Motorola's contamination extended beyond the Old Cross Cut Canal. Therefore, the contamination discovered in this area was initially thought to be a separate contaminant plume known as the East Washington (EW) Area.

What is One Part Per Billion?

- *One Thin Mint[®] in 25,000,000 boxes of Girl Scout cookies*
- *One inch in 16,000 miles*
- *One dimple in 2,600,000 golf balls*
- *One heartbeat in 36 years*
- *One M&M[®] in 1,000 tons of M&M[®]s*

From 1985 to 1989, ADEQ conducted a remedial investigation (RI) and initiated an investigation of potentially responsible parties (PRPs). In 1987, the EW area was listed on ADEQ's **Water Quality Assurance Revolving Fund (WQARF)** Priority List. The study area boundaries were determined to be Thomas Road to the north, Lower Buckeye Road to the south, 48th Street to the east, and 7th Avenue to the west. In July 1988, questionnaires were mailed to 995 facilities located in the EW Area requesting information regarding their hazardous substance use, storage, and disposal practices.

Groundwater contamination in OU2 was originally believed to be a separate site, the East Washington Area WQARF site.

Questionnaire responses were evaluated by ADEQ to determine which facilities warranted additional investigations. At the time, four companies were found to have potential sources of contamination that may have contributed to the groundwater plume:

1. AlliedSignal (now Honeywell);
2. Arvin Industries;
3. FMC Corporation; and
4. Tiernay Turbines (now Walker Power Systems).

In August 1989, ADEQ's contractor completed the Phase I Report for the EW Area. For this study, a literature and records search was conducted to provide background information on the

geology, hydrogeology, present and past land use, and to identify potential chemical manufacturers, users, and disposers within the EW Area. The report was made available for public review and comment.

OU2 Investigations and Activities Conducted From 1990 Through 1995

From 1990 to 1992, ADEQ and Motorola continued an area-wide groundwater investigation to define the extent of groundwater contamination in the OU2 area. Approximately 48 monitor wells, with a total of 120 sampling ports, were installed and over 300 aquifer tests were conducted. In 1992, "area-wide" sampling events were coordinated to include Motorola wells and EW wells. Later that same year, Motorola submitted the RI Report to ADEQ which summarized the results of the investigation. The RI confirmed that contamination migrating from the Motorola facility had extended into the EW Area. The report was released to the public for review and comment.

The extent of groundwater contamination prompted ADEQ and USEPA to develop a second OU to address groundwater contamination before a final remedy is selected.

Upon completing a PRP search in the area, the United States Environmental Protection Agency (USEPA) named additional PRPs in 1992: AlliedSignal (now Honeywell), ITT Cannon, and Tiernay Turbines (now Walker Power Systems). The following year, USEPA named the City a PRP as the landowner of a portion of the Honeywell and ITT Cannon properties.

In 1993, Motorola issued a series of reports documenting the development and calibration of a flow and transport model that was used for the evaluation of remedial alternatives in the area from 46th Street to approximately 24th Street between McDowell and Buckeye Roads.

In March 1993, Motorola submitted the Draft Detailed Analysis of Alternatives Report for the final remedy. A report on the ranking of alternatives was submitted in October 1993.

In August 1993, Motorola submitted the Draft Interim Remedy FS Report. The FS covers the same area as the Final Remedy RI Report and the Detailed Evaluation of Alternatives Report. However, between March and August 1993, ADEQ and USEPA determined that this would be a second interim remedy (or operable unit) that is now known as OU2. In 1993, ADEQ and USEPA issued a proposed groundwater remedy for public review and comment.

In October 1993, Motorola submitted an updated Interim Remedy FS Report to ADEQ. Motorola issued a supplement evaluating an additional end use alternative in the area of OU2. Sixty-seven alternatives were evaluated in accordance with the criteria listed in the National Contingency Plan (NCP), and remedial action objectives were proposed. The report was issued to the public for review and comment. The document was approved by ADEQ in January 1994. A public meeting was held to take oral comments from the public regarding the OU2 FS on February 9, 1994.

In February 1994, Motorola submitted the Hydrogeologic Investigation of Subsurface Bedrock Conditions Report of the EW Area WQARF site. The investigations were conducted to define the magnitude and extent of a subsurface bedrock ridge suspected to occur in the area north of the Sky Harbor Airport. These results were used to assess the potential effect of the bedrock ridge on patterns of groundwater movement and the distribution of VOCs in the groundwater. A letter supplement to this report, including the results of additional drilling conducted to confirm the depth to bedrock, was submitted by Motorola in November 1994.

In July 1994, ADEQ and USEPA issued the Record of Decision (ROD) selecting the interim groundwater remedy. The purpose of the OU2 interim remedy is to provide additional containment of contaminated portions of the groundwater. The interim remedy includes groundwater extraction near 20th and Washington Streets, treatment of the water by ultraviolet oxidation and granular activated carbon (GAC), and discharge of the treated water to the Grand Canal for irrigation use.

The USEPA delegated its authority to ADEQ to continue to be the lead agency for the OU2 area. However, later developments resulted in USEPA becoming the lead agency in 1999.

In 1994, ADEQ requested Honeywell, ITT Cannon, the City, and Motorola to implement the groundwater remedy (Walker Power Systems was not included since it is located outside the OU2 area). However, ADEQ later issued a no further action (NFA) letter to ITT Cannon in 1995. Therefore, ITT Cannon was not included in the remedial design (RD) negotiations.

OU2 Investigations and Activities Conducted From 1996 to 2004

In February 1996, Motorola submitted the MI52 Model Documentation Report presenting models of predicted groundwater flow and contaminant transport of VOCs from Motorola and other sources. Later that year, in October 1996, Motorola and the City signed a Consent Decree with ADEQ to implement the design of a groundwater containment and treatment system for OU2. Honeywell withdrew from the agreement and did not participate in the design.

In 1997, Arizona's WQARF program statutes were revised by the Legislature. Among other changes, the Priority List was replaced with a Registry. This involved evaluating all former Priority List sites and re-listing on the new Registry those sites that the State determined required additional investigation. In evaluating the EW Area for listing on the Registry, the fact that the contaminants related to the M52 site had co-mingled with a significant portion of the EW area was considered. In order to prevent the duplication of work and funding, ADEQ and USEPA determined that the investigation of groundwater contamination from 52nd Street to 7th Avenue would continue under the federal Superfund program. Because the site was being addressed under another program, ADEQ did not list the EW Area on the Registry.

In October 1997, Motorola submitted the OU2 Preliminary (30%) Design to ADEQ. In September 1998, Motorola submitted the OU2 Pre-Final (90%) Design to ADEQ. Motorola

submitted the OU2 Final (100%) Design to ADEQ in July 1999. ADEQ approved the OU2 Final Design on December 28, 1999.

During the OU2 design process, negotiations between ADEQ, Motorola, and Honeywell broke down regarding work during the construction and post-construction phases of the project. As a result, USEPA issued a unilateral administrative order (UAO) to Motorola and Honeywell for construction, startup, and two years of operation and maintenance of the groundwater treatment system on November 30, 1998. USEPA became the lead agency for the remedial action phase for OU2.

In November 1999, Honeywell and Motorola submitted the OU2 Remedial Action Work Plan to USEPA. In March 2000, under the oversight of the USEPA, construction of the treatment system began and was completed in September 2001. Startup activities then proceeded. On September 24, 2001, the Construction Completion Notification was provided to USEPA. The pre-final and final construction inspections were conducted by ADEQ and USEPA on September 26, 2001, and October 23, 2001, respectively. Motorola and Honeywell submitted the Construction Completion Report on December 6, 2001.

On December 13, 2001, the OU2 groundwater treatment system became fully operational. It was designed to pump at a rate of approximately 5,000 gallons per minute (gpm).

During the first year of operation, the pumping rates of the OU2 system were reduced several times. The steadily declining regional groundwater levels reduced the saturated thickness of the Salt River gravels (the primary groundwater aquifer), thereby reducing the amount of groundwater available for pumping. As of November 2002, the pumping rate had been reduced to 2,650 gpm. Motorola conducted an additional investigation of the bedrock ridge area and submitted a report of the results in May 2002. As of June 2007, the pumping rate had been further reduced to 2,150 gpm.

OU2 Investigations and Activities Conducted From 2003 to Present

The Companies installed additional monitor wells near the OU2 Treatment System as requested by ADEQ and USEPA to provide further information on site lithology and groundwater conditions. Four rounds of drilling have occurred since 2003. Monitor wells NW04-S, NW04-D, NW05-S, NW06-S, NW06-D, NW07-S, NW07-D, NW08-S, NW08-M, and NW08-D were installed between June and July 2003. NW09-D was installed in January 2004. Monitor wells NW09-D2, NW10-D, NW11-D, and NW12-D were installed between January and February 2005. Monitor wells NW07-M, NW09-M, NW13-M, NW13-D, NW14-M, and NW14-D were installed between November and December 2005.

In September 2003, the Companies submitted the Final Remedial Action Report. In September 2003, the Companies submitted the revised OU2 Annual Effectiveness Report for 2002. This report provided documentation showing that the OU2 groundwater treatment system had attained capture of the contaminant plume. The 2003 Effectiveness Report was submitted by the

Companies on April 15, 2004. The 2004 Effectiveness Report was submitted by the Companies on April 15, 2005.

In April 2006, the Companies submitted the 2005 Effectiveness Report for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2005. During 2005, the OU2 treatment system removed approximately 1,268 pounds of VOCs.

In September 2006, ADEQ completed the second five-year review of the OU2 interim remedy. The purpose of a five-year review is to evaluate the effectiveness of the interim remedy and whether it remains protective of human health and the environment. ADEQ identified several issues in the review of the OU2 treatment system. The assessment identified several issues in the review of the existing OU2 system capture analyses. These problems include non-conservative interpretation of groundwater data, failure to use all available data, and failing to effectively evaluate the results of specific analyses in conjunction with the conceptual site model. Several data gaps have been identified that need to be filled in order to fully evaluate the OU2 capture effectiveness. A review of applicable or relevant and appropriate requirements (ARARs) determined that there are no newly promulgated standards that affect OU2; however, new ARARs and To Be Considereds (TBCs) are likely to be determined for the final remedy.

In April 2007, the Companies submitted the 2006 Effectiveness Report for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2006. During 2006, the OU2 treatment system removed approximately 1,277 pounds of VOCs.

As of June 30, 2007, approximately 6.3 billion gallons of groundwater had been treated and approximately 9,205 pounds of VOCs had been removed from the groundwater. In 2006, an average of 2.7 million gallons of treated water was discharged each day to the SRP canal under an agreement between Motorola and SRP. In accordance with this agreement, all water released to the canal must meet drinking water standards.

In 2007, the Companies installed additional groundwater monitor wells (NW15S, NW16-D/S, NW17-S, NW18-S&M, and NW19-M&D, NW20). Data from these new wells filled several data gaps related to the evaluation of groundwater containment and capture of the OU2 groundwater extraction system. These wells will assist ADEQ, USEPA, and the Companies in evaluating the effectiveness of the OU2 containment system.

In April 2008, the Companies submitted the 2007 Effectiveness Report for operations of the groundwater treatment system. The report documents the operation, maintenance, and monitoring activities associated with the OU2 interim treatment system for 2007. During 2007, the OU2 treatment system removed approximately 1,150 pounds of VOCs.

Honeywell Areas 9, 13, and 21

On December 10, 2004, ADEQ and USEPA sent a joint 288 / 104(e) Request for Information to Honeywell. In reviewing Honeywell's original responses to the August 20, 2002 104(e)



Information Request (submitted October 31, 2002 and June 13, 2003), ADEQ determined that Honeywell's responses were incomplete and unresponsive to certain questions. Honeywell submitted partial responses to the Information Request on February 9, 2005. ADEQ is currently reviewing these documents.

Confidential settlement negotiations are on-going.

ITT Industries

An Administrative Order on Consent was signed in June 2008 for additional characterization work on the facility.

D-Velco Manufacturing of Arizona

Confidential settlement negotiations are on-going.

On November 12, 2004, D-Velco notified ADEQ that it intended to conduct its own soil gas survey and forwarded a Work Plan to ADEQ. ADEQ will not review the Work Plan outside of the Administrative Order process. The Passive Soil Gas Survey and Soil Sampling Report was submitted to ADEQ in April 2005.

Responses to a Supplemental Request for Information pursuant to Section 104 of CERCLA and 288 of WQARF were submitted on June 29, 2005 and October 18, 2005.

Kachina/Joray Corporation

ADEQ issued a Unilateral Administrative Order (a legal document which requires work be done) to Joray Corporation to conduct an investigation at its former facility, Kachina Testing Laboratories.

Confidential settlement negotiations are on-going. The Draft Research Report was submitted on June 10, 2005. Following comments from ADEQ, revised Draft Research Reports were submitted in March 2006 and August 2006. A Draft Conceptual Site Model was submitted in March 2007.

Laundry and Cleaners Supply

On 2004, ADEQ issued an Opportunity to Conduct Work letter to install monitor wells to investigate the potential of free product PCE at the bottom of the aquifer. On December 6, 2004, ADEQ sent a Statement of Work to Laundry and Cleaners Supply to drill a boring to bedrock and collect groundwater samples at discrete intervals. If groundwater samples are non detect, a monitor well will not need to be installed.

Appendix D: Detailed Project Background for Honeywell 34th Street Facility Within Operable Unit 2

The Honeywell 34th Street facility was constructed in 1951 and continues to operate today. Historically, the Honeywell facility has operated under the names of AiResearch Manufacturing Company of Arizona, Garrett Turbine Engine Company, and AlliedSignal Aerospace Company. Located on approximately 188 acres and consisting of more than 130 buildings, Honeywell and its predecessors have conducted jet engine design, assembly, testing, and repair at the site.

Chemicals Used at the Honeywell 34th Street Facility

Some of the chemicals that are known to have been used at the facility are lubricating and cutting oils, paints and paint stripper, acids for etching, metal solutions for plating, various types of jet fuel, and solvents used for vapor degreasing, cleaning jet engines, and as a refrigerant.

Releases of contaminants to the environment have occurred in a number of different ways at the Honeywell facility. Degreasers, drywells, underground and aboveground storage tanks, underground piping and trenches, chemical storage areas, solvent recycling areas, and areas of handling/transferring solvents are all considered potential sources of contamination at the Honeywell facility. The following are five known examples of how chemicals were used and the pathway for environmental contamination:

1. Beginning in 1951, the oil chip yard (located west of Building 102) was the main chip, oil, and acid storage area for the facility. There was a trench and sump system that was designed to catch runoff from the metal chips that were coated with cutting oils and solvents from machining. This area also housed an oil reclamation facility, a solvent distilling machine, and two underground and aboveground storage tanks. The oil chip yard also became the main area for trichloroethene (TCE) and 1,1,1-trichloroethane (TCA) handling, dispensing, storage, and recycling. The highest concentrations of TCA in groundwater (40,000 ppb) found at the facility were collected from a monitor well in this area.
2. The facility used about 65 vapor degreasers (used to clean engine parts) from 1955 through 1995 that contained a variety of different solvents including TCE, TCA, and freon. Spills occurred occasionally when handling parts, cleaning the degreasers, and replacing the solvent.
3. TCE was also used as a refrigerant from 1955 to 1984 in two low temperature engine testing chambers located in Building 202. It is estimated that 18,000 gallons of TCE was contained in the system. Each chamber is located over a concrete pit that collected wastes from the operation of these chambers. In 1993, samples collected from these pits indicated high levels of TCE. These pits were not designed to contain liquid hazardous

waste.

4. Throughout the facility, there were approximately 50 dry wells and approximately 165 sumps. The dry wells were used for collecting storm water runoff and drainage from about 50 jet engine test cells where solvents (TCE, TCA, and freon) were used. A system of trenches and pipes inside the test cells was used to route the waste water, oils, solvents, and spilled jet fuel to a series of dry wells. Eventually the dry wells were replaced with concrete sumps. Samples collected from the test cell wastes indicated very high levels of jet fuel components and solvents.
5. In Area 4 (the western area of the facility) it is known that workers disposed of solvent wastes on the ground. Also, there are records of solvent spills in some of the buildings and photographs of soil staining in the area. This area was a large waste storage area for drums of chemicals plus the oil and solvent coated chips. Spills from this area were directed to a trench and sump system that was not designed to hold liquid hazardous waste.

Honeywell Investigations and Activities Conducted From 1983 to 1989

In June 1983, a preliminary assessment (PA) was completed by USEPA. The purpose of the PA was to review existing information regarding the facility and assess the threat, if any, posed to public health, welfare, or the environment, and to determine if future action under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA)/**Superfund Amendment and Reauthorization Act (SARA)** may be warranted. USEPA determined that further investigation of the site would be necessary.

In 1983, the Honeywell 34th Street facility was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS).

From 1985 to 1986, Honeywell implemented an underground storage tank (UST) replacement program of tanks that were installed in the mid-1950s. A total of 15 tanks were removed and 20 new tanks were installed. Honeywell stated that these 30-year-old USTs were in good working condition when they were removed and that there was no evidence of leaks.

From 1988 to 1999, ADEQ was requesting Honeywell to characterize the 34th Street facility by issuing a total of four opportunity letters. Honeywell responded by conducting soil gas surveys and installing groundwater monitoring wells. A soil gas survey, conducted in June 1997, indicated a source of VOC contamination in the Old Oil Chip Yard. Honeywell voluntarily operated a Soil-Vapor Extraction (SVE) system from August 1997 through November 1999 to remove the soil contamination. The SVE removed approximately 2,600 lbs of VOCs and approximately 207,000 lbs of jet fuel. Honeywell has not yet evaluated whether cleanup of the Old Oil Chip Yard has been completed.

In May 1988, Honeywell submitted a sump removal proposal to remove 25 sumps. Honeywell proposed to collect soil samples only if there was visual evidence of soil staining. Approximately one year earlier, in 1987, Honeywell collected liquid samples from these sumps that indicated the presence of solvents, such as TCA at 8,900,000 ppb, TCE at 5,300,000 ppb, PCE at 26,200 ppb, and freon at 380,000,000 ppb. In 1998, ADEQ requested all data associated with the sump removal project pursuant to A.R.S. §49-288. The 1987 VOC data were submitted to ADEQ for the first time in October 2000 pursuant to a second request.

In 1988, ADEQ sent a facility questionnaire to Honeywell regarding three of its facilities in the EW Area. In August 1989, ADEQ's contractor (Kleinfelder) completed the Phase I Report for the EW Area. The report identified the Honeywell 34th Street facility (one of several facilities) as a potential source to the regional groundwater contamination.

In 1988, ADEQ requested Honeywell to submit a proposal for site characterization. In January 1989, Honeywell submitted a letter to ADEQ with a sump removal report and plans to proceed with remedial action alternatives. In February 1989, ADEQ issued a letter to Honeywell indicating that the extent of contamination associated with the removed sumps was not defined.

Honeywell Investigations and Activities Conducted From 1990 to 1995

In 1990, shallow soil-gas sampling was conducted on-site. In February 1991, Honeywell submitted a Draft Phase I Record Search Report as part of ADEQ's 1988 request for information. On April 30, 1991, ADEQ issued an opportunity letter to Honeywell to voluntarily conduct work, such as installing a groundwater monitor network and conducting soil-gas surveys. ADEQ submitted a second opportunity letter to Honeywell to install a groundwater monitoring well network on August 15, 1991. In August 1991, Honeywell submitted a work plan to install monitor wells in response to ADEQ's opportunity letters. The work plan was approved by ADEQ in June 1992.

From July to August 1992, Honeywell installed nine monitor wells. Groundwater quality data from these monitor wells indicated elevated concentrations of TCE, TCA, dichloroethene (DCE), dichloroethane (DCA), vinyl chloride, and other VOCs.

In November 1992, the USEPA issued a general notice letter identifying Honeywell as a PRP in the Motorola 52nd Street Superfund site.

In February 1993, ADEQ issued an opportunity letter to Honeywell for additional groundwater and soil investigations.

In September 1993, ADEQ completed a preliminary reassessment of the Honeywell facility.

From June through August 1994, Honeywell conducted a shallow soil-gas survey that consisted of 161 locations throughout the facility. In August 1994, soil sampling was conducted in Building 202 in response to an anonymous phone complaint.

In 1995, Honeywell installed 16 additional groundwater monitor wells and conducted a seismic refraction investigation to characterize the subsurface bedrock ridge.

In 1995, Honeywell discontinued use of TCA at the facility.

In February 1995, ADEQ sent an opportunity letter to Honeywell to contribute to the preparation of a regional groundwater flow and transport model.

Honeywell Investigations and Activities Conducted From 1996 to Present

In early 1997, four groundwater monitor wells and two groundwater piezometers were installed. In April 1997, a second phase of the seismic refraction investigation was conducted to characterize the subsurface bedrock ridge.

In May 1997, three deep soil-gas borings were drilled in the Old Oil Chip Yard (source area). A shallow soil-gas survey conducted in June 1997 in the Old Oil Chip Yard area comprised 44 locations. VOCs were detected as high as 2,500 ppb. A soil-vapor extraction (SVE) pilot test was conducted in June 1997 based on the soil-gas data collected in the Old Oil Chip Yard, around Building 140. Initial VOC concentrations in the influent were 7,500 ppb.

From August 1997 through November 1999, a full-scale SVE system was voluntarily operated in the Old Oil Chip Yard. The system consisted of four soil-vapor piezometers, two extraction wells, two granular activated carbon (GAC) vessels, and two potassium permanganate impregnated zeolite vessels (to treat vinyl chloride). The SVE system removed approximately 2,600 lbs of solvents and about 207,000 lbs of jet fuel from the soil. The SVE system is not currently in operation.

In 1998, ADEQ issued an information request pursuant to A.R.S. §49-288 to Honeywell. ADEQ specifically requested documentation and data associated with the 1988 sump removal project.

In July 1998, ADEQ issued a letter with an attached statement of work to Honeywell to conduct an additional soil-gas survey at 175 locations and to install 13 additional groundwater monitor wells. From December 1998 through January 1999, Honeywell executed ADEQ's July 1998 Statement of Work. In 1998, two additional monitor wells were installed. An additional 12 monitor wells were installed in spring 1999. In April 1999, Honeywell detected floating free product of jet fuel in several on-site groundwater monitoring wells.

Jet Fuel Contamination at the Honeywell 34th Street Facility

Honeywell discovered pure jet fuel floating on top of the water table in April 1999. The jet fuel was collected from two monitoring wells and analyzed for solvents. The highest detected VOC was DCE at 190,000 ppb. Other VOCs detected were TCE, Freon, DCA, and VC. In March 2000 Honeywell began removing the floating jet fuel/solvent mixture. As of September 2003, more than 6,000 gallons have been removed.

During the months of April, May, and June 1999, Honeywell sampled the floating free product to have it fingerprinted and analyzed for VOCs. The fingerprint indicated that the floating free product was a mixture of JP-4, Jet A, and JP-10. The maximum VOC concentrations reported were as follows:

- TCE at 99,000 ppb;
- Freon 113 at 23,000 ppb;
- Freon 11 at 11,000 ppb;
- 1,1-DCA at 24,000 ppb;
- cis-1,2-DCE at 190,000 ppb; and
- vinyl chloride at 80,000 ppb.

On September 19, 1999, Honeywell entered into an administrative order on consent (AOC) with ADEQ to conduct a focused remedial investigation at its 34th Street Facility. The AOC requires Honeywell to identify and characterize the potential source areas at the facility, to define the lateral and vertical extent of contamination, and to pay all of the state's oversight costs. Honeywell submitted a Research Report in December 1999, pursuant to the AOC, that contains information regarding the facility's past disposal and handling practices, chemical uses, and any known leaks and spills, any potential source areas, etc.

Additionally, Honeywell submitted a work plan to install groundwater monitor wells. In March 2000, ADEQ approved Honeywell's proposal to begin the removal of the floating free product.

In July 2000, 12 monitor wells were installed to investigate potential sources. Honeywell submitted its **Conceptual Site Model (CSM)** in August 2000 that provides Honeywell's interpretation of site conditions, such as: groundwater flow, plume maps, etc. The CSM is useful in identifying **data gaps** and to define any additional work that is needed. All information/data collected in the RI will be useful for when cleanup remedies are selected and designed.

Honeywell submitted responses to ADEQ comments and supplemental information to the Research Report in October 2000, February 2001, and November 2001.

In March 2001, Honeywell discovered a small amount of pure mercury in the storm drain outside Building 301. The storm drain was removed and the soils around the pipe were excavated. Samples were collected throughout the trench and analyzed for mercury. Concentrations of mercury were as high as 2,600,000 ppb.

In May 2002, the Potential Source Area Investigation Report was submitted pursuant to the AOC. ADEQ determined that additional work was needed to identify and characterize potential source areas. In response, Honeywell submitted a work plan that was approved by ADEQ in July 2002. From July through August 2002, a soil-gas survey (shallow and deep) was conducted throughout the facility, including the interior of buildings, to identify potential source areas.

From August through September 2002, 20 multiport **soil-vapor monitor (SVM)** wells were installed where known releases had occurred and/or where historical VOC concentrations in soil gas were elevated. The purpose of the SVM wells is to characterize known sources at the 34th Street Facility and to determine if these sources continue to contaminate groundwater. The SVM wells were sampled for VOCs in October, November, and December 2002. In September 2003, Honeywell submitted a report with the results of using two different models (VLEACH and GPL) that predict if contaminated soil continues to be a threat to groundwater. The results of Honeywell's modeling efforts will aid in ADEQ's determination of requiring soils cleanup.

On January 15, 2003, Honeywell submitted the Draft Additional Site Characterization Work Plan to conduct additional monitor well installations on and off the facility property to define the lateral and vertical extent of its contamination. On March 3, 2003, Honeywell began the installation of 32 groundwater monitor wells, in clusters of up to three, at 14 general locations. Using a dynamic work plan that allows for real-time review and interpretation of data to guide placement of the next monitoring well, an additional four wells have been installed. The majority of the 36 groundwater monitoring wells were installed in the Fall of 2003.

In February 2003, Honeywell conducted a bioventing pilot study to collect information to assess whether this technology is appropriate to remove the floating free product jet fuel/solvent mixture. On May 7, 2003, Honeywell submitted a Summary of Results report that documents the Bioventing/SVE Pilot Study. In May, 2003, Honeywell submitted a preliminary proposal to cleanup the jet fuel contamination.

On July 18, 2003, Honeywell submitted a **Corrective Action Plan (CAP)** to ADEQ that evaluates three **remedial alternatives** to clean up jet fuel. In a letter dated October 15, 2003 entitled *Corrective Action Plan Preliminary Approval*, ADEQ's Underground Storage Tank (UST) Section determined that Honeywell's preferred remedial method of bio-venting would not adequately remediate the free product at the site. Thus, ADEQ approved a different method proposed in the CAP – Multi-Phase Extraction (with modifications).

An informal appeal of ADEQ's decision on Honeywell's July 2003 CAP was filed by Honeywell on November 5, 2003. During the Informal Appeal Meeting on January 6, 2004, ADEQ offered Honeywell the opportunity to perform a bioventing pilot project at the facility. ADEQ never received a response from Honeywell indicating its willingness to perform the Bioventing/Soil Vapor Extraction Pilot Project in accordance with ADEQ's conditions. Thus, on April 15, 2004, ADEQ issued its Final Determination regarding Honeywell's Informal Appeal, affirming ADEQ's preliminary approval of Multi-Phase Extraction as the appropriate remedial method, as modified in ADEQ's October 15, 2003 *Corrective Action Plan Preliminary Approval Letter*.

Honeywell installed three additional monitor wells in December 2003 to further define the southern extent of groundwater contamination. With these three wells in place, the activities defined in the Additional Site Characterization Work Plan have been completed, and production of the Remedial Investigation (RI) Report has begun. The Draft Focused RI Report was submitted to ADEQ on September 30, 2004. In response to ADEQ comments, Honeywell submitted its Final Focused RI Report on December 30, 2005. An Addendum to the Final



Motorola 52nd Street Superfund Site Appendices for the Community Involvement Plan



Focused Remedial Investigation Report was submitted to ADEQ in August 2008 and was approved by ADEQ in September 2008. Work on the Focused Feasibility Study (FS) is planned to begin by the end of 2008

On May 13, 2004, Honeywell filed a Formal Appeal of ADEQ's Final Determination. During an Informal Settlement Conference held on May 28, 2004, ADEQ agreed to allow Honeywell the opportunity to submit a revised CAP due July 30, 2004 to include Bioventing/Soil Vapor Extraction and active free-product removal.

In Oct. 2005, ADEQ approved Honeywell's CAP to remediate fuel floating on groundwater and soil contamination resulting from releases of fuel from their 34th Street LUSTs. Prior to approval, the CAP was subject to a 30-day public notice period. Additionally, a public meeting was held to solicit comments on June 29, 2005.

On October 13, 2006, Honeywell submitted a revision of the BSVE air permit application to the Maricopa County Air Quality Department (MCAQD). The Title V Air Permit Revision was approved on Dec. 27, 2007. The system includes redundant air treatment technologies and monitoring to provide multiple safeguards ensuring that the treated air emitted will meet permit conditions and be protective of public health. The technologies include five separate treatment steps: thermal oxidation, quenching, scrubbing, carbon filtration and potassium permanganate filtration.

In October 2006, Honeywell reported to ADEQ that an interceptor had been discovered on the west side of Building 112. Subsequent sampling of the liquid and sludge in the interceptor identified high concentrations of VOCs. An investigation is currently being conducted regarding this discovery.

Honeywell is currently working on a number of field activities, including on-going semiannual groundwater monitoring, construction and start-up on the BSVE system in late 2008, and additional data collection for a focused FS expected to be submitted to ADEQ in early 2010. Finally, Honeywell continues to remove the free product jet fuel that is floating on top of the water table. As of June 30, 2008, approximately 7,262 gallons of fuel have been removed since recovery began in 1999.

Because in some portions of the fuel release, the groundwater is also impacted by chemicals of concern of the 52nd Street Superfund Site, primarily chlorinated solvents, the technology to address the petroleum and solvent contaminated groundwater will be evaluated during the feasibility study for the Honeywell facility and OU2. The final groundwater remedy (cleanup) will address all the chemicals of concern for both the Superfund site and the UST releases.

Appendix E: Detailed Project Background for Operable Unit 3

OU3 was formerly part of the East Washington (EW) area, which was listed on the Water Quality Assurance Revolving Fund (WQARF) Priority List in 1987. In 1997, the EW area was not re-listed on the WQARF Registry (see Operable Unit 2 Site History). In 1997, USEPA and ADEQ created a third operable unit study area with the following boundaries: 20th Street on the east, 7th Avenue on the west, McDowell Road on the north, and Buckeye on the south, except between 3rd Avenue and 7th Avenue where Buchanan Street is the southern border.

On February 25, 2000, USEPA sent a letter to ADEQ stating that after conducting its own modeling effort, USEPA had concluded that the downgradient boundary for the study area (7th Avenue) was appropriate. USEPA further stated that with the available information to date, it appeared that Motorola's releases were not likely to have migrated beyond 7th Avenue. Groundwater contamination west of 7th Avenue is being investigated under the jurisdiction of the ADEQ WQARF program. According to the current data, the West Van Buren (WVB) WQARF site is bounded 7th Avenue on the east, Van Buren Street on the north, Buckeye Road on the south, and 75th Avenue on the west. In addition, a finger shaped plume exists between 7th and 27th Avenues between Buckeye and Lower Buckeye Roads. For more information on this project, please contact the ADEQ Remedial Project Manager, Ms. Jennifer Thies, at (602) 771-4703 or via email at thies.jennifer@azdeq.gov.

In June 2000, USEPA completed its groundwater flow and transport model for the Site. One objective of the model was to assess the possibility of contaminants from Motorola and Honeywell source areas migrating beyond OU2.

In December 2001, USEPA completed a Work Plan to conduct a groundwater investigation. Drafts of this Work Plan were made available to the public for comment.

USEPA has conducted two phases of Superfund-lead groundwater investigations. Fifteen groundwater monitoring wells were installed from February 2002 to May 2002 and thirteen wells were installed from May 2003 to July 2003. The second phase included the abandonment and replacement of three Phase I wells (OU3-5, shallow, middle and deep). The wells help define the depth and width of groundwater contamination. The Phase I and II groundwater investigation results were presented in the *Final Groundwater Investigations Report, Phase I and II Well Installation, Motorola 52nd Street Superfund Site, Operable Unit 3 Study Area, Phoenix Arizona* (Shaw, 2005). USEPA collects samples from the wells in March and September of each year and the results are reported in semiannual Groundwater Monitoring Reports.

Arvin Meritor / AdobeAir / Cooper Industries

In 2004, USEPA, Arvin Meritor, AdobeAir, and Cooper Industries entered into an Administrative Order to conduct a Focused RI/FS at the 500 S. 15th Street facility. The Draft Quality Management Plan was submitted on November 9, 2004 and the Final Quality Management Plan that addresses USEPA comments was submitted on January 12, 2005. The draft Remedial Action Objectives Technical Memorandum on December 2, 2004 and the Revised RAO Memo that addresses USEPA comments was submitted January 27, 2005.

The draft Research Report was submitted on November 11, 2004. The final report was submitted on June 10, 2005.

On January 27, 2005, the Revised Draft Remedial Action Technical Objectives Memorandum was submitted. The Quality Management Plan was submitted on January 12, 2005. A final RI/FS Work Plan was submitted on December 21, 2005.

The Phase I RI/FS Soil Gas Investigation was completed and the Technical Memorandum report has been submitted. The Phase II RI/FS was completed in 2007 and consisted of additional soil gas sampling, indoor sampling and installing groundwater monitoring wells.

APS

On July 29, 2004, USEPA and APS entered into an Administrative Order on Consent to conduct a Focused RI/FS at the APS facilities located at 505 S. 2nd Avenue, 502 S. 2nd Avenue, 501 S. 2nd Avenue. On August 26, 2004, APS submitted its Quality Management Plan. APS submitted its Communications and Community Outreach Plan on August 2004. APS submitted the Remedial Action Objectives Technical Memorandum on September 20, 2004 and the revised RAO Memo on November 22, 2004 that addresses USEPA comments. On September 20, 2004, APS submitted the Draft Research Report. The Research Report describes the historical operations including the uses and disposal of chlorinated solvents, a summary of environmental investigations conducted to date, and identifies potential source areas that warrant further investigation.

APS submitted the Draft RI/FS Work Plan on November 24, 2004. On December 21, 2004, APS submitted the Draft Health and Safety Plan and the Draft Sampling and Analysis Plan.

The Revised Research Report was submitted January 20, 2005. The report was finalized on April 22, 2005.

APS has installed and sampled 17 groundwater monitoring wells, six soil vapor monitoring wells, and collected soil samples. They have completed characterization of most of their site. They expect to submit a Draft RI report summarizing their findings in Winter 2008.

Baker Metal Products

A report entitled Historical Environmental Data at Former WAMCO and Opinion Regarding Listing as a PRP in the Motorola 52nd Street Superfund Site was submitted on December 9, 2003.

On February 4, 2004, the Draft Quality Management Plan was revised to address January 20, 2004 USEPA comments. Notification to Start Field Work and Request for Schedule Extension; Dated November 18, 2004; Prepared by Smith Consultants.

The Draft Research Report was submitted on April 14, 2004 by Smith Consultants and the Revised Research Report that addresses USEPA comments was submitted on June 25, 2004. The Draft Remedial Action Objectives Technical Memorandum was submitted on April 14, 2004, and the Revised RAO Memo that addresses USEPA comments was submitted on July 7, 2004. The Draft RI/FS Work Plan was submitted on May 17, 2004, and the Revised RI/FS Work Plan and Field Sampling Plan (Quality Assurance Project Plan & Health and Safety Plan) that addresses USEPA comments were submitted on July 8, 2004. Smith Consultants submitted responses to September 14, 2004 USEPA Comments to the Revised Work Plan on September 23, 2004. Another Draft RI/FS Work Plan (Includes FSP, QAPP, and HSP) was submitted on September 20, 2004, with the Final RI/FS Work Plan (Includes FSP, QAPP, and HSP) submitted on November 2, 2004. On August 24, 2004, Smith Consultants submitted the Revised Baker Metal Products Site Work Plan which addresses USEPA comments. On November 23, 2004, Smith Consultants submitted the Revised Draft RI/FS Work Plan. The Quality Management Plan was submitted on November 29, 2004.

The Draft Soil Gas Sampling Technical Memorandum was submitted on January 14, 2005. USEPA provided comments on February 3, 2005. Additional drilling and sampling that was recommended in the Draft Soil Gas Sampling Technical Memorandum began on February 22, 2005.

Baker Metal Products submitted a Draft RI Report in February 2007. No COCs were detected above screening levels and USEPA has determined that no additional investigation is required at the facility. A Final RI Report was submitted in March, 2008.

Fruehauf

On February 12, 2004, the report entitled Evaluation of Environmental Conditions was submitted by Wabash National Corporation. The Historical Research Report was submitted on May 3, 2004. The Site Investigation Sampling and Analysis Work Plan was submitted on May 6, 2004. Revised Work Plans were submitted on May 28th, June 16th, and June 23, 2004. A Focused Site Investigation Report was submitted on June 23, 2004. The Revised Focused Site Investigation Report addressing USEPA comments was submitted on August 6, 2004.

McCoys Laundry

In 2006, McCoys Laundry entered into an AOC to conduct a Focused RI/FS at the facility. While McCoy's Laundry completed much of the work required by the AOC, the company indicated that it could not comply with future requirements due to financial constraints. McCoy's submitted an Ability to Pay (ATP) application in 2007. The USEPA signed an agreement with McCoys Laundry that requires the company to pay \$26,000 to settle their liability in the cleanup based on a limited ability to pay. The USEPA will place the \$26,000 in an interest bearing account to be used for work on the Site.

Phoenix Newspaper, Inc.

Phoenix Newspaper Inc. (PNI) submitted a Research Report, Focused RI Work Plan for Soil Gas Investigation, and a Draft Soil Gas Investigation Tech Memo. USEPA is currently reviewing and commenting on the Technical Memorandum.

SRP

USEPA and SRP signed a Consent Order in 2004 to conduct a focused RI/FS at the 16th Street Facility. SRP submitted the Quality Management Plan on July 1, 2004 and the Final Quality Management Plan (addresses USEPA comments) on December 2004. SRP submitted the RI/FS Remedial Action Objectives Technical Memorandum on August 12, 2004. On August 27, 2004, SRP submitted a Draft Research Report and a Revised Research Report on December 3, 2004 to address USEPA comments. On September 28, 2004, the Draft Focused RI/FS Work Plan was submitted by SRP and the Final Work Plan was submitted January 2005.

On January 19, 2005, SRP submitted the Revised Technical Memorandum for Remedial Action Objectives. SRP submitted the Final RI/FS Work Plan on September 26, 2005.

SRP has collected indoor air samples (no action was needed), completed removal of a sump (no chemicals of concern found), and completed installation and sampling of two soil vapor monitoring wells. They submitted a Draft Phase I RI Report summarizing their findings in February 2008. They expect to submit a Draft Phase II RI Report in late 2008.

Union Pacific Railroad

Union Pacific submitted a Draft Site Inspection Work Plan on February 11, 2004 and the Final Work Plan on April 22, 2004. Union Pacific submitted a Draft Field Sampling Plan on May 14, 2004 and the Final Field Sampling Plan was submitted on June 2, 2004. In July 2004, Union Pacific submitted the Preliminary Soil Gas Results and the Final soil gas survey analytical data was submitted on October 5, 2004.

Union Pacific submitted the Soil Gas Inspection Report on November 9, 2004.



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



Walker Power Systems

On November 23, 2004, Walker Power submitted its Research Report.

Walker Power Systems conducted a survey of site characteristics and submitted a RI/FS work plan in late 2007. Field work will commence in 2008.

Appendix F: PRP SEARCH

For contact information for any of the PRPs listed, please contact ADEQ or USEPA.

September 3, 2003 General Notice Letter

Site Area	Potentially Responsible Party (PRP)	Facility Location
Facilities Located Within Operable Unit 2 (OU2)	D-Velco Manufacturing of Arizona, Inc. (owner/operator) City of Phoenix (owner) U.S. Air Force (former owner/operator)	401 S. 36 th St. 111 S. 34 th St.
	Honeywell International Inc. I-Place Realty Corp. (former owner)	Honeywell Area 13 2739 E. Washington St. 2801 E. Washington St. 149 S. 27 th St. 202 S. 27 th St.
	Honeywell International Inc.	Honeywell Area 9 3145 E Washington St.
	Honeywell International Inc.	Honeywell Area 21 1944 Sky Harbor Circle
	ITT Industries, Inc. (former operator) City of Phoenix (owner)	2801 E. Air Lane
	Kachina Technical Services & Processes, Inc. (operator) Phoenix Industrial Properties, Ltd (owner) CC & J Agents, Inc. (owner)	3027 E. Washington St.
	Edwards & Angell, LLP/Joray Corporation (former operator) Laundry & Cleaners Supply, Inc. (owner/former operator)	4120 E. Madison St.
	Papago Plating Company, Inc. (operator) B&G Investments (owner) Thomas & Nancy Stonebraker (owner)	2312 E. Washington St. 2326 E. Washington St.
	Adobe Air, Inc. (owner/operator) Arvin Meritor, Inc. (former owner/operator) Cooper Industries (General Noticed by letter dated May 10, 2004)	500 S. 15 th St.
	Arizona Public Service (APS) Company/Pinnacle West Capital Corporation (owner/operator)	505 S. 2 nd Ave 502 S. 2 nd Ave 501 S. 2 nd Ave
	Baker Metal Products (owner/operator) Estate of Basil David Russell (former owner/operator) Phoenix Automatic Machine Products Company (former operator) Phoenix Manufacturing, Inc. (former operator)	1601 E. Madison St.
	Wabash National Trailer Centers, Inc. (former owner/operator) Wabash National Corporation (former owner/operator) Paul McCoy's Laundry and Dry Cleaners, Inc. (owner/former operator)	Fruehauf Trailer Sales 902 S. 7 th St. 1624 E. Washington St.
	Phoenix Newspapers Inc. (former owner/operator) Salt River Project (SRP) (owner/operator) Tiernay Properties, Inc. (owner) Walker Power Systems, Inc. (operator) Union Pacific Railroad Company (former owner) Federal Compress & Warehouse (former owner)	120 E. Van Buren St. 1616 E. Lincoln St. 1301 E. Jackson St.

NOTE: The following have already been identified as Responsible Parties:

1. Freescale Semiconductor, Inc. (formerly Motorola, Inc. – former owner/operator). Facility Location 5005 E. McDowell Rd., Phoenix, Arizona
2. Honeywell International Inc. (owner/operator). Facility Location- 111 S. 34th Street, Phoenix, Arizona

Appendix F: PRP SEARCH - Continued

March 26, 2004 Special Notice Letter

Site Area	Potentially Responsible Party	Facility Location
Facilities Located Within Operable Unit 3 (OU3)	Arizona Public Service (APS) Company/Pinnacle West Capital Corporation (owner/operator)	505 S. 2 nd Ave 502 S. 2 nd Ave 501 S. 2 nd Ave
	Phoenix Manufacturing, Inc. (former operator)	1601 E. Madison St.
	Paul McCoy's Laundry and Dry Cleaners, Inc. (owner/former operator)	1624 E. Washington St.
	Phoenix Newspapers Inc. (former owner/operator)	120 E. Van Buren St.
	Tiernay Properties, Inc. (owner)	
	Walker Power Systems, Inc. (operator)	1301 E. Jackson St.
	Union Pacific Railroad Company (former owner)	
Federal Compress & Warehouse (former owner)		

March 26, 2004 Waiver of Special Notice

Site Area	Potentially Responsible Party	Facility Location
Facilities Located Within Operable Unit 3 (OU3)	Adobe Air, Inc. (owner/operator)	
	Arvin Meritor, Inc. (former owner/operator)	500 S. 15 th St.
	Cooper Industries (Waiver of Special Notice Dated May 10, 2004)	
	Baker Metal Products (owner/operator)	
	Estate of Basil David Russell (former owner/operator)	1601 E. Madison St.
	Phoenix Automatic Machine Products Company (former operator)	
	Wabash National Trailer Centers, Inc. (former owner/operator)	Fruehauf Trailer Sales
Wabash National Corporation (former owner/operator)	902 S. 7 th St.	
Salt River Project (SRP) (owner/operator)	1616 E. Lincoln St.	

July 2, 2004 Special Notice Letter

Site Area	Potentially Responsible Party (PRP)	Facility Location
Facilities Located Within Operable Unit 2 (OU2)	D-Velco Manufacturing of Arizona, Inc. (owner/operator)	401 S. 36 th St.
	ITT Industries, Inc. (former operator)	2801 E. Air Lane
	Kachina Technical Services & Processes, Inc. (operator)	
	Phoenix Industrial Properties, Ltd.	3027 E. Washington St.
	Joray Corporation	



Appendix F: PRP SEARCH - Continued

September 1, 2004 Special Notice Letter

Site Area	Potentially Responsible Party	Facility Location
Facilities Located Within Operable Unit 2 (OU2)	Honeywell International, Inc. (Honeywell Area 13)	2739 E. Washington St. 149 S. 27 th St. 202 S. 27 th St.
	Honeywell International, Inc. (Honeywell Area 9)	3145 E. Washington St.
	Honeywell International, Inc. (Honeywell Area 21)	1944 E. Sky Harbor Circle

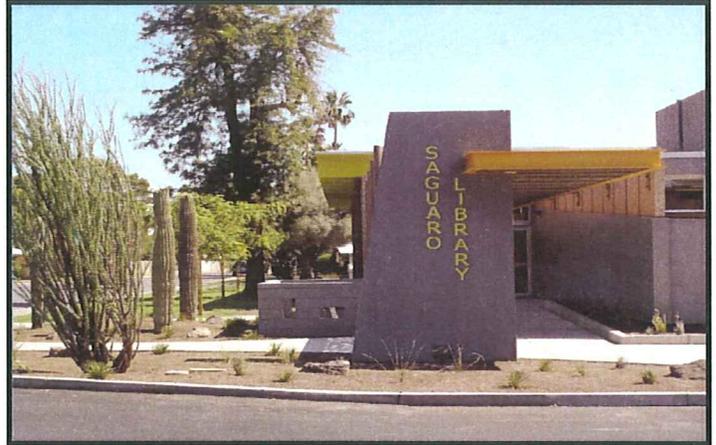
Appendix G: Information Repositories

Phoenix Public Library, Saguardo Branch

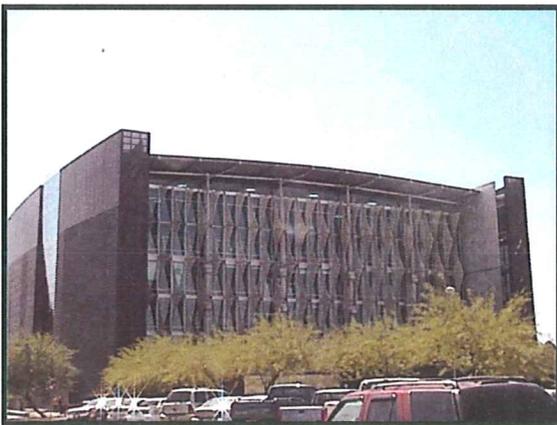
2802 North 46th Street
Phoenix, Arizona 85008
Phone: (602) 262-4636

Hours:

Monday – Thursday 9 a.m. – 9 p.m.
Friday & Saturday 9 a.m. – 6 p.m.
Sundays Noon – 6 p.m.



Phoenix Public Library, Central Branch



1221 N. Central Avenue
Phoenix, Arizona 85004
Phone: (602) 262-4636

Hours:

Monday – Thursday 9 a.m. – 9 p.m.
Friday & Saturday 9 a.m. – 6 p.m.
Sundays Noon – 6 p.m.

Arizona Department of Environmental Quality

1110 West Washington Street
Phoenix, Arizona 85007
Phone: (602) 771-2300 or
(800) 234-5677 (Arizona toll free)

Hours for Public Review of File:

Monday through Friday 8:30 a.m. to 4:30 p.m.

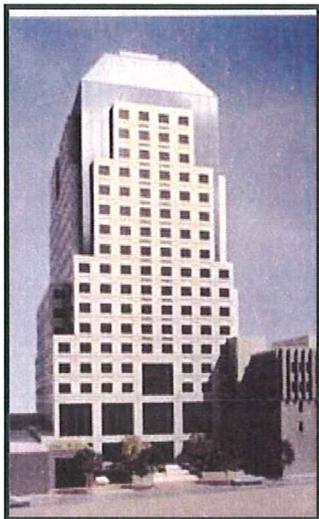
Requesting an ADEQ File Review Via Telephone:

To arrange for a time to review the public site file, please call the ADEQ Records Center (602) 771-4380 or (800) 234-5677 (Arizona toll free).



Requesting an ADEQ File Review Via Fax: (602) 771-4389

Once a request is received, ADEQ will assemble the identified materials and contact you to arrange for a time to review the file. Occasionally, a file may be with an ADEQ program or in archives, so please allow sufficient time to retrieve the files when scheduling a review.



USEPA Superfund Records Center

75 Hawthorne Street (Building Entrance)
Mailing Address is 95 Hawthorne Street
Suite 403F – South Wing
San Francisco, CA 94105
Phone: (415) 536-2000

Call in advance to request a site file index and to make an appointment so that time can be allowed for the information to be located. Hours to call for an appointment and for records review are Monday through Friday, 8:00 a.m. to 5:00 p.m.



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



Appendix H: Mailing List Form



Water Quality Assurance Revolving Fund Mailing List Form

[Fondo Rotativo para la Garantía de la Calidad del Agua Formulario para la Lista de Correo]

Any ADEQ translation or communication in a language other than English is unofficial and not binding on the State of Arizona.

[Cualquier traducción o comunicado de ADEQ en un idioma diferente al inglés no es oficial y no sujetará al Estado de Arizona a ninguna obligación jurídica.]

Site Name: Motorola 52nd Street Site
[Nombre del Sitio]

If you would like to be added to the site mailing list, please fill out the top portion of this form and return it to ADEQ. [Si usted quisiera estar en la lista de correo para el sitio, favor de llenar la parte de arriba de este formulario y devolverlo a ADEQ.]

First Name [Nombre]: _____ Last Name [Apellido]: _____

Organization / Association [Organización / Asociación]: _____

Address [Dirección]: _____ Zip Code [Código Postal]: _____

Mailing Address: (if different from above) Dirección de Correo [si es diferente de la anterior]: _____

Zip Code [Código Postal]: _____ Email Address [Correo Electrónico]: _____

Occupation [Ocupación]: _____ Employer [Empleador]: _____

Phone Numbers [Números de Teléfono]: (home/domicilio): _____ (work/trabajo) _____
(mobile/celular): _____ (other/otro): _____

Return this form to (Devuelva esta solicitud a): ADEQ, Outreach Unit, 1110 W. Washington, Phoenix, AZ 85007 or fax to (602) 771-4138. For more information, visit ADEQ's Web site at www.azdeq.gov or contact Wendy Flood at (602) 771-4410. [Para más información, favor de visitar la página del Internet de ADEQ al www.azdeq.gov ó llame a Juana Bonilla, al (602) 771-4189.]

Thank you for your interest.
[Gracias por su interés.]

Updated 12/08



Appendix I: Key Contacts

Agency Representatives

Sherri Zendri

Remedial Project Manager
Arizona Department of Environmental
Quality Southern Regional Office
400 W. Congress Street, Ste.433
Tucson, AZ 85701
(520) 770-3126
(800) 234-5677 Ext. 7713126 (Arizona toll
free)
E-mail: zendri.sherri@azdeq.gov

Joellen Meitl

Project Hydrologist
Arizona Department of Environmental
Quality
1110 W. Washington Street
Phoenix, AZ 85007-2809
(602) 771-4455
(800) 234-5677 Ext. 7714455 (Arizona toll
free)
E-mail: meitl.joellen@azdeq.gov

Wendy Flood

Community Involvement Coordinator
Arizona Department of Environmental
Quality
1110 W. Washington Street
Phoenix, AZ 85007-2809
(602) 771-4410
(800) 234-5677 Ext. 7714410 (Arizona toll
free)
E-mail: wv1@azdeq.gov

Wayne Miller

Project Hydrologist
Arizona Department of Environmental
Quality
1110 West Washington Street
Phoenix, AZ 85007-2809

(602) 771-4121
(800) 234-5677 Ext. 7714121 (Arizona toll
free)
E-mail: miller.wayne@azdeq.gov

Mark Lucas

Underground Storage Tanks Project
Manager
Arizona Department of Environmental
Quality
1110 West Washington Street
Phoenix, AZ 85007-2809
(602) 771-4297
(800) 234-5677 Ext. 7714297 (Arizona toll
free)
E-mail: lucas.mark@azdeq.gov

Leah Butler

Project Manager
U.S. EPA – Region IX
75 Hawthorne Street (SFD-8-2)
San Francisco, CA 94105
(415) 972-3199
(800) 231-3075 (toll free message line)
E-mail: butler.leah@epa.gov

Janet Rosati

Project Manager
U.S. EPA – Region IX
75 Hawthorne Street (SFD-8-2)
San Francisco, CA 94105
(415) 972-3165
(800) 231-3075 (toll free message line)
E-mail: rosati.janet@epa.gov



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Project Manager
U.S. EPA – Region IX
75 Hawthorne Street (SFD-8-2)
San Francisco, CA 94105
(415) 972-3145
(800) 231-3075 (toll free message line)
E-mail: lucey.john@azdeq.gov

Leana Rosetti

Community Involvement Coordinator
U.S. EPA – Region IX
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
(415) 972-3070
(800) 231-3075 (toll free message line)
E-mail: rosetti.leana@epa.gov

Andria Benner

Project Manager
U.S. EPA – Region IX
75 Hawthorne Street (SFD-6-2)
San Francisco, CA 94105
(415) 972-3189
(800) 231-3075 (toll free message line)
E-mail: benner.andria@epa.gov

Will Humble

Bureau Chief
Epidemiology & Disease Control
Arizona Department of Health Services
150 N. 18th Ave
Phoenix, AZ 85007
(602) 364-3855
whumble@hs.state.az.us

**Agency for Toxic Substances and Disease
Registry**

Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-888-422-8737
FAX: (404) 498-0057

William Nelson

Regional Representative
Agency for Toxic Substances and Disease
Registry
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4316
wqnl@cdc.gov



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



Elected Officials

U.S. Senate

Senator John McCain

United States Senate
2400 E. Arizona Biltmore Circle
Suite 1150
Phoenix, AZ 85106-2108
(602) 952-2410

Senator John McCain

United States Senate
241 Russell Senate Office Building
Washington, D.C. 20510
(202) 224-2235

Senator Jon Kyl

United States Senate
2200 E. Camelback Road
Suite 120
Phoenix, AZ 85016-3455
(602) 840-1891

Senator Jon Kyl

United States Senate
730 Hart Senate Office Building
Washington, D.C. 20510
(202) 224-4521

U.S. House of Representatives

Congressman Ed Pastor

411 N. Central Avenue
Suite 150
Phoenix, AZ 85004-2120
(602) 256-0551

Congressman Ed Pastor

2465 Rayburn House Office Building
Washington, D.C. 20515
(202) 225-4065



Motorola 52nd Street Superfund Site
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Arizona Senate

Senator Debbie McCune Davis (District 14)

Arizona State Senate
1700 W. Washington Street, Rm 311
Phoenix, AZ 85007-2890
(602) 926-4485
dmccunedavis@azleg.gov

***Senator Ken Chevront
(District 15)***

Arizona State Senate
1700 W. Washington Street, Rm 315
Phoenix, AZ 85007-2890
(602) 926-5325
kcheuvront@azleg.gov

***Senator Leah Landrum Taylor
(District 16)***

Arizona State Senate
1700 W. Washington Street, Rm 315
Phoenix, AZ 85007-2890
(602) 926-3830
llandrumtaylor@azleg.gov



Arizona House of Representatives

Representative Cloves C. Campbell, Jr.

(District 16)

Arizona House of Representatives
1700 W. Washington Street, Rm 124
Phoenix, AZ 85007-2890
(602) 926-3042
clcampbell@azleg.gov

Representative Robert Meza

(District 14)

Arizona House of Representatives
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(602) 926-3425
rmeza@azleg.gov

Representative Ben Miranda

(District 16)

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Phoenix, AZ 85007-2890
(602) 926-4893
bmiranda@azleg.gov

Representative David Lujan

(District 15)

Arizona House of Representatives
1700 W. Washington Street, Rm 332
Phoenix, AZ 85007-2890
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dlujan@azleg.gov

Representative Kyrsten Sinema

(District 15)

Arizona House of Representatives
1700 W. Washington Street, Rm 333
Phoenix, AZ 85007-2890
(602) 926-5058
ksinema@azleg.gov

Representative Chad Campbell

(District 14)

Arizona House of Representatives
1700 W. Washington Street, Rm 121
Phoenix, AZ 85007-2890
(602) 926-3026
chcampbell@azleg.gov



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



City of Phoenix

Mayor Phil Gordon

Phoenix City Hall
200 W. Washington Street
11th Floor
Phoenix, AZ 85003
(602) 262-7111

Councilman Michael Johnson

200 W. Washington Street
Phoenix, AZ 85003
(602) 262-7493
michael.johnson@phoenix.gov

Councilman Greg Stanton

200 W. Washington Street,
11th Floor
Phoenix, AZ 85003
(602) 262-7491
greg.stanton@phoenix.gov

Maricopa County

Supervisor Mary Rose Wilcox

Maricopa County Board of Supervisor
301 W. Jefferson Street
Phoenix, AZ 80007
(602) 506-7092
mrwilcox@mail.maricopa.gov



Appendix J: Media Contacts

Newspapers

The Arizona Republic
200 E. Van Buren Street
Phoenix, AZ 85044
(602) 444-8000

Arizona Capitol Times
1835 W. Adams Street
Phoenix, AZ 85007
(602) 258-7026

The Arizona Informant
1746 E. Madison Street, Suite 2
Phoenix, AZ 85034
(602) 257-9300

Ahwatukee Foothills News
10631 S. 51st Street
Phoenix, AZ 85044
(480) 496-0665

Arcadia News
2823 N. 48th Street
Phoenix, AZ 85008

Arizona Business Gazette
200 E. Van Buren Street
Phoenix, AZ 85004
(602) 444-7300

Arizona News Service
1835 W. Adams Street
Phoenix, AZ 85007
(602) 258-7026

Arizona Newspaper Association
1001 N. Central Ave.
Phoenix, AZ 85004
(602) 261-7655

Business Journal
3030 N. Central Avenue
Phoenix, AZ 85012
(602) 230-8400

Camelback Corridor News
3104 E. Camelback Rd., Suite 354
Phoenix, AZ 85066
(602) 956-8414

LaVoz
800 N. 1st Avenue
Phoenix, AZ 85003
(602) 253-9080

Phoenix New Times
1201 E. Jefferson Street
Phoenix, AZ 85034-23341
(602) 254-3177

Phoenix Press Weekly
P.O. Box 8753
Phoenix, AZ 85066

Prensa Hispana
809 E. Washington Street, Suite 209
Phoenix, AZ 85034
(602) 256-2443

Record Reporter
1505 N. Central Avenue
Phoenix, AZ 85004
(602) 417-9900

Valley Newspapers Independent NWSP
23043 N. 16th Lane
Phoenix, AZ 85027
(623) 879-0425



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



Television Stations

ABC 15 KNXV
515 N. 44th Street
Phoenix, AZ 85008-6537
(602) 273-1500

KPNX Television NBC-Channel 12
1101 N. Central Avenue
Phoenix, AZ 85004-1818
(602) 257-1212

Camel 51
1101 N. Central Avenue
Phoenix, AZ 85004
(602) 808-0729

KSAZ Fox 10
511 W. Adams Street
Phoenix, AZ 85003-1608
(602) 257-1234

Channel 33 KTVW
3019 E. Southern Avenue
Phoenix, AZ 85040
(602) 243-3333

KTVK-3 TV-News Channel 3
5555 N. 7th Avenue
Phoenix, AZ 85013
(602) 207-3333

KDMA Channel 25
2002 W. Lone Cactus Drive
Phoenix, AZ 85027-2624
(623) 581-2511

WB 61- KASW-TV
5555 N. 7th Avenue
Phoenix, AZ 85013

KDRX-TV
4625 S. 33rd Place
Phoenix, AZ 85040
(602) 470-0507

World Television Channels 41 & 58
4013 E. Broadway Road
Phoenix, AZ 85040
(602) 470-0041

KGS TV Channel 53
5030 E. Warner Road, STE 3
Phoenix, AZ 85044
(480) 961-4353

KPAZ-TV Channel 21
3551 E. McDowell Road
Phoenix, AZ 85008-3847
(602) 273-1477

KPHO-TV 5
4016 N. Black Canyon Highway
Phoenix, AZ 85017-4730
(602) 264-1000



Radio Stations

96.9 FM KMXP Business Office
645 E. Missouri Avenue
Suite 360
Phoenix, AZ 85012-1372
(602) 279-5577

KASA 1540 AM Radio
1445 W. Baseline Road
Phoenix, AZ 85041-7010
(602) 276-5272

KBAQ FM Radio 89.5 FM
2323 W. 14th Avenue
Tempe, AZ 85281
(480) 834-5627

KCKY 1150 AM
1445 W. Baseline Road
Phoenix, AZ 85041
(520) 426-1150

KDKB Radio 93 FM
1167 W. Javelina Avenue
Mesa, AZ
(602) 260-9393

KEZ 99.9 FM Radio Station
600 E. Gilbert Drive
Tempe, AZ 85281
(602) 260-0999

KFYI AM 550 Radio
624 E. Missouri Avenue
Phoenix, AZ 85012
(602) 798-9340

KJZZ FM Radio 91.5 FM
2323 W. 14th Street
Tempe, AZ 85281
(480) 834-5627

KKFR 92 FM
631 N. 1st Avenue
Phoenix, AZ 85003
(602) 258-6161

KMLE FM108
840 N. Central Avenue
Phoenix, AZ 85004
(602) 260-0108

KMVP 860 AM
5300 N. Central Avenue
Phoenix, AZ 85012
(602) 277-5687

KNAI
3602 W. Thomas Road
Phoenix, AZ 85019
(602) 269-2929

KOOL FM
4745 N. 7th Street
Phoenix, AZ 85014
(602) 956-9696

KPHF FM
3602 W. Thomas Road
Phoenix, AZ 85019
(602) 272-7220

KPHX Radio
824 E. Washington Street
Phoenix, AZ 85034
(602) 252-1480

KSUN Radio Fiesta 1400 FM Stereo
714 N. 3rd Street
Phoenix, AZ 85004-2018
(602) 252-0030



Radio Stations (Continued)

KTKP Radio
100 W. Clarendon Avenue
Phoenix, AZ 85013
(602) 234-1280

KVVA-AM FM
1641 E. Osborn Road
Phoenix, AZ 85016
(602) 266-2005

LaNueva/KHOT
4745 N. 7th Street, Suite 104
Phoenix, AZ 85014
(602) 308-7900

Q 96
2425 E. Camelback Road
Phoenix, AZ 85016
(602) 955-9600

Appendix K

Recent Fact Sheets and Bulletins Issued Since April 2006

- **Motorola 52nd Street Superfund Site Announcement of the Start of the OU1 and OU2 Five –Year Reviews, April 2006**
- **OU1 Remedial Alternatives Analysis Report Public Comment Period, November 2006**
- **Motorola 52nd Street Superfund Site OU1 and OU2 Five Year Reviews Public Comment Period, November 2006**
- **Motorola 52nd Street Superfund Site-Wide Environmental Bulletin, May 2007**
- **Honeywell 34th Street Facility, November 2008**



PUBLIC COMMENT FOR 5-YEAR REVIEW

Motorola 52nd Street Superfund Site April 2006 Operable Units 1 and 2, Public Notice of Five-Year Review

The Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (EPA) are announcing the start of the third Five-Year Review for the Motorola 52nd Street Federal Superfund Site and are soliciting input from the community regarding the cleanup. ADEQ is conducting the Five-Year Review of the two interim groundwater cleanup remedies at the Site. The purpose of a five-year review is to evaluate whether the **remedies at a site are protective of human health and the environment**; or in other words, whether the cleanup methods are working as designed. ADEQ will also assess if any factors suggest that the remedies may not continue to be protective in the future. During the five-year review process, ADEQ would like to address any concerns from the public specifically regarding the cleanup activities being conducted at the Motorola 52nd Street Site.

FIVE-YEAR REVIEW

These are the U.S. laws that govern the Five-Year Review:

Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) state that a remedial action that resulted in hazardous substances, pollutants, or contaminants remaining at the site shall be reviewed no less frequently than every five years. It requires that the EPA make a determination whether the remedial actions are protective. Thus, the Motorola 52nd Street Superfund Site requires a five-year review of the selected remedies. ADEQ will provide a Five-Year Review Report with a protectiveness statement for EPA's review and approval.

In order to determine the protectiveness of the remedy, ADEQ will conduct studies, perform inspections of the treatment systems, and review existing operation and maintenance information. ADEQ will also interview key project personnel, evaluate any changes of site conditions, and review federal and state requirements.

BACKGROUND

The Motorola 52nd Street Site is located in a residential and commercial area in eastern and central Phoenix. The site boundaries are approximately 52nd Street to the east, Seventh Avenue to the west, Palm Lane to the north and Buckeye Road to the south. The site encompasses a large plume of groundwater contamination which, to facilitate the clean up of the site, has been divided into three separate areas, or operable units (OUs). The focus of this notice is Operable Unit 1 (OUI) and Operable Unit 2 (OU2). See map for location of the OUI and OU2 boundaries and the groundwater remedies.

The contamination at the Motorola 52nd Street Site is a result of historic commercial and industrial solvent disposal throughout the area. The primary groundwater contaminants are trichloroethene (TCE), tetrachloroethene (PCE), and 1,1,1-trichloroethane (TCA). The Motorola 52nd Street Site was placed on the National Priorities List (NPL) in September 1989. Since the site was discovered, ADEQ has had the lead enforcement role at the site.

More detailed information on this site can be found on the ADEQ Web page at: <http://www.azdeq.gov/environ/waste/sps/download/phoenix/m52.pdf>.

OPERABLE UNIT 1

In 1989, Motorola signed a Consent Order (a legal agreement between ADEQ and Motorola) with ADEQ to construct and operate a groundwater treatment system to contain and treat groundwater contaminated with chlorinated solvents for OUI. The OUI remedy involves the cleanup of both soil and groundwater. Three areas at the former Motorola 52nd Street Facility are required to be cleaned up by soil vapor extraction (SVE). The soil remedy is currently not in operation; one area has been completed and the other two areas are being evaluated.

The groundwater treatment system at OUI has been in operation since 1992 and consists of three

separate well fields (two on the Facility and one along the Old Cross Cut Canal) and a treatment plant located at the Facility. The groundwater is pumped at a rate of 230 gallons per minute (gpm) from these well fields and conveyed via an underground dual-wall pipe to the treatment plant. The contaminated groundwater then enters the air stripper towers where the contaminants are moved from the water into the air. The air then moves through a vapor phase granular activated carbon system to trap the contamination within the carbon filter. The treated water is used in plant operations at the 52nd Street Facility.

OPERABLE UNIT 2

In 1998, the EPA issued a Unilateral Administrative Order (a legal document requiring work) to Motorola and Honeywell to construct and operate a groundwater treatment system. The system is designed to contain and treat groundwater contaminated with chlorinated solvents within OU2. The system became fully operational in September 2001 and currently extracts groundwater at approximately 2000 gallons per minute from a series of three extraction wells located along 20th Street. The water is treated by pumping the contaminated water through a liquid phase granular activated carbon system to trap the contamination within the carbon filter. The treated water is then discharged to the Salt River Project (SRP) Grand Canal.

COMMUNITY INVOLVEMENT

In an effort to better involve and inform the community, ADEQ would like to interview people who have knowledge of operations of the cleanup systems as well as members of the public who have information or concerns about on-going cleanup activities. Please contact:

Linda Mariner

ADEQ Community Involvement Coordinator
(602) 771-4294

e-mail: mariner.linda@azdeq.gov

Hearing impaired persons call

ADEQ's TDD line: (602) 771-4829

before May 15, 2006 to schedule an interview.

ADEQ initiated the five-year review process in February 2006 and plans to complete the review and submit a report to EPA by September 2006. The findings of the five-year review will be available to the public at the local information repositories listed below in October 2006.

MOTOROLA 52ND STREET SITE INFORMATION REPOSITORIES:

ADEQ Records Center
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4420

U.S. EPA
Superfund Records Center
95 Hawthorne Street, Ste. 403S
San Francisco, CA 94105-3901
(415) 536-2000

City of Phoenix Public Library
Saguaro Branch
2808 North 46th Street
Phoenix, AZ 85008
(602) 262-6801

City of Phoenix Public Library
Burton Barr Branch
1221 North Central Avenue
Phoenix, AZ 85004
(602) 262-4636

Documents in electronic form (pdf) are available to be emailed or mailed to you on a CD from EPA or ADEQ. Electronic versions will also be in the libraries on CD and can be copied.

If you would like further information regarding the Motorola 52nd Street site, please contact:

Linda Mariner

ADEQ Community Involvement Coordinator
(602) 771-4294

e-mail: mariner.linda@azdeq.gov

Hearing impaired persons call

ADEQ's TDD line: (602) 771-4829

For general comments and questions regarding the Five-Year Review for the Motorola 52nd Street Site, please contact:

Kris Paschall

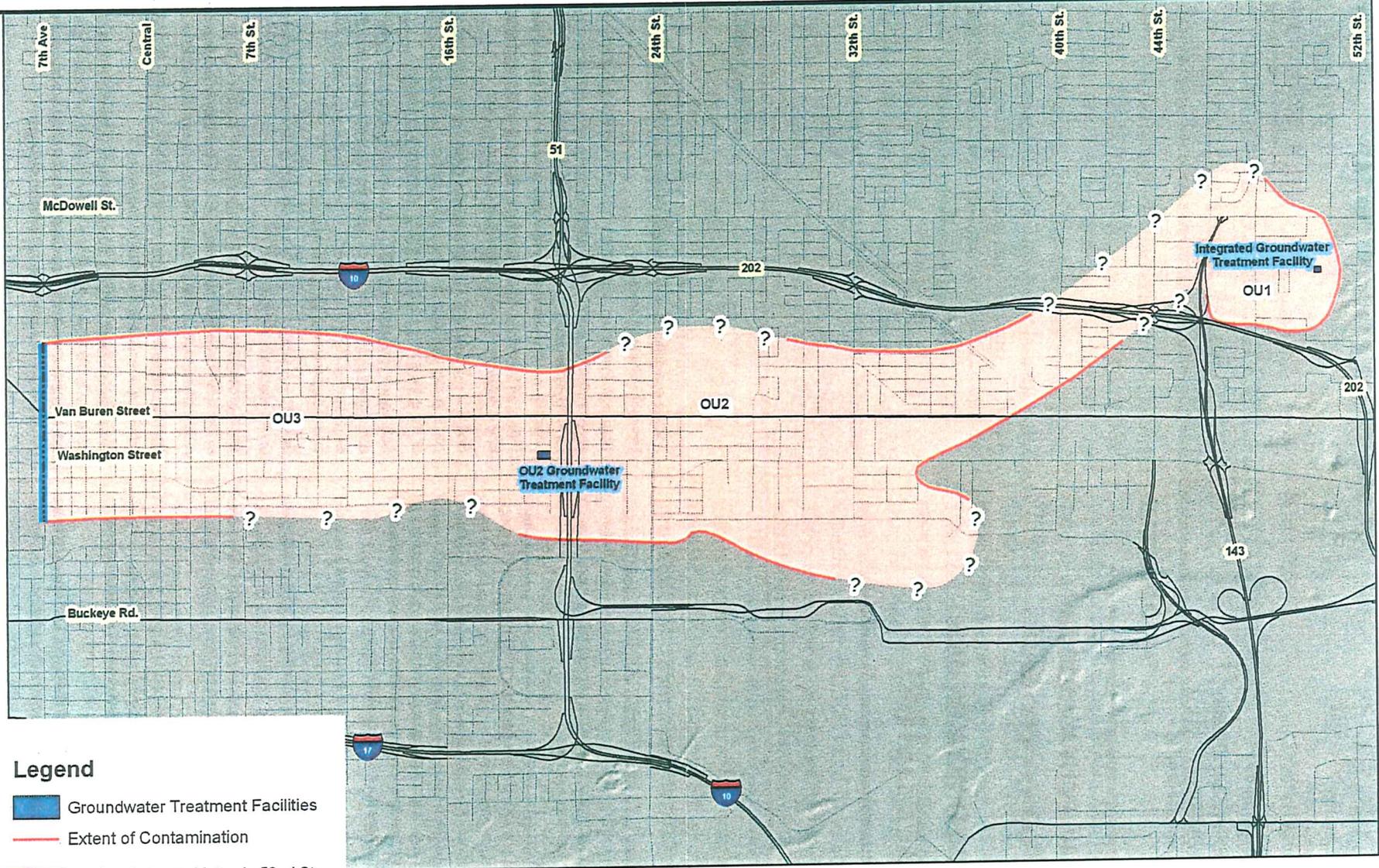
ADEQ Project Manager
(602) 771-4193

e-mail at paschall.kris@azdeq.gov

In Arizona, outside the Phoenix area, call 1(800) 234-5677. Hearing impaired may call TDD line at (602) 771-4829.

Web site: www.azdeq.gov

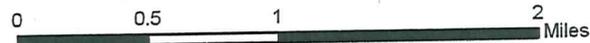
Motorola 52nd Street Superfund Site



Legend

- Groundwater Treatment Facilities
- Extent of Contamination
- Boundary between Motorola 52nd St. and West Van Buren WQARF Site
- ? = plume boundary inferred.

Contour represents area of volatile organic compounds in alluvial and bedrock groundwater that exceed the Aquifer Water Quality Standards.



Samples collected September 2005





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Linda Mariner,
Community Involvement Coordinator
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007-9973

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por correo en español?

Por favor comuníquese
(602) 771-4189

Publication Number: C 06-06

GLOSSARY

Air strippers - Air Stripping is a treatment system that removes volatile organic compounds (VOCs) from contaminated groundwater or surface water by forcing an airstream through the water and causing the compounds to move from the water into the air within the stripping tower.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - CERCLA is a federal law passed in 1980 that created a special tax that funds a trust fund, commonly known as Superfund, to be used to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, EPA can pay for cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work, or take legal action to force parties responsible for contamination to clean up the site or reimburse the federal government for the cost of the cleanup.

Contamination - Any hazardous or regulated substance released into the environment.

Extraction Well - An extraction well is a well specifically designed to withdraw groundwater or soil gas for treatment.

Groundwater - Water found beneath the earth's surface that fills pores between materials such as sand, clay, or gravel and that often supplies wells and springs.

Liquid Phase Granulated Activated Carbon - Liquid phase carbon adsorption is a full-scale technology in which ground water is pumped through one or more vessels containing activated carbon to which dissolved organic contaminants adsorb.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) - The NCP is the major regulatory framework that guides the Superfund response effort. The NCP is a comprehensive body of regulations that outlines a step-by-step process for implementing Superfund responses and defines the roles and responsibilities of EPA, other federal agencies, states, private parties,

and the communities in response to situations in which hazardous substances are released into the environment.

National Priorities List (NPL) - The 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.

Soil Gas - Soil gas and soil vapor are the gaseous elements and compounds that occur in the small spaces between soil particles. Such gases can move through or leave the soil or rock, depending on changes in pressure.

Soil Vapor Extraction (SVE) - A commonly used technique for cleaning up contaminated soils. SVE draws gases from contaminated soils and through the extraction system for treatment. The term soil vapor extraction is often used interchangeably with soil gas extraction.

Solvent - A substance, usually a liquid that is capable of dissolving or dispersing one or more other substances.

Trichloroethene - TCE is a nonflammable, colorless solvent that readily evaporates at room temperature. TCE is used mainly for degreasing/drying of metals and electronic components. TCE is a potential occupational carcinogen.

Trichloroethane - TCA is a solvent similar to TCE and used mainly for degreasing/drying of metals and electronic components.

Tetrachloroethene - PCE is a clear, colorless, nonflammable liquid with a sweet odor and a low boiling point. It is a solvent used for dissolving waxes, greases, oils, fats, gums, and widely used for dry cleaning of fabrics and degreasing/drying of metals. PCE is a potential occupational carcinogen.

Vapor Phase Granulated Activated Carbon - Vapor-phase carbon adsorption is a remediation technology in which pollutants are removed from air by physical adsorption onto activated carbon grains.

Sitio Superfund de Motorola 52nd Street Abril 2006 Unidades Operables 1 y 2, Aviso Público De La Revisión de 5 Años

El Departamento de Calidad Ambiental del Estado de Arizona (ADEQ, por sus siglas en inglés) y la Agencia de Protección Ambiental de los EE.UU. (EPA, por sus siglas en inglés) anuncian el comienzo de la tercera Revisión de Cinco Años para el Sitio Superfund Motorola 52nd Street. Se solicita comentarios de la comunidad sobre la limpieza de este Sitio. ADEQ está ejecutando la Revisión de Cinco Años de los dos remedios temporales de la limpieza de agua subterránea para el sitio. El propósito de una revisión de cinco años es evaluar si los remedios en un sitio sean protectores de la salud humana y del medio ambiente; en otras palabras, ver si los métodos de limpieza funcionan según su diseño. ADEQ va a determinar si haya algún factor que sugiere que los remedios no van a ser protectores en el futuro. Durante el proceso de la revisión de cinco años, a ADEQ le gustaría tratar con preocupaciones del público relacionadas con las actividades de limpieza que están siendo llevadas a cabo en el Sitio Motorola 52nd St.

REVISIÓN DE 5 AÑOS

Hay dos leyes estadounidenses que rigen la Revisión de Cinco Años:

La Sección 121(c) de la Ley de Responsabilidad, Compensación y Recuperación Ambiental (CERCLA, por sus siglas en inglés), enmendado, y el Plan Nacional de Contingencias de Contaminación del Petróleo y de las Sustancias Peligrosas declaran que las acciones correctivas que produzcan las sustancias peligrosas y la contaminación en un sitio deben ser revisadas por lo menos cada cinco años. Requiere que la EPA determina lo protector de las acciones correctivas. Por lo tanto, el Sitio Superfund Motorola 52nd Street requiere una revisión de cinco años de las acciones correctivas seleccionadas. ADEQ entregará a la EPA un Reporte de la Revisión de Cinco Años con una declaración de lo protector.

Para poder determinar lo protector de una acción correctiva, ADEQ ejecutará estudios y inspecciones de los sistemas de tratamiento, y revisará los datos existentes del funcionamiento y mantenimiento. ADEQ también entrevistará a personal de proyecto clave, evaluará cambios en las condiciones del sitio, y revisará los requisitos federales y estatales.

ANTECEDENTES

El Sitio Motorola 52nd Street está ubicado en una zona residencial y comercial de Phoenix oriental y central. Los límites del sitio se encuentran desde 52 Street al este, Seventh Avenue al oeste, Palm Lane al norte, y Buckeye Road al sur. El Sitio abarca un gran área de contaminación subterránea que, para facilitar la limpieza del sitio, ha sido dividido en tres áreas distintas conocidas como unidades operables (OUs, por sus siglas en inglés). El enfoque de esta noticia es la Unidad Operable 1 (OU1) y la Unidad Operable 2 (OU2). El mapa del Sitio indica los límites de la OUI y la OU2, además de la ubicación de las acciones correctivas.

La contaminación del Sitio Motorola 52nd Street es resultado de la antigua eliminación comercial e industrial de disolventes por todo el área. Los principales contaminantes en el agua subterránea son el tricloroetileno (TCE, por sus siglas en inglés), el Tetracloroetano (PCE, por sus siglas en inglés), y 1,1,1-tricloroetileno (TCA, por sus siglas en inglés). En septiembre del 1989, se colocó el Sitio Motorola 52nd Street en la Lista de Prioridades Nacionales (NPL, por sus siglas en inglés). Desde que se descubrió el Sitio, ADEQ ha tenido el papel de encargado principal.

Se puede encontrar más información detallada sobre este Sitio en la página Web del ADEQ: <http://www.azdeq.gov/environ/waste/sps/download/phoenix/m52.pdf>.

UNIDAD OPERABLE 1

En 1989, Motorola firmó un acuerdo legal con ADEQ para construir y administrar un sistema de agua subterránea para la OUI con el fin de contener y limpiar el agua subterránea contaminada por disolventes clorados. El remedio para la OUI incluye la limpieza del suelo y del agua subterránea. Para tres áreas del Sitio Motorola 52nd Street, se requiere la limpieza por medio de la extracción de vapores del suelo (SVE, por sus siglas en inglés). El remedio para el suelo aún no está funcionando; se ha terminado un área, y el otro se le está evaluando.

El sistema de tratamiento del agua subterránea en la OUI ha estado funcionando desde 1992. Consiste en tres campos distintos de pozos (dos en las instalaciones y uno a lo largo del Canal Old Cross Cut) y una

planta de tratamiento ubicada en las instalaciones del Sitio. Se bombea 230 galones de agua subterránea por minuto desde los campos de pozos hasta la planta de tratamiento via una tubería subterránea de doble pared. Luego, el agua subterránea contaminada entra las torres de separación con aire donde se mueven los contaminantes desde el agua hasta el aire. Luego, el aire se mueve por un sistema de carbón activado granular en fase vapor que atrapa los contaminantes dentro del filtro de carbón. Se utiliza el agua tratada en la planta de las instalaciones 52nd Street.

UNIDAD OPERABLE 2

En 1998, la EPA emitió una Orden Administrativa Unilateral (un documento legal que exige trabajo) a Motorola y Honeywell para construir y administrar un sistema de tratamiento de agua subterránea. El sistema está diseñado para contener y limpiar el agua subterránea contaminada con disolventes clorados dentro de la OU2. El sistema empezó a funcionar en septiembre del 2001 y extrae actualmente 2000 galones de agua subterránea por minuto de tres pozos de extracción ubicados a lo largo de 20th Street. Se limpia el agua bombeandola por un sistema de carbón activado granular en fase líquida que atrapa los contaminantes dentro del filtro de carbón. Se descarga el agua tratada al Gran Canal del Proyecto Salt River.

PARTICIPACIÓN COMUNITARIA

Para involucrar e informar a la comunidad, ADEQ desea entrevistar:

1. a las personas que tengan conocimiento de los sistemas de tratamiento y limpieza
2. a los miembros de la comunidad que tengan información o preocupaciones sobre las actuales actividades de limpieza.

Por favor, contáctese antes del 15 de mayo 2006 para programar una entrevista:

Linda Mariner

Coordinadora de Participación Comunitaria ADEQ
(602) 771-4294

e-mail: mariner.linda@azdeq.gov

Las personas con discapacidad auditiva pueden llamar al (602) 771-4829

ADEQ comenzó el proceso de la revisión de cinco años en febrero 2006, y piensa terminar la revisión y entregar el informe a la EPA para septiembre 2006. En octubre 2006, los resultados de la revisión de cinco años serán disponibles para el público en los depósitos de información indicados abajo.

DEPÓSITOS DE INFORMACIÓN DEL SITIO MOTOROLA 52ND STREET:

Centro de Archivos ADEQ
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4380

U.S. EPA
Centro de Archivos Superfund
95 Hawthorne Street, Ste. 403S
San Francisco, CA 94105-3901
(415) 536-2000

Biblioteca Pública de Phoenix
Sucursal Saguaró
2808 North 46th Street
Phoenix, AZ 85008
(602) 262-6801

Biblioteca Pública de Phoenix
Sucursal Burton Barr
1221 North Central Avenue
Phoenix, AZ 85004
(602) 262-4636

Están disponibles los documentos en forma electrónica (pdf) a través del correo electrónico o de un CD de la EPA o de ADEQ. También se puede encontrar y copiar la versión electrónica en las bibliotecas.

Si Ud. tiene preguntas o comentarios sobre la Revisión de Cinco Años para el Sitio Motorola 52nd Street, o si Ud. desea más información sobre el Sitio Motorola 52nd Street, contáctese con:

Juana Bonilla

ADEQ

(602) 771-4189

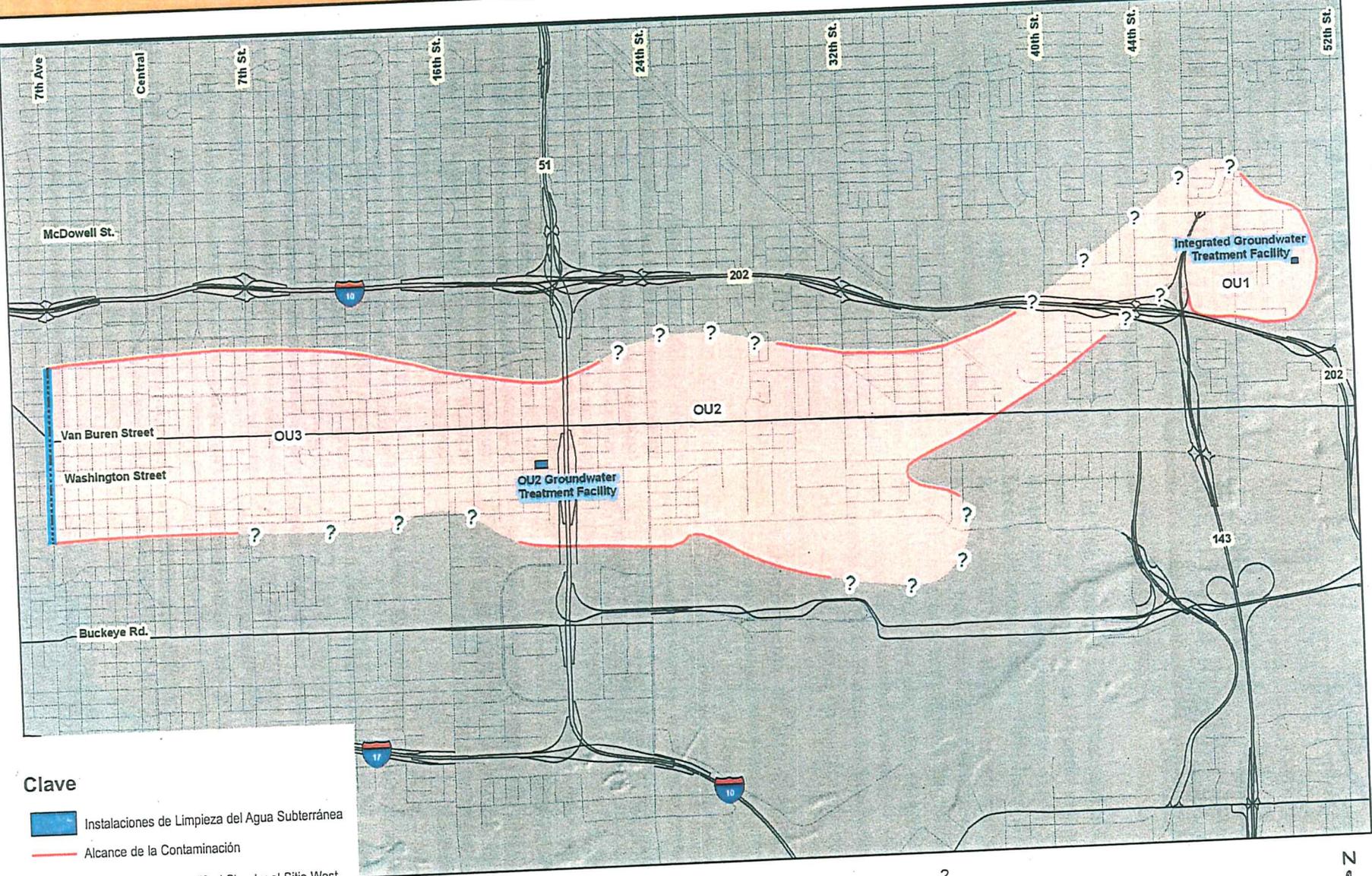
e-mail: jsb@azdeq.gov

Las personas con discapacidad auditiva pueden llamar al (602) 771-4829

En Arizona, fuera del area de Phoenix, llame al (800) 234-5677.

Página Web: www.azdeq.gov

Sitio Superfund Motorola 52nd Street



Clave

- Instalaciones de Limpieza del Agua Subterránea
- Alcance de la Contaminación
- Límite entre Motorola 52nd Street y el Sitio West Van Buren WQARF
- ?

El contorno representa el área de compuestos orgánicos volátiles en el agua subterránea aluvial y en el agua subterránea de lecho rocoso que superan las Normas de Calidad de Agua de Acuífero.



Muestras recolectadas en septiembre 2005.





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Linda Mariner,
Community Involvement Coordinator
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007-9973

Publication Number: C 06-06

GLOSARIO

1,1,1-tricloroetileno (TCA, por sus siglas en inglés) - Un disolvente parecido al TCE que se utiliza principalmente para desengrasar/secar los metales y los componentes electrónicos.

Aguas subterráneas - Aguas dulces encontradas bajo la superficie de la tierra que alimentan los pozos y manantiales.

Carbón Activado Granular en Fase Líquida - La absorción de carbón en fase líquida es una tecnología completa en la cual el agua subterránea es bombeada por una o más vasijas que contienen el carbón activado al cual los contaminantes orgánicos disueltos se absorben.

Carbón Activado Granular en Fase Vapor - Una tecnología en la cual se eliminan los contaminantes del aire absorbiéndolos en partículas de carbón activado.

Contaminación - Cualquier sustancia peligrosa o regulada emitida al medio ambiente.

Disolventes - Una sustancia, como un líquido, que es capaz de disolver o dispersar una o más sustancias.

Extracción de Vapores del Suelo (SVE, por sus siglas en inglés) - Una técnica común para la limpieza de suelos contaminados. SVE saca el gas desde los suelos contaminados a través de un sistema de extracción para luego limpiarse.

Gas del Suelo - Gas del suelo y vapor del suelo son los elementos y compuestos gaseosos que se encuentran en los espacios pequeños entre las partículas de suelo. Tales gases pueden moverse por el suelo o roca, o dejarla, según el cambio de presión.

Ley de Responsabilidad, Compensación y Recuperación Ambiental (CERCLA, por sus siglas en inglés) - Mejor conocida como Superfund, fue aprobada por el Congreso de los Estados Unidos en 1980 con el fin de identificar, investigar, y restaurar lugares que contienen desperdicios peligrosos que provienen de fueron dejados por plantas manufactureras, maquiladoras, industrias químicas, vertederos o basureros públicos. Superfund provee fondos que se utilizan para

restaurar y mejorar los lugares que contienen estos desperdicios peligrosos. Los fondos son utilizados cuando no se puede determinar la persona o empresa responsable por la contaminación, o cuando esa persona o empresa no puede pagar por el trabajo para limpiar, mejorar o restaurar el área afectada.

Lista de Prioridades Nacionales (NPL, por sus siglas en inglés) - NPL es la lista EPA de los sitios más serios descontrolados o abandonados de desechos peligrosos identificados para una posible respuesta de acción correctiva a largo plazo, bajo Superfund. Un sitio es incluido en la Lista según el resultado que reciba bajo el Sistema de Clasificación de Peligros. Se puede utilizar fondos del Superfund para limpiar los sitios en la Lista. EPA es obligada a actualizar la Lista una vez al año.

Plan Nacional de Contingencias de Contaminación del Petróleo y de las Sustancias Peligrosas (NCP, por sus siglas en inglés) - Es un importante marco regulador que guía el esfuerzo de respuesta de Superfund. NCP resume el proceso de implementación de respuesta Superfund y define el rol y las responsabilidades de la EPA, de otras agencias federales, estatales, privadas y de las comunidades como respuesta a los asuntos en los cuales las sustancias peligrosas se emiten al medio ambiente.

Pozo de Extracción - Pozos utilizados para bombear aguas subterráneas para su limpieza.

Separación con aire - Un sistema de tratamiento que separa o elimina los compuestos orgánicos volátiles del agua subterránea contaminada al forzar una corriente de aire a través del agua, causando que los compuestos se evaporan.

Tricloroetileno (TCE) - Líquido orgánico incoloro con un olor similar al cloroformo. La aplicación más común del tricloroetileno es como desengrasador de piezas fabricadas de metal.

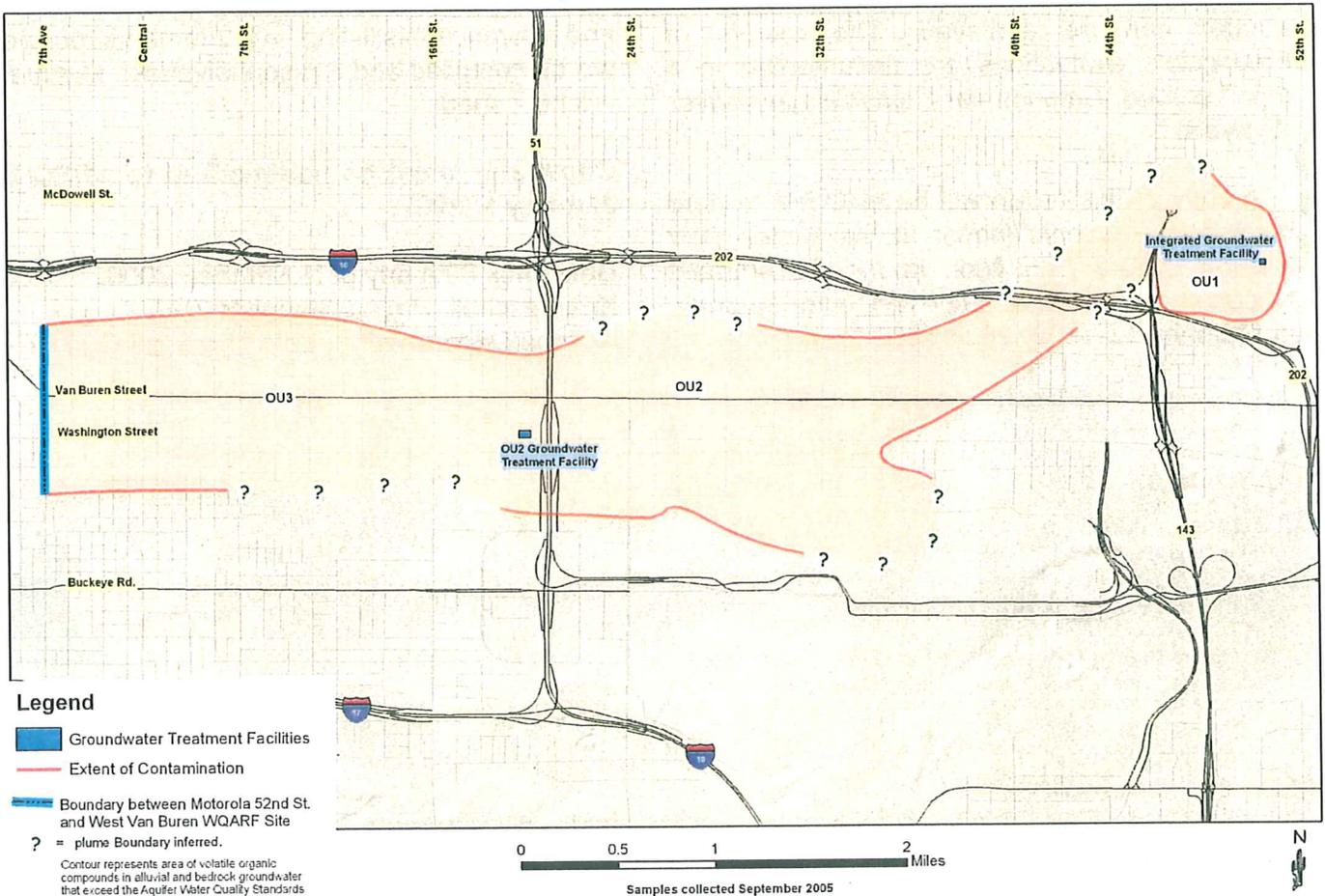
Tetracloroetano (PCE) - Líquido orgánico incoloro con un olor suave similar al cloroformo. Su aplicación más común es como desengrasador y en la industria de limpieza en seco.

30 DAY PUBLIC COMMENT PERIOD

NOTICE OF AVAILABILITY AND OPPORTUNITY TO COMMENT ON THE **REMEDIAL ALTERNATIVES ANALYSIS REPORT** FOR THE MOTOROLA 52ND STREET SUPERFUND SITE OPERABLE UNIT 1

PLEASE TAKE NOTICE: the Arizona Department of Environmental Quality (ADEQ) has available for public comment the Remedial Alternatives Analysis Report and Addendum dated September and December 2005 for the Motorola 52nd Street Superfund Site in Phoenix, Arizona. The Motorola 52nd Street Site is located in the central and eastern portions of Phoenix, Arizona. The Site boundaries encompass an area of groundwater contamination extending approximately from 52nd Street on the east to 7th Avenue on the west and from Oak Street on the north to Buckeye Road to the south (see map). Historical spills or releases of industrial solvent seeped downward through the soil, mixed with the groundwater, and spread to the west.

**MOTOROLA 52ND STREET SUPERFUND SITE
 PHOENIX, ARIZONA SITE BOUNDARY**



Legend

- Groundwater Treatment Facilities
 - Extent of Contamination
 - Boundary between Motorola 52nd St. and West Van Buren WQARF Site
 - ? = plume Boundary inferred.
- Contour represents area of volatile organic compounds in alluvial and bedrock groundwater that exceed the Aquifer Water Quality Standards

Operable Unit 1 (OU1) is the area farthest to the east (52nd Street to 44th Street) and is the subject of this notice. Since 1992, groundwater at OU1 has been contained to prevent additional contamination from moving farther west. The groundwater is brought up to the surface and piped to a treatment plant that removes the contamination to state and federal standards. Freescale Semiconductor (a company spun off from Motorola) operates the treatment plant which is located on the former Motorola facility at McDowell Road and 52nd Street.

ADEQ is working to select a final OU1 remedy that can meet groundwater cleanup goals. In order to do so, a more detailed evaluation is necessary to better determine how deep and how wide the contamination is. Additionally, an analysis needs to be conducted to determine if the contamination can be removed from deep within the bedrock fractures or degraded in order to restore the aquifer to an acceptable quality. Freescale has evaluated (1) the current remedy with respect to its longevity, (2) potential alternative remedies, and (3) whether the goal to restore the aquifer can be achieved. The results of Freescale's evaluations are documented in a report entitled: *Groundwater Remedial Alternatives Analysis*.

A copy of this report will be available in hard copy and electronic format at the Burton Barr Central Library, 2nd floor, in the Government Documents section, at 1221 N. Central Avenue, in Phoenix, AZ, (602) 262-4636.

The reports will also be available both in hard copy and in electronic format at the Saguaro Public Library, at 2802 N. 46th Street in Phoenix, AZ, (602) 262-6801.

The report is also available at the ADEQ office in Phoenix. With 24 hour notice, an appointment to review related documentation is available, Monday through Friday from 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, AZ. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.

PARTIES WISHING TO MAKE COMMENTS regarding the Remedial Alternatives Analysis Report may make such comments in writing to:

Arizona Department of Environmental Quality
(ADEQ)
Attention: Kris Paschall, Project Manager
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007

and reference this listing. All comments received will be compiled and a responsiveness summary will be issued.

Comments must be postmarked to ADEQ by January 5, 2007.

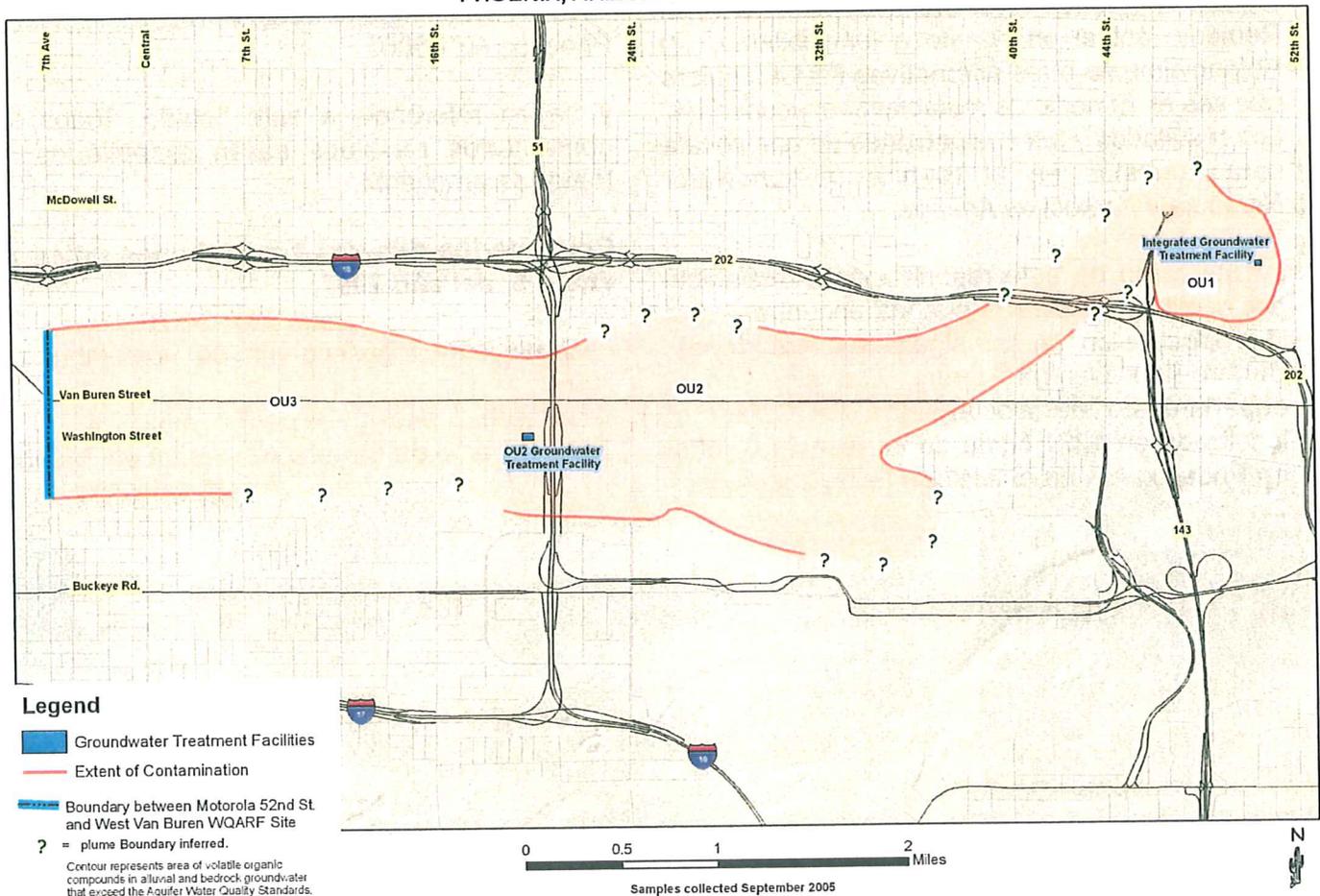
Dated this 30th day of November, 2006.
Kris Paschall, Project Manager
Arizona Department of Environmental Quality

PERIODO DE COMENTARIO PÚBLICO POR 30 DIAS

OPORTUNIDAD PARA HACER COMENTARIOS SOBRE **EL REPORTE DEL ANÁLISIS DE LAS ALTERNATIVAS PARA LA LIMPIEZA DEL AGUA SUBTERRÁNEA EN EL SITIO DE SUPERFUND MOTOROLA CALLE 52 UNIDAD OPERABLE 1**

FAVOR DE TOMAR NOTA: El Departamento de Calidad Ambiental de Arizona (ADEQ, por sus siglas en inglés) y la Agencia de Protección Ambiental de los EE.UU. (EPA, por sus siglas en inglés) anuncian la oportunidad para que el público comente sobre el esfuerzo del análisis y las alternativas del reporte de cinco años para la limpieza del agua subterránea en el sitio de Superfund Motorola Calle 52. Contrato fechado en Septiembre y Diciembre del año 2005 por Motorola Calle 52, en Phoenix AZ. Los límites del sitio que rodean el área del agua contaminada se extendieron aproximadamente desde la calle 52 y este de la Avenida 7 al oeste de la calle Oak, siguiendo al Norte de Buckeye Rd. y continuaron hasta la parte sur (ver el mapa). Históricamente los derrames de los solventes de la industria se filtraron debajo de la tierra, se mezclaron con el agua subterránea y se extendieron para el lado Oeste.

**MOTOROLA 52ND STREET SUPERFUND SITE
 PHOENIX, ARIZONA SITE BOUNDARY**



Unidad Operable 1 (OU1) área situada mas al este (calle 52nd y la calle 44th) es el tema de esta noticia. Desde 1992, el agua subterránea de Unidad Operable OU1 ha sido tratada para prevenir futuras contaminaciones y evitar que las mismas se extiendan hacia el área Oeste. El agua subterránea fue traída hacia la superficie por un sistema de bombeo y llevada a una planta tratadora de agua para remover los contaminantes y mantener los niveles normales de acuerdo con las reglas estatales y federales. Freescale Semiconductor. (Compañía no afiliada a Motorola) encargada de la planta que opera en la limpieza y tratamiento en el agua en la facilidad de Motorola Calle 52.

ADEQ esta trabajando para determinar el final de la Unidad Operable OU1, cumplir con los requisitos de limpieza del agua subterránea, y obtener una evaluación detallada, la evaluación es necesaria para determinar que tan adentro y extensa es la contaminación. Otro analisis es necesario para saber si la cotaminación puede ser removida de las fracturas del subsuelo desintegrado y poder restablecer el acuífero (1)El Remedio actual en cuanto a longitibilidad, (2) Potencialmente otras alternativas (3) Cualquiera que sea el remedio de restablecer el acuífero (4) Los resultados y las evaluaciones de alta escala serán puestos en el reporte: *Groundwater Remedial Alternatives Analisis*.

Una copia de este reporte estará disponible por escrito y la otra la puedes encontrar en el sitio electrónico en las siguientes direcciones: Burton Barr Central Library, 2nd piso, en el departamento de Documentos de Gobierno, localizada en 1221 Norte de la Avenida Central en Phoenix, AZ, en el teléfono (602) 262-4636.

Una copia de este reporte también estará disponible en la Librería Publica el Saguaro, localizada en el 2802 Norte de la calle 46th en Phoenix, Arizona en el teléfono (602) 262-6801.

También estarán disponible en el Departamento de Calidad Ambiental (ADEQ, por su siglas en Inglés). El reporte deberá ser solicitado con 24 horas de anticipación en la oficina de Phoenix, para poder revisar los archivos solicite una cita con 24 horas de anticipación de Lunes a Viernes de 8:30 am hasta 4:30 pm en la ofician de ADEQ, Departamento de Archivo localizado en el 1110 W. Washington St. en Phoenix, AZ. Favor de hablar al teléfono (602) 771-4380 o (800) 234-5677 para solicitar una cita.

Las personas que desean hacer comentarios sobre el Reporte de las Alternativas y el Análisis pueden hacer sus comentarios por escrito y enviarlos al Departamento de:

Departamento de Calidad Ambiental de Arizona (ADEQ)
dirigidos a Kris Paschall, encargada del Proyecto
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007

y hagan referencia a este listado. Todos los comentarios recibidos serán recopilados y tomados en cuenta.

Comentarios deberán ser fechados antes de enero 5, del año 2007.

Fechado este trigésimo día de noviembre del 2006.

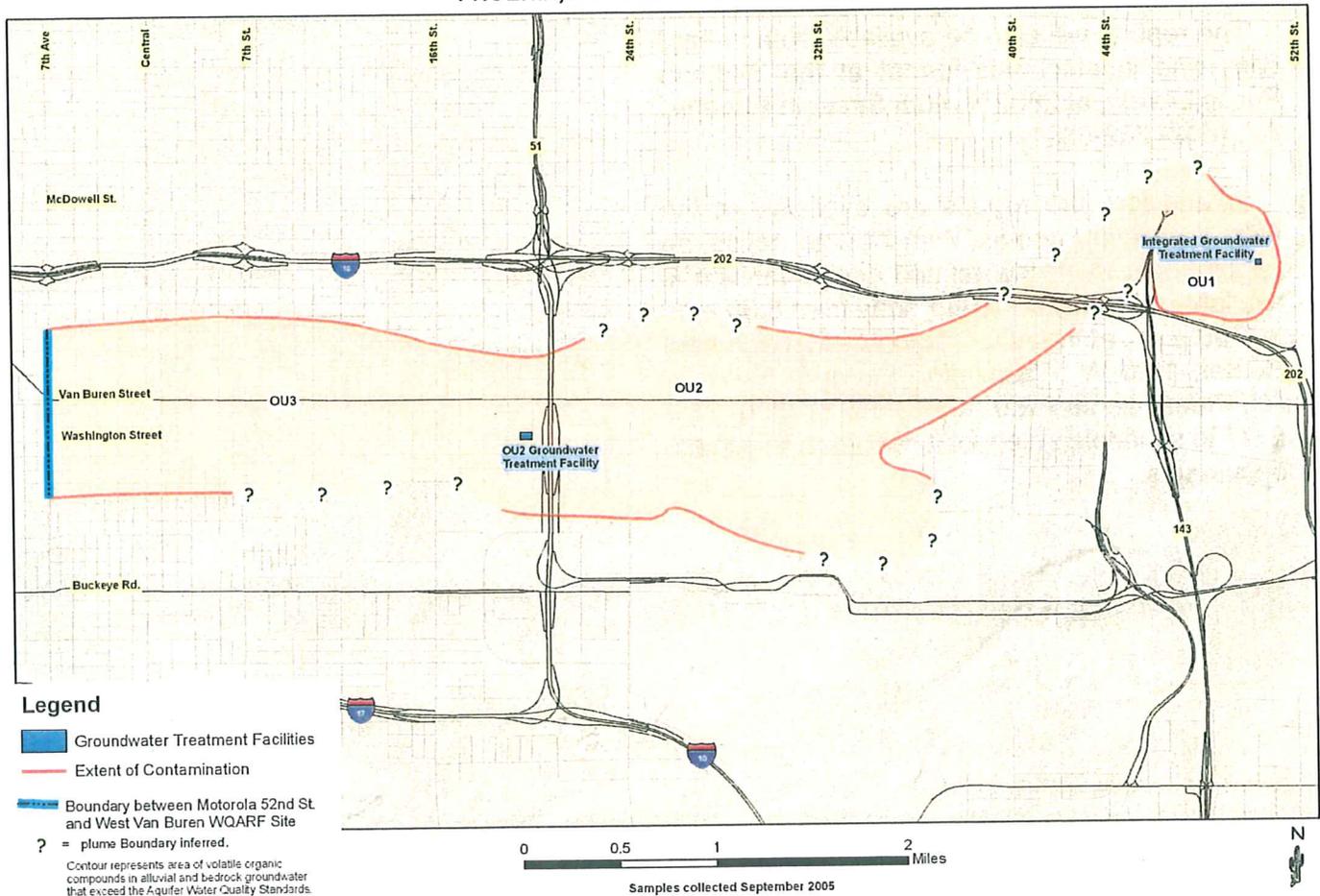
Kris Paschall, encargada del Proyecto
Departamento de Calidad Ambiental de Arizona

30 DAY PUBLIC COMMENT PERIOD

NOTICE OF AVAILABILITY AND OPPORTUNITY TO COMMENT ON THE **FIVE-YEAR REVIEW REPORTS** FOR THE MOTOROLA 52ND STREET SUPERFUND SITE OPERABLE UNITS 1 AND 2

PLEASE TAKE NOTICE: the Arizona Department of Environmental Quality (ADEQ) has available for public comment the Operable Unit 1 (OU1) and Operable Unit 2 (OU2) Five Year Review Reports dated September 2006 for the Motorola 52nd Street Superfund Site in Phoenix, AZ. The Motorola 52nd Street Site is located in the central and eastern portions of Phoenix, AZ. The Site boundaries encompass an area of groundwater contamination extending approximately from 52nd Street on the east to 7th Avenue on the west and from Oak Street on the north to Buckeye Road to the south (see map). Historical spills or releases of industrial solvent seeped downward through the soil, mixed with the groundwater, and spread to the west.

MOTOROLA 52ND STREET SUPERFUND SITE PHOENIX, ARIZONA SITE BOUNDARY



To facilitate cleanup of the groundwater, the Motorola 52nd Street Site is divided into three separate areas or Operable Units (OUs). There are treatment plants located in OU1 (at the former Motorola facility on McDowell Road and 52nd Street) and OU2 (at the intersection of 20th and Washington Streets) that are containing and cleaning up the groundwater. Currently, OU3 is in the investigation phase and a cleanup remedy has not yet been selected.

Federal law requires that the regulatory agencies conduct a comprehensive review of the OU1 and OU2 cleanup remedies and to determine if they remain protective of human health and the environment. ADEQ has recently released the OU1 and OU2 Five-Year Review Reports that detail ADEQ's review, evaluations, and findings.

A copy of these reports will be available in hard copy and electronic format at the Burton Barr Central Library, 2nd floor, in the Government Documents section, at 1221 N. Central Avenue, in Phoenix, AZ, (602) 262-4636.

The reports will also be available both in hard copy and in electronic format at the Saguaro Public Library, at 2802 N. 46th Street in Phoenix, AZ, (602) 262-6801.

In addition, the reports are available at the ADEQ office in Phoenix. With 24 hour notice, an appointment to review related documentation is available, Monday through Friday from 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, AZ. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.

PARTIES WISHING TO MAKE COMMENTS regarding the OU1 Five Year Review Report and/or the OU2 Five Year Report may make such comments in writing to:

Arizona Department of Environmental Quality
(ADEQ)
Attention: Kris Paschall, Project Manager
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007

and reference this listing. All comments received will be compiled and a responsiveness summary will be issued.

Comments must be postmarked to ADEQ by January 5, 2007.

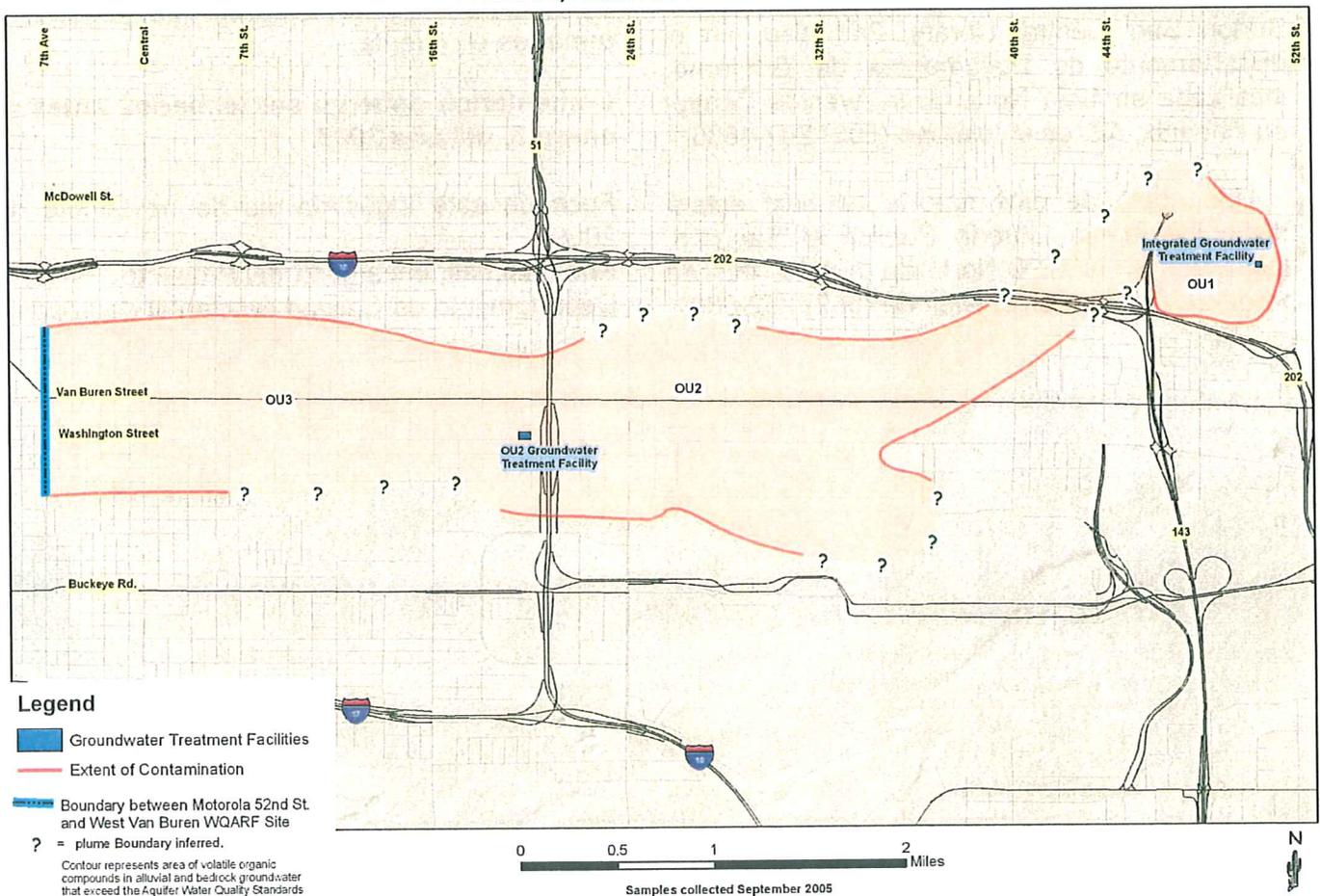
Dated this 30th day of November, 2006.
Kris Paschall, Project Manager
Arizona Department of Environmental Quality

PERIODO DE COMENTARIO PÚBLICO POR 30 DIAS

OPORTUNIDAD PARA HACER COMENTARIOS SOBRE LA EVALUACIÓN DE CADA CINCO AÑOS DEL REMEDIO EN EL SITIO SUPERFUND DE LA PLANTA MOTOROLA CALLE 52, UNIDAD OPERABLES (OU1) Y (OU2)

FAVOR DE TOMAR NOTA: El Departamento de Calidad Ambiental del Estado de Arizona (ADEQ, por sus siglas en inglés) y la Agencia de Protección Ambiental de los EE.UU. (EPA, por sus siglas en inglés) anuncian la oportunidad para que el público pueda hacer comentarios sobre la evaluación de cada 5 años para la limpieza del agua subterránea en el sitio de Superfund Motorola Calle 52 de la Unidad Operable1 (OU1) y la Unidad Operable2 (OU2). Reporte fechado en Septiembre del año 2006. Localizadas en Phoenix, AZ. Los límites del sitio que rodean el área del agua contaminada se extendieron desde la calle 52 hacia el este de la Avenida 7 oeste de la calle Oak siguiendo al Norte de Buckeye Rd, continuando sobre la parte Sur (ver el mapa). Históricamente los derrames de los solventes de la industria se filtraron debajo de la tierra, y se mezclaron con el agua subterránea extendiéndose hacia el lado Oeste.

**MOTOROLA 52ND STREET SUPERFUND SITE
 PHOENIX, ARIZONA SITE BOUNDARY**



Para facilitar la limpieza del agua subterránea de la Planta Motorola Calle 52, el sitio se dividió en tres diferentes áreas separadas Unidades Operables. Uno de los tratamientos se encuentra localizado en la OU1, área situada mas al este de la calle 52 y el otro esta localizado en la OU2 en la intersección de la calle 20 y Washington. Estas dos unidades mantienen el tratamiento sobre el agua subterránea. Actualmente la Unidad Operable 3 (OU3) esta en investigación y el remedio de limpieza no ha sido seleccionado.

La ley Federal requiere que las agencias conduzcan una extensa revisión sobre las unidades de operación OU1 y OU2 y remedios de limpieza y se determine si siguen protegiendo la salud del ser humano y el medio ambiente. Recientemente ADEQ hizo público el reporte de la evaluación de los 5 años a las Unidades Operables OU1 y OU2.

Una copia de este reporte estará disponible por escrito y la otra la puedes encontrar en el sitio electrónico en las siguientes direcciones: Burton Barr Central Library, 2nd piso, en el departamento de Documentos de Gobierno, localizada en 1221 Norte de la Avenida Central en Phoenix, AZ, en el teléfono (602) 262-4636.

Una copia de este reporte también estará disponible en la Librería Publica el Saguaro, localizada en el 2802 Norte de la calle 46th en Phoenix, Arizona en el teléfono (602) 262-6801.

También estarán disponible en el Departamento de Calidad Ambiental (ADEQ, por su siglas en Inglés). El reporte deberá ser solicitado con 24 horas de anticipación en la oficina de Phoenix, para poder revisar los archivos solicite una cita con 24 horas de anticipación de Lunes a Viernes de 8:30 am hasta 4:30 pm en la oficina de ADEQ, Departamento de Archivo localizado en el 1110 W. Washington St. en Phoenix, AZ. Favor de hablar al teléfono (602) 771-4380 o (800) 234-5677 para solicitar una cita.

Las personas que desean hacer comentarios sobre el Reporte de OU1 y los 5 años de revisión de la Unidad OU2 pueden hacer sus comentarios por escrito y enviarlos al Departamento de:

Departamento de Calidad Ambiental de Arizona (ADEQ)
dirigidos a Kris Paschall, encargada del Proyecto
1110 W. Washington Street, 4415B-1
Phoenix, AZ 85007

y hagan referencia a este listado. Todos los comentarios recibidos serán recopilados y tomados en cuenta.

Comentarios deberán ser fechados antes de enero 5, del año 2007.

Fechado este trigésimo día de noviembre del 2006.

Kris Paschall, encargada del Proyecto
Departamento de Calidad Ambiental de Arizona

Motorola 52nd Street Superfund Site May 2007

This is a publication of the Arizona Department of Environmental Quality (ADEQ) and the U.S. Environmental Protection Agency (EPA). The purpose of this fact sheet is to update the community regarding the Motorola 52nd Street Superfund Site located in the City of Phoenix in Maricopa County. *Italicized terms are defined in the glossary located at the end of this fact sheet.*

Any ADEQ translation or communication in a language other than English is unofficial and not binding on the State of Arizona. (Cualquier traducción o comunicado de ADEQ en un idioma diferente al inglés no es oficial y no sujetará al Estado de Arizona a ninguna obligación jurídica.)

SITE HISTORY & BACKGROUND

The Motorola 52nd Street Site is located in a residential and commercial area in the central and eastern portions of Phoenix, Arizona. The site boundaries encompass an area of *groundwater contamination* extending from 52nd Street on the east to 7th Avenue on the west and from Oak Street on the north to Buckeye Road on the south (see map). Historical spills or releases of commercial and industrial solvents, including *trichloroethene (TCE)* and *trichloroethane (TCA)*, seeped downward through the ground, mixed with the groundwater, and spread to the west.

The groundwater in this area, which is 40-90 feet below ground surface, is not being used for drinking water purposes. The City of Phoenix supplies drinking water from sources outside of the Site that is tested to ensure compliance with regulatory standards. If you own a well located within the Superfund Site, please call Linda Mariner at (602) 771-4294.

The former Motorola facility located at 52nd Street and McDowell Road, the Honeywell facility located at 34th Street and Air Lane, and potentially other facilities in the area have had releases of TCE and/or TCA to the groundwater. Since Freescale Semiconductor (a successor of Motorola) and Honeywell have been identified as *Potentially Responsible Parties (PRPs)*, they have been conducting the work to investigate and cleanup the contamination with

close oversight from ADEQ and EPA.

The Motorola 52nd Street Site was added to the National Priorities List (a list of hazardous waste sites eligible for cleanup under the Federal *Superfund* Program) in 1989. EPA then delegated its authority to ADEQ to remain the lead oversight agency.

To facilitate cleanup, the site is divided into three separate areas, or Operable Units (OUs). The OU1 groundwater treatment system is located at the former Motorola facility and has been in operation since 1992. The OU2 groundwater treatment system is located at 20th and Washington Streets and has been in operation since 2001. The third OU has been designated a study area because the extent of groundwater contamination is still being investigated by EPA. ADEQ is the lead agency for remediation at OU1 and will take on the lead agency role at OU2 during 2007. EPA is the lead agency for groundwater investigations at OU3 and is considering an *enforcement* approach for future OU3 cleanup work.

FACILITY INVESTIGATIONS

Honeywell has been conducting a remedial investigation of soil and groundwater contamination at its 34th Street facility since 1999. In December 2005, Honeywell submitted a report called the Focused Remedial Investigation Report that summarizes the history of the facility, chemical use and disposal, investigations that have been done at the facility, the nature and extent of their contamination, analyses and conclusions. ADEQ is currently reviewing this report to determine if the investigation at Honeywell's 34th Street facility is complete.

To date, 22 other facilities located in OU2 and OU3 have been identified by EPA as possibly contributing to the groundwater contamination. Investigations of soil and groundwater have been initiated at many of these facilities in order to determine if they are a PRP to the Motorola 52nd Street Superfund Site. ADEQ's search for additional facilities located in OU2 that may have had releases of TCE and/or TCA is on-going.

OPERABLE UNIT I

The OU1 treatment system is an interim remedy that was installed in 1992 to stop the groundwater contamination

from moving further west. ADEQ is working towards selecting a final OUI remedy that can meet groundwater cleanup goals. First, a more detailed evaluation of the contamination is necessary in order to better determine where it is and, second, can the contamination be removed to restore the aquifer to acceptable levels. The evaluation of groundwater contamination is being conducted through the installation of additional monitoring wells in the OUI area. In addition, a pilot test will be conducted in the bedrock to determine if contamination can be sufficiently removed. Freescale has submitted reports containing their analyses of the current remedy and its longevity, potential alternative remedies, and whether the goal to restore the aquifer can be obtained.

OPERABLE UNIT 2

The OU2 treatment system is also an interim remedy, and was installed in 2001 to stop groundwater contamination from moving west of the 20th Street area. Over the past two years, Honeywell and Freescale have installed 19 additional groundwater wells in OU2 in order to more effectively measure the performance of the treatment system in capturing contaminated groundwater. Freescale and Honeywell submit a report annually that includes an evaluation of the data collected during the past year and provides conclusions regarding the effectiveness of the OU2 treatment system to contain the groundwater and reduce the contaminant concentrations in the aquifer. The OU2 groundwater remedy will require the same evaluation currently being conducted at OUI in order for a final remedy to be selected.

OPERABLE UNIT 3

The OU3 Study Area was established in 1997, and EPA has been conducting a groundwater investigation of the area to define the extent of contamination, and identify any potential sources to the contamination. This year, the final phase of the groundwater investigation for OU3 will be initiated. The investigation will include installing additional groundwater monitoring wells, conducting a treatability study, and collecting soil gas samples to evaluate the potential for vapor intrusion (migration of volatiles from the groundwater into buildings). Once the groundwater investigation is completed, EPA will initiate the groundwater remedy selection process and propose a final remedy for OU3.

HOW CAN YOU GET INVOLVED?

A Community Advisory Group (CAG) was established for the Motorola 52nd Street Superfund Site in May of 2001 and currently has nine members. The CAG is a group of concerned citizens that review, discuss, and provide input on the clean up of contaminated groundwater and soil. The responsibilities of the CAG include:

- Participating in community outreach
- Providing assistance in distributing information from ADEQ and EPA to the community
- Ensuring that the opinions and concerns of the residents are accurately understood by ADEQ and EPA
- Providing comments to ADEQ and EPA on various documents

If you would like to be on the Motorola 52nd Street Superfund Site CAG, please contact Linda Mariner or Viola Cooper, Community Involvement Coordinators, for more information.

COMMUNITY INVOLVEMENT PLAN (CIP) UPDATE

ADEQ and EPA are in the process of updating the CIP. The purpose of the CIP is to align our public involvement program with the current needs of the community at the Motorola 52nd Street Superfund Site. In an effort to reach out and get input from the community, we would like to hear from you. Please send any comments or questions to Viola Cooper or Linda Mariner.

WOULD YOU LIKE MORE INFORMATION ABOUT THE SITE?

There are a number of ways to obtain more information regarding the Motorola 52nd Street Site:

- The project staff contact information is listed below as well as the link to the ADEQ and EPA websites, and the location of the repositories where documents can be reviewed and copied.
- CAG meetings are open to the public and are announced on the ADEQ website as well as a mailing to the Motorola 52nd Street Site mailing list.
- If you would like to be on the Motorola 52nd Street mailing list, please complete and return the mailing form included in this newsletter. Additionally, more detailed fact sheets regarding specific issues are provided to the Motorola 52nd Street mailing list.
- If you would like a presentation for your community group, contact Viola Cooper or call EPA's toll free message line.

EPA provides a Technical Assistance Grant (TAG) to qualified citizen groups affected by a Superfund site to hire an independent technical advisor to help them evaluate and comment on site-related documents. The Lindon Park Neighborhood Association was awarded the TAG in September of 2004.



Updating the Community Involvement Plan (CIP) Actualización del Plan de Participación Comunitaria

Any ADEQ translation or communication in a language other than English is unofficial and not binding on the State of Arizona.
Cualquier traducción o comunicado de ADEQ en un idioma diferente al inglés no es oficial y no sujetará al Estado de Arizona a ninguna obligación jurídica.

The CIP is written to help community members understand the ongoing cleanup activities at the Motorola 52nd Street Superfund Site. In an effort to better reach out to the community, we would like to hear from you as soon as possible. Please complete:

[Nos gustaría saber de usted en nuestro esfuerzo por comunicarnos de una manera mejor con la comunidad.]

First Name: _____ Last Name: _____
[Nombre] [Apellido]

Address: _____
[Dirección]

City: _____ Zip code: _____
[Ciudad] [Código Postal]

Email address: _____
[Correo Electrónico]

How long have you lived or worked in the Motorola Superfund site area? _____
[¿Cuanto tiempo ha vivido o ha trabajado en el área del Sitios Este del Central de Phoenix del Superfondo?]

Are you interested in learning more or becoming involved with the site cleanup? Yes/Sí No/No
[¿Está interesado en aprender más o participar en la limpieza del sitio?]

Do you have issues or concerns regarding the site cleanup? _____
[¿Tiene alguna preocupación o algún tema a tratar con respecto a la limpieza del sitio?]

Would you like to be added or continue to be on the ADEQ/EPA shared mailing list for site information?
 Yes/Sí No/No [¿Quisiera estar en la lista de correo para el Sitio?]

May we contact you by phone or in person to ask you additional questions? Yes/Sí No/No
[¿Podríamos comunicarnos con usted por teléfono o en persona para hacerle unas preguntas?]

If yes, please give us your telephone number and tell us the best time to call you: _____
[Si marcó sí, por favor incluya su número de teléfono y la hora más conveniente para hablarle.]

Best phone number to call _____ When? _____
[El mejor número de teléfono a llamar] [¿Cuándo podemos llamar?]

Would you like to receive future mailings in English or in Spanish? (please check box)
¿Preferiría recibir envíos por correo en inglés o en español? (marque su preferencia)

After completion please fold and tape this form before mailing (no staples). Thank you.
[Después de llenar la solicitud, por favor de doblarla y sellarla (no grapas) antes de enviarla. Muchas Gracias.]

INFORMATION REPOSITORIES

- ADEQ Main Office located at 1110 West Washington Street, Phoenix, AZ 85007. Please call the ADEQ Records Management Center at (602) 771-4380, or toll-free in Arizona at 800- 234-5677, for a file review appointment.
- Reference Section of the Burton-Barr Branch of Phoenix Library located at 1221 N. Central Avenue, Phoenix, (602) 262-4636.
- Staff Office (behind check out desk) at the Saguaro Branch Phoenix Library located at 2802 N. 46th Street, Phoenix, (602) 262-6801.
- U.S. EPA Superfund Records Center located at 95 Hawthorne Street, Ste. 403S, San Francisco, CA, (415) 536-2000.

WEB SITE INFORMATION

For more detailed site information, you may access ADEQ's Superfund Programs web page at:
www.azdeq.gov/envIRON/waste/sps.html

or EPA's waste information web page at:
www.epa.gov/region09/waste/sfund.

ADEQ CONTACTS

Harry Hendler, ADEQ Project Manager, OUI and OU2
(602) 771- 4609 or (800) 234- 5677 Ext. 771- 4609
E-mail: hh3@azdeq.gov

Nicole Coronado, ADEQ Project Manager, OU3
(602) 771- 4245 or (800) 234- 5677 Ext. 771- 4245
E-mail: nml@azdeq.gov

Robert Peebles, ADEQ Project Manager, OU3
(602) 771- 4196 or (800) 234- 5677 Ext. 771- 4196
E-mail: rp5@azdeq.gov

Linda Mariner, Community Involvement Coordinator
(602) 771- 4294 or (800) 234- 5677 Ext. 771- 4294
E-mail: lph@azdeq.gov

Hearing impaired persons may call ADEQ's TDD line at
(602) 771-4829.

EPA CONTACTS

Leah Butler, EPA Project Manager, OUI and OU2
(415) 972-3199 or (800) 321-3075
E-mail: butler.leah@epa.gov

Janet Rosati, EPA Project Manager, OU3
(415) 972-3165 or (800) 321-3075
E-mail: rosati.janet@epa.gov

Viola Cooper, EPA Community Involvement Coordinator
(415) 972-3243 or (800) 321-3075
E-mail: cooper.viola@epa.gov

GLOSSARY

Contamination - Any hazardous substance released into the environment.

Enforcement - EPA, state, or local legal actions to obtain compliance with environmental laws, rules, regulations, or agreements and/or obtain penalties or criminal sanctions for violations. EPA can take enforcement actions to require potentially responsible parties to clean up a Superfund site or pay for the cleanup.

Groundwater - Water found beneath the earth's surface that fills pores between materials such as sand, clay or gravel. In aquifers, groundwater occurs in sufficient quantities that it can be used for drinking water, irrigation and other purposes.

Potentially Responsible Party (PRP) - An individual or company that is potentially responsible for all or part of the contamination at a State or Federal Superfund site. Whenever possible, EPA and ADEQ require PRPs, through administrative and legal actions, to clean up or pay for the cleanup of hazardous substances at sites they have contaminated.

Remediation - Actions taken to address the release of a hazardous substance that could affect people or the environment. The term "cleanup" is sometimes used interchangeably with the terms remedial action, removal action, response action, and remedy. Remediation prevents continued migration of contaminants, removes and treats contaminants until cleanup levels are achieved, and prevents future human and environmental exposure to the contaminants.

Remedial Investigation (RI) - An in-depth investigation designed to determine
(1) the nature and extent of contamination,
(2) the sources of the contamination,
(3) the potential risks posed to humans and the environment, and
(4) appropriate cleanup goals.

Site - The geographical boundaries (two dimension, horizontal) of the contaminated environment (groundwater, land, rivers, lakes). A site may be a single manufacturing facility and the associated area, or a larger Superfund site encompassing contamination across many square miles with many potential source facilities.

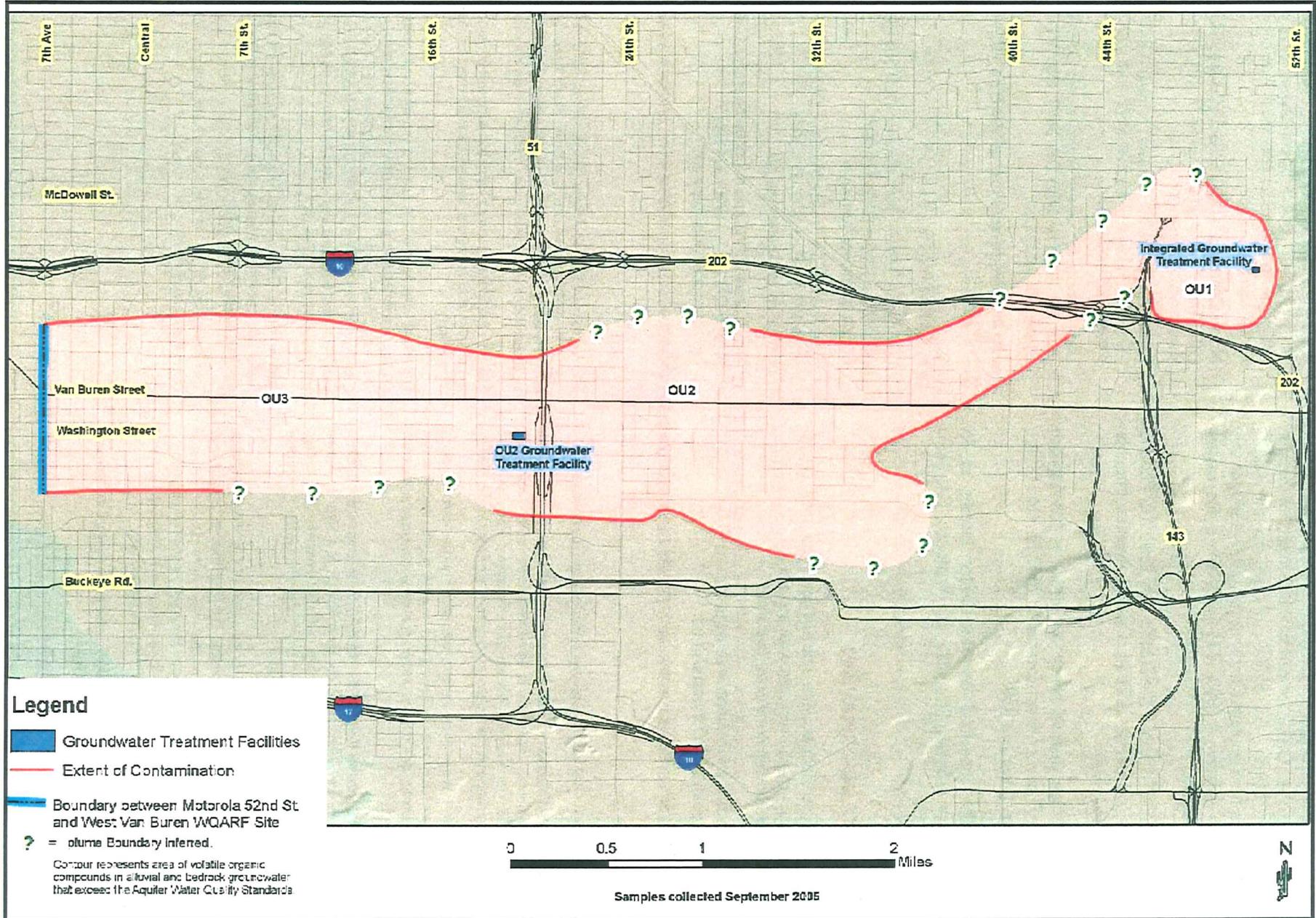
Solvent - A substance (usually a liquid) that is capable of dissolving or dispersing one or more other substances. Solvents are mainly used for cleaning or degreasing machinery.

Superfund - The Federal trust fund that provides for the cleanup of hazardous substances released into the environment, regardless of fault. The Superfund was established under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and subsequent amendments to CERCLA. The term Superfund also is used to refer to cleanup programs designed and conducted under CERCLA.

Trichlorethene (TCE) - A nonflammable, colorless chlorinated solvent that readily evaporates at room temperature. TCE is used mainly for degreasing/drying of metals and cleaning of fabrics.

Trichloroethane (TCA) - A chlorinated solvent similar to TCE used mainly for degreasing/drying of metals.

Motorola 52nd Street Superfund Site / Sitio del Superfondo Motorola de la Calle 52



Sitio del Superfund Motorola de la Calle 52 Mayo 2007

Cualquier traducción o comunicado de ADEQ en un idioma diferente al inglés no es oficial y no sujetará al Estado de Arizona a ninguna obligación jurídica.

*Esta es una publicación del Departamento de Calidad Ambiental de Arizona (ADEQ) y la Agencia de Protección Ambiental de EE.UU. (EPA). El propósito de esta hoja informativa es el de actualizar a la comunidad con respecto al Sitio Superfondo Motorola de la calle 52 ubicado en la ciudad de Phoenix, condado de Maricopa. El Glosario que aparece al final de esta hoja informativa contiene la definición de los términos en *itálicas*.*

HISTORIA Y ANTECEDENTES DEL SITIO

El Sitio Motorola de la calle 52 está ubicado en un área comercial y residencial en partes del centro y el este de Phoenix, Arizona. Los límites del Sitio abarcan un área de contaminación de agua subterránea que se extiende desde la calle 52 en el este hasta la 7 avenida en el oeste, y desde la calle Oak en el norte hasta Buckeye Road en el sur (vea el mapa). Derrames históricos o escapes de disolventes comerciales e industriales, incluyendo tricloroetileno (TCE) y tricloroetano (TCA), se filtraron a través del suelo y se mezclaron con el agua subterránea, desparramándose luego hacia el oeste.

El agua subterránea de esta área, la cual está de 40 a 90 pies debajo de la superficie, no está siendo usada como agua potable. La ciudad de Phoenix suministra agua potable de fuentes externas al Sitio que se somete a pruebas para asegurar su conformidad con los estándares normativos. Si eres dueño de un pozo localizado dentro el Sitio del Superfondo, favor de llamar a Linda Mariner (602) 771-4294.

Las antiguas instalaciones de Motorola ubicadas en la calle 52 y McDowell Road, las de Honeywell ubicadas en la calle 34 y Air Lane, y potencialmente otras facilidades en el área han tenido escapes de TCE y/o TCA al agua subterránea. Desde que Freescale Semiconductor (un sucesor de Motorola) y Honeywell han sido identificados como Partes Potencialmente Responsables (PRPs), ellos han estado conduciendo trabajos de investigación y limpieza de contaminación supervisados de cerca por ADEQ y EPA.

El Sitio Motorola de la calle 52 fue agregado a la Lista de Prioridades Nacionales (una lista de sitios de desechos peli-

gros elegibles para limpieza bajo el Programa Federal de Superfondo) en 1989. EPA delegó su autoridad a ADEQ para que continuara siendo la agencia principal del descuido.

Para facilitar la limpieza, el sitio se divide en tres áreas separadas, o Unidades Operacionales (OUs). La OUI del sistema de tratamiento de aguas subterráneas esta localizada en las antiguas instalaciones de Motorola y ha estado en operación desde 1992. La OU2 del sistema de tratamiento de aguas subterráneas esta localizada en las calles 20 y Washington y ha estado en operación desde 2001. El tercer OU ha sido designado un área del estudio porque la extensión de la contaminación de agua subterránea es investigada todavía por EPA. ADEQ es la agencia principal para la remediación en OUI y tomara el papel principal de la agencia en OU2 sobre el siguiente año. EPA es la agencia principal para investigaciones de agua subterránea en OU3 y está considerando un acercamiento de la aplicación para el trabajo futuro de la limpieza en OU3.

INVESTIGACIÓN DE LAS FACILIDADES

Desde 1999, Honeywell ha estado conduciendo una investigación remediadora de contaminación de suelo y aguas subterráneas en sus facilidades de la calle 34. En diciembre de 2005, Honeywell presentó el reporte Informe Enfocado a la Investigación de Remediación, el cual resumía la historia de sus instalaciones, uso y eliminación de químicas, investigaciones realizadas en estas facilidades, la naturaleza y la extensión de su contaminación, el analisis y las conclusiones. Actualmente este reporte está siendo examinado por ADEQ para determinar si la investigación de las facilidades en la calle 34 de Honeywell está completa.

A la fecha, otras 22 instalaciones ubicadas en OU2 y OU3 han sido identificadas por EPA como contribuyendo posiblemente a la contaminación de la agua subterránea. En muchas de estas facilidades se han iniciado investigaciones de suelo y aguas subterráneas para determinar si contribuyeron a la contaminación del Sitio Superfondo Motorola de la calle 52. ADEQ continúa investigando instalaciones adicionales ubicadas en la OU2 donde pueden haber ocurrido escapes de TCE y/o TCA.

UNIDAD OPERACIONAL I

El sistema de tratamiento de la OUI es un remedio provisional que fue instalado en 1992 para parar la contaminación del agua subterránea que continuara moviéndose

aún más hacia el oeste. ADEQ está trabajando para escoger un remedio final para la OUI que satisfaga las metas de limpieza del agua subterránea. Primero es necesario hacer una evaluación más detallada de la contaminación para mejor determinar donde está localizada la contaminación del agua subterránea, y segundo, si es posible removerla para restaurar la capa acuífero a una calidad aceptable. La evaluación de contaminación subterránea se está llevando a cabo por la instalación de pozos adicionales de monitoreo de aguas subterráneas en el área de la OUI. Además, una prueba piloto se realizará en el lecho de roca para determinar si la contaminación se puede quitar suficientemente. Freescale ha sometido reportes que contienen su análisis del remedio actual y su longevidad, posibles remedios alternativos, y si el objetivo de restaurar el acuífero puede ser encontrado.

UNIDAD OPERACIONAL 2

El sistema del tratamiento OU2 es también un remedio provisional, y se instaló en 2001 para que la contaminación de agua subterránea no se pueda mover del oeste de la area cerca de la Calle 20. En los últimos dos años, Honeywell y Freescale han instalado pozos adicionales de monitoreo de aguas subterráneas en el área de la OU2 para más efectivamente medir el desempeño del sistema de tratamiento para capturar agua subterránea contaminada. Freescale y Honeywell someten un reporte anualmente que incluye una evaluación de los datos acumulados durante el año pasado y proporciona las conclusiones con respecto a la eficacia del sistema del tratamiento OU2 para contener la agua subterránea y reducir las concentraciones de contaminante en el acuífero. El remedio para el agua subterránea de OU2 requerirá la misma evaluación de desempeño conducida actualmente en la OUI para escoger un remedio final.

UNIDAD OPERACIONAL 3

El área del estudio OU3 se estableció en 1997, y EPA ha estado realizando una investigación de agua subterránea del área para definir la extensión de la contaminación e identificar alguna fuente potencial a la contaminación. Este año se iniciará la fase final de la investigación del agua subterránea para la OU3. La investigación incluirá la instalación de pozos adicionales de monitoreo de agua subterránea, conduciendo el desarrollo de un estudio de tratabilidad, y colección de muestras de gas del suelo para evaluar el potencial de intrusión del vapor (migración de volátiles de agua subterránea en edificios). Una vez que se completa la investigación de agua subterránea, EPA iniciará el proceso de selección de remedio para agua subterránea y seleccionará un remedio final para la OU3.

CÓMO PUEDE USTED PARTICIPAR

En mayo de 2001 se estableció un grupo de consulta comunitario (CAG) para el Sitio Superfondo Motorola de la

calle 52, que cuenta actualmente con nueve miembros. El CAG es un grupo de ciudadanos concientes que revisan, discuten, y aportan sus puntos de vista sobre la limpieza del agua subterránea contaminada. Las responsabilidades del CAG incluyen:

- Participar en actividades de enlace comunitario
- Ayudar con la distribución de información de ADEQ y EPA a la comunidad
- Asegurar que las opiniones y preocupaciones de los residentes son correctamente interpretadas por ADEQ y EPA;
- Proporcionar comentarios a ADEQ y EPA en varios documentos
- Ensure that the opinions and concerns of the residents are accurately understood by ADEQ.

Si quiere formar parte del CAG del Sitio del Superfondo Motorola de la Calle 52, contacte a:

Linda Mariner
Coordinadora de Participación Comunitaria de ADEQ
(602) 771-4294
E-mail: mariner.linda@azdeq.gov

Viola Cooper
Coordinadora de Participación Comunitaria de EPA
(415) 972-3243 o a la línea de mensaje (800) 321-3075
Email: cooper.viola@epa.gov

Personas con déficit auditivo deben llamar a la Línea TDD de ADEQ: (602) 771-4829

¿LE INTERESA SABER MÁS ACERCA DEL SITIO?

Hay varios modos de obtener más información acerca del Sitio Motorola de la calle 52:

- Debajo se lista el personal de contacto para información del proyecto así como también las direcciones de los depósitos donde los documentos pueden ser examinados y copiados.
- Las juntas de CAG están abiertas al público. Las fechas de estas juntas se anuncian en el sitio Web de ADEQ y en avisos que se envían por medio de la lista de correo del Sitio Motorola de la calle 52.
- Si quiere estar en la lista de correo del Sitio de Motorola, complete y regrese el formulario de correo incluido en esta hoja informativa. Además, a esta lista de correo se envían hojas de datos más detalladas con respecto a asuntos específicos.
- Si usted quisiera una presentación a su grupo comunitario, contacte a Viola Cooper, o llame a la línea de mensaje sin cargo de EPA.

EPA proporciona una beca de asistencia técnica (TAG) a grupos cualificados de ciudadanos afectados por un Sitio de Superfondo para la contratación de un consejero técnico independiente que les ayude a evaluar y comentar acerca de



Updating the Community Involvement Plan (CIP) Actualización del Plan de Participación Comunitaria

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The CIP is written to help community members understand the ongoing cleanup activities at the Motorola 52nd Street Superfund Site. In an effort to better reach out to the community, we would like to hear from you as soon as possible. Please complete:

[Nos gustaría saber de usted en nuestro esfuerzo por comunicarnos de una manera mejor con la comunidad.]

First Name: _____ Last Name: _____
[Nombre] [Apellido]

Address: _____
[Dirección]

City: _____ Zip code: _____
[Ciudad] [Código Postal]

Email address: _____
[Correo Electrónico]

How long have you lived or worked in the Motorola Superfund site area? _____
[¿Cuanto tiempo ha vivido o ha trabajado en el área del Sitio Este del Central de Phoenix del Superfondo?]

Are you interested in learning more or becoming involved with the site cleanup? Yes/Sí No/No
[¿Está interesado en aprender más o participar en la limpieza del sitio?]

Do you have issues or concerns regarding the site cleanup? _____
[¿Tiene alguna preocupación o algún tema a tratar con respecto a la limpieza del sitio?]

Would you like to be added or continue to be on the ADEQ/EPA shared mailing list for site information?
 Yes/Sí No/No [¿Quisiera estar en la lista de correo para el Sitio?]

May we contact you by phone or in person to ask you additional questions? Yes/Sí No/No
[¿Podríamos comunicarnos con usted por teléfono o en persona para hacerle unas preguntas?]

If yes, please give us your telephone number and tell us the best time to call you: _____
[Si marcó sí, por favor incluya su número de teléfono y la hora más conveniente para hablarle.]

Best phone number to call _____ When? _____
[El mejor número de teléfono a llamar] [¿Cuándo podemos llamar?]

Would you like to receive future mailings in English or in Spanish? (please check box)
¿Preferiría recibir envíos por correo en inglés o en español? (marque su preferencia)

After completion please fold and tape this form before mailing (no staples). Thank you.
[Después de llenar la solicitud, por favor de doblarla y sellarla (no grapas) antes de enviarla. Muchas Gracias.]

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LINDA MARINER
COMMUNITY INVOLVEMENT COORDINATOR
1110 W. WASHINGTON STREET, 4415B-1
PHOENIX, AZ 85007-9973



documentos relacionado con los sitios. La Asociación del Barrio de Lindon Park recibió una TAG en septiembre de 2004. El punto de contacto de este grupo TAG es la Sra. Mary Moore. Puede contactarla llamando al (602) 686-7267 o por e-mail al m.i.moore@usa.net.

DEPÓSITOS DE INFORMACIÓN

- Oficina Principal de ADEQ
ADEQ Record Center (Centro de Registros)
1110 W. Washington St., Phoenix, AZ 85007
(602) 771-4380 o sin cargo en Arizona al
(800) 234-5677, para una cita de revisión de archivos.
- U.S. EPA - Superfund Records Center (Centro de Registros del Superfondo - EPA EE.UU.)
95 Hawthorne Street, Ste. 403S
San Francisco, CA 94105-3901
(415) 536-2000
- City of Phoenix Public Library
Saguaro Branch Staff Office (detrás del escritorio de recepción)
2808 N. 46th St., Phoenix, AZ 85008
(602) 262-6801
- City of Phoenix Public Library
Burton Barr Branch Reference Section
1221 N. Central Ave., Phoenix, AZ 85004
(602) 262-4636

INFORMACIÓN DEL SITIO WEB

Para información más detallada acerca del Sitio, puede entrar a la página Web de los Programas de Superfondo de ADEQ en el www.azdeq.gov/environ/waste/sps.html o a la página Web de información de desperdicios de EPA en el www.epa.gov/region09/waste/sfund.

CONTACTOS ADEQ

Juana Bonilla
(602) 771-4189 or (800) 234-5677 Ext. 771-4189
E-mail: jsb@azdeq.gov

Personas con déficit auditivo deben llamar a la Línea TDD de ADEQ: (602) 771-4829.

CONTACTOS EPA

Leah Butler, Gerente de Proyecto, OUI y OU2 de EPA
(415) 972-3199 or (800) 321-3075
E-mail: butler.leah@epa.gov

Janet Rosati, Gerente de Proyecto, OU3 de EPA
(415) 972-3165 or (800) 321-3075
E-mail: rosati.janet@epa.gov

Viola Cooper, Coordinadora de Participación Comunitaria de EPA
(415) 972-3243 or (800) 321-3075
E-mail: cooper.viola@epa.gov

GLOSSARY

Contaminación - Una sustancia peligrosa liberada al medio ambiente.

Aplicación - EPA, el estado, o demandas legales locales para obtener conformidad con leyes ambientales, reglas, regulaciones, o acuerdos y/o obtener penas o sanciones criminales para violaciones. El EPA puede tomar acciones de imposición para requerir que partidos potencialmente responsables limpiaran un sitio de Superfondo o paga para la limpieza.

Agua subterránea - Agua encontrada debajo de la superficie de la tierra que llena los poros entre materiales como arena, arcilla o grava. La agua subterránea en acuíferos ocurre en suficientes cantidades que puede ser utilizada para el agua potable, la irrigación y otros propósitos.

Parte Potencialmente Responsable (PRP) - Un individuo o compañía potencialmente responsable por toda o parte de la contaminación de un Sitio de Superfondo federal o estatal. Siempre que es posible, EPA y ADEQ requieren, por medio de acciones legales administrativas, que el/los PRPs, limpien o paguen por la limpieza de sustancias peligrosas en los sitios que ellos han contaminado.

Remediación - Acciones tomadas dirigidas al escape de sustancias peligrosas que puedan afectar a gente o al medio ambiente. El término "cleanup" (limpieza) es a veces intercambiable con acciones correctivas, acciones de respuesta, y remedio. La remediación previene la continua migración de contaminantes, remueve y trata los contaminantes hasta que se alcanzan los niveles de limpieza, y previene futuras exposiciones humanas y medio ambientales a esos contaminantes.

Investigación Correctiva (RI) - Investigación a fondo diseñada para determinar (1) la naturaleza y extensión de la contaminación, (2) las fuentes de contaminación, (3) los riesgos potenciales que presentan a humanos y al medio ambiente, y (4) metas de limpieza apropiadas.

Sitio - Los límites geográficos (bidimensional, horizontal) del medio ambiente contaminado (agua subterránea, tierra, ríos, lagos). Un sitio puede ser solamente una facilidad de manufacturación y el área que la rodea, o un Sitio Superfondo más grande que abarca la contaminación a lo largo y ancho de muchas millas cuadradas con muchas fuentes de facilidades potenciales.

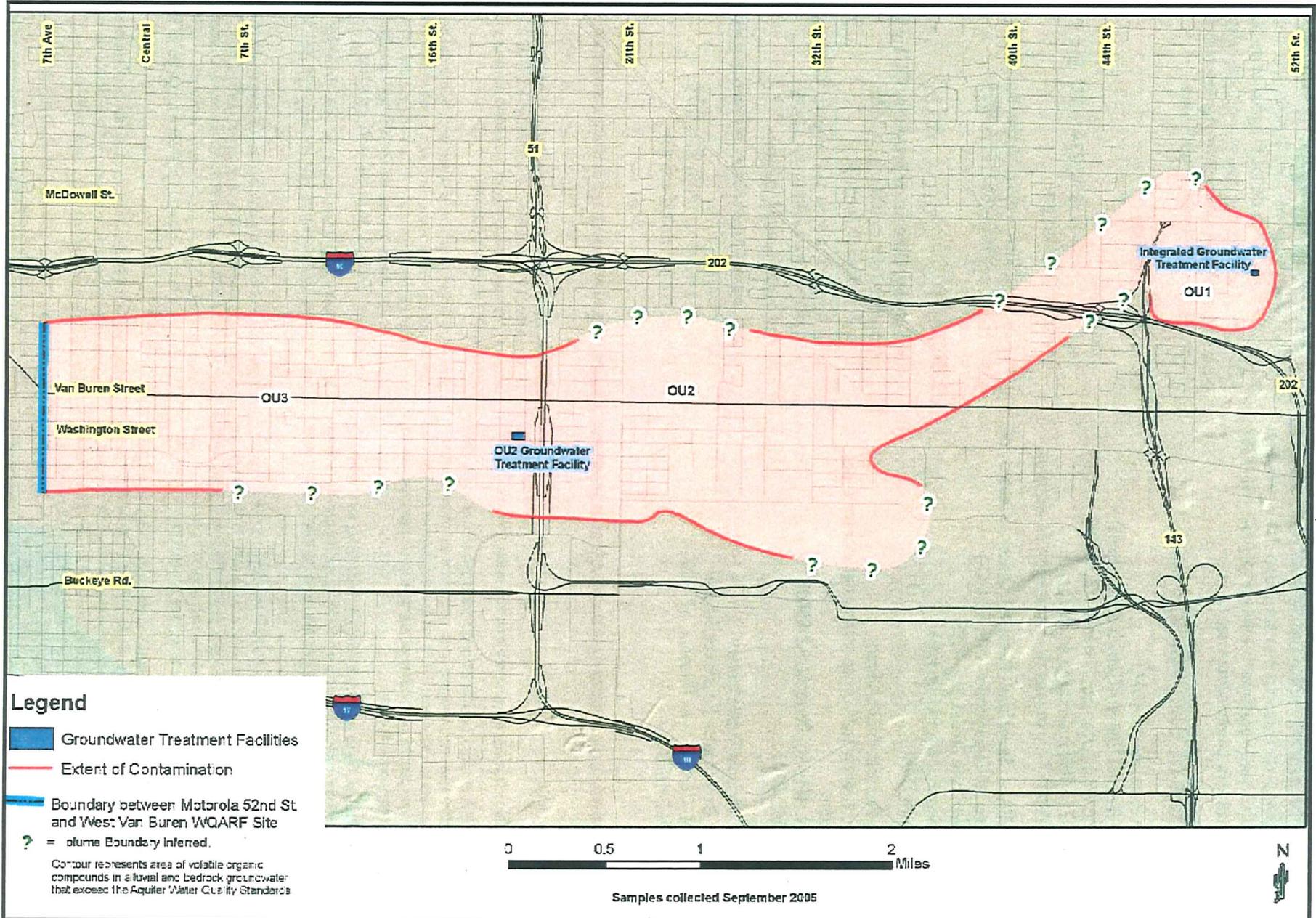
Solvente - Sustancia (generalmente líquida) capaz de disolver o dispersar una o más sustancias. Los solventes se usan principalmente para limpiar o desgrasar maquinaria.

Superfund - El fondo fiduciario federal que asegura la limpieza de sustancias peligrosas lanzados en el ambiente, sin tener cuenta la falta. El Superfondo fue establecido en la Respuesta Ambiental Comprensiva, Compensación y Acto de Responsabilidad (CERCLA) y subsecuente enmiendas a CERCLA. El término Superfondo también se utiliza para referirse a programas de limpieza diseñados y conducidos bajo CERCLA.

Tricloroetileno (TCE) - Solvente clorinado no inflamable, incoloro que se evapora rápidamente a temperatura ambiente. El TCE se usa principalmente para el desgrase/secado de metales y limpieza de telas.

Tricloroetano (TCA) - Solvente clorinado similar al TCE usado principalmente para el desgrase/secado de metales.

Motorola 52nd Street Superfund Site / Sitio del Superfondo Motorola de la Calle 52



Honeywell 34th Street Facility November 2008

This is a publication of the Arizona Department of Environmental Quality (ADEQ). The purpose of this fact sheet is to update the community regarding the Honeywell 34th Street Jet Fuel Cleanup Site located in the City of Phoenix in Maricopa County.

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SITE HISTORY & BACKGROUND

The Honeywell 34th Street facility is located within the Operable Unit (OU) 2 portion of the Motorola 52nd Street Superfund site. In addition to an ongoing groundwater cleanup, the Honeywell facility is the site of an underground storage tank (UST) investigation and cleanup of jet fuel for which the Tank Programs Division at ADEQ has regulatory oversight under Arizona's Underground Storage Tank laws. The Environmental Protection Agency (EPA) added the Motorola 52nd Street site to the National Priorities List (Superfund register) in 1989 and delegated ADEQ authority as the lead oversight agency for the investigations of OU1 and OU2. ADEQ is also the lead oversight agency for the UST investigation and cleanup at the Honeywell 34th Street facility under Arizona law and began regulatory oversight in Sept. of 1999 when Honeywell reported the releases of petroleum products to the soil to ADEQ.

UST INVESTIGATION AND CLEANUP

In Sept. 1999, Honeywell reported to ADEQ releases of petroleum products from their UST systems. These releases penetrated vertically through the soil and reached the groundwater resulting in contaminated soil and groundwater, and jet fuel floating on the water table. Dozens of groundwater monitoring wells and soil borings were installed to investigate the full extent of the soil and groundwater contamination and the extent of the jet fuel floating on the water table. The investigation was documented in Site Characterization Reports submitted by Honeywell on Aug. 26, Oct. 9 and Dec. 20, 2002.

The full extent of the petroleum groundwater contamination and the floating jet fuel has been determined by ADEQ and Honeywell so that the size of the problem and cleanup needed is now known. On March 18, 2003 ADEQ

approved characterization of the full extent of the petroleum groundwater contamination and the floating jet fuel. The petroleum groundwater contamination and the floating jet fuel extend approximately 2,400 ft. south of the release points originating on the Honeywell owned facility and extending approximately 1,100 ft. beneath Sky Harbor International Airport. ADEQ approved the Site Characterization Report and required that Honeywell prepare and submit a Corrective Action Plan (CAP) in a letter dated March 18, 2003. To date, Honeywell has installed and monitors 39 monitoring wells located on the Honeywell facility and 27 monitoring wells located at the airport property. In addition to the 66 groundwater monitoring wells, approximately 138 multi-level vapor monitoring points have been installed to monitor soil vapor.

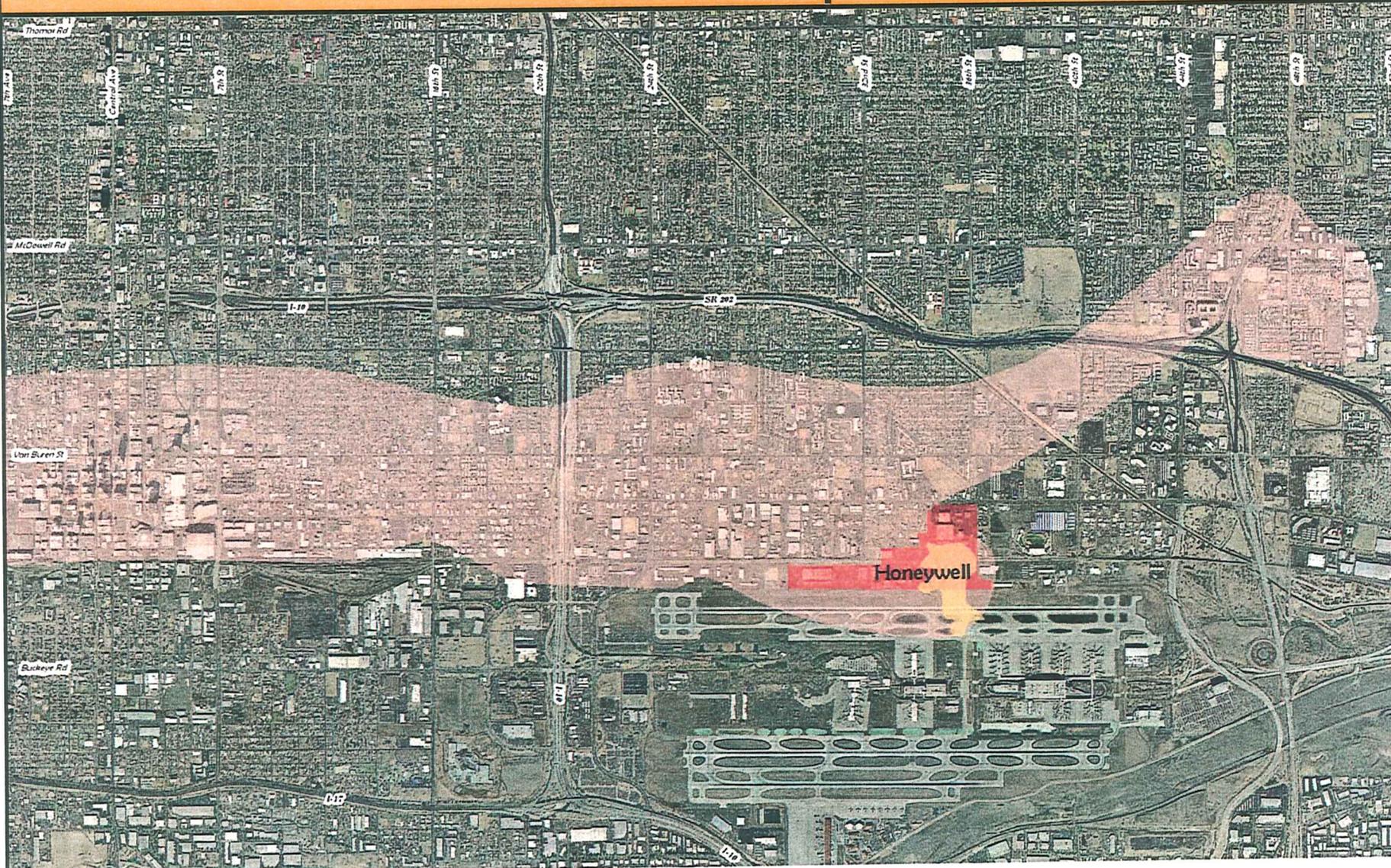
See Maps on next 2 pages.

An extensive public process was conducted prior to approval of the CAP, the Bio-enhanced Soil Vapor Extraction System also known as BSVE and associated air quality permit. Approximately 21 meetings held by the Community Advisory Group, Technical Assistance Group, ADEQ and Maricopa County discussed the UST CAP or the BSVE permit between Feb. 2002 and Aug. 2007. A list of the meetings held is reprinted at the end of this Site Update.

In June 1999, free product recovery was initiated by the use of skimming pumps in a number of the groundwater monitoring wells. To date, 7,270 gallons of jet fuel have been recovered. In Oct. 2005, ADEQ approved Honeywell's CAP to remediate fuel floating on groundwater and soil contamination resulting from releases of fuel from their 34th Street USTs. Prior to approval, the CAP was subject to a 30-day public notice period. Additionally, a public meeting was held to solicit comments on June 29, 2005. The CAP requires pumping of fuel floating on the groundwater and installation of a BSVE to remediate the soil and fuel floating on the groundwater. The CAP approval withheld approval of the proposed monitored natural attenuation to remediate the contaminated groundwater or any jet fuel submerged beneath the water table but stated that natural attenuation would be considered in conjunction with the OU2 final remedy decision. A feasibility study work plan for this final remedy is planned for submission to ADEQ late this year.

Given the chemicals of concern and site geology, the Bio-enhanced Soil Vapor Extraction System and free-product skimming system is the best available technology to safely

Motorola 52nd Street Superfund Site



2

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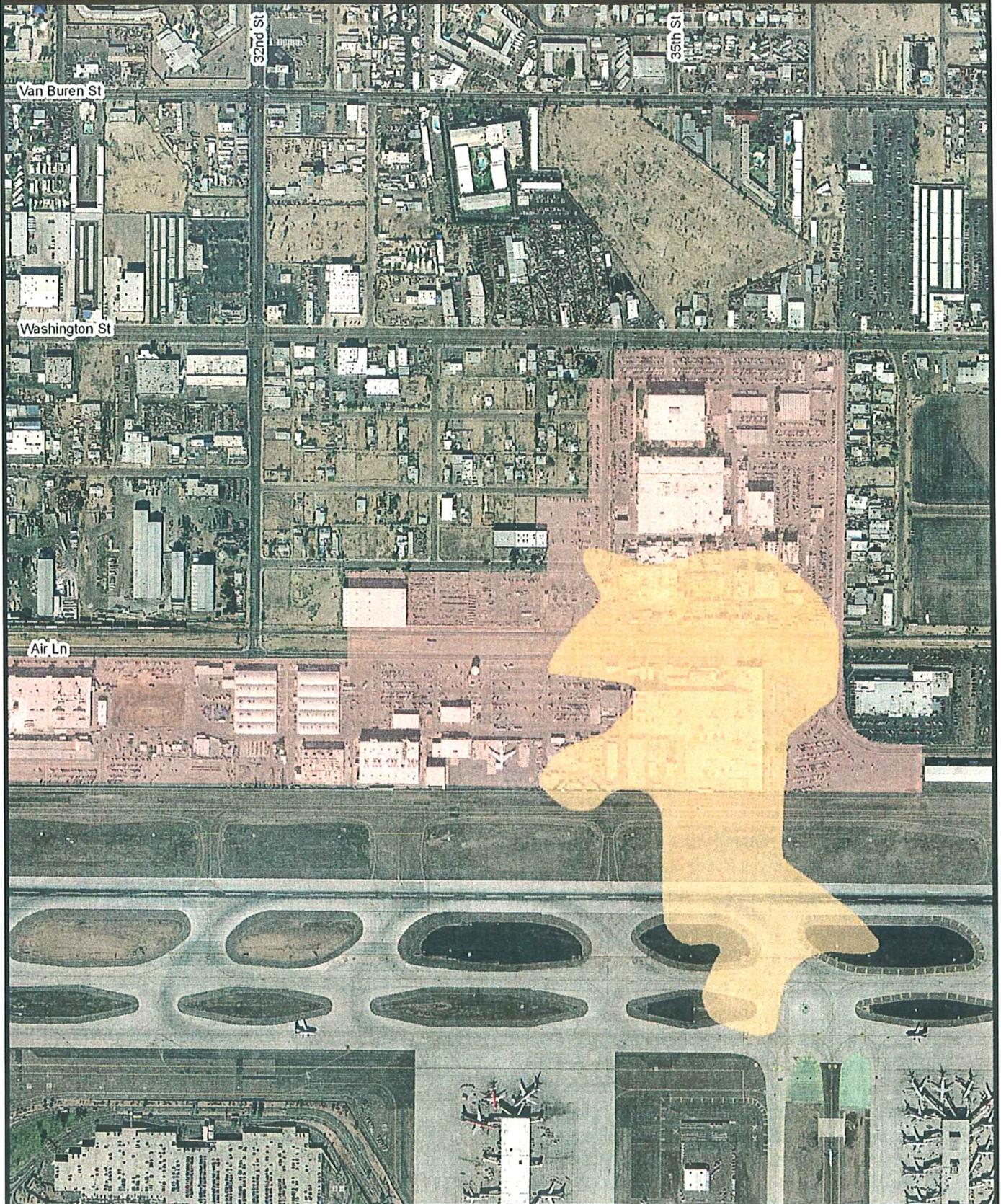
Oct. 24, 2008

Legend

-  Historical Extent of Jet Fuel Floating on Water Table
-  Honeywell 34th St Facility
-  Motorola 52nd St, 2006 Contaminant Plume



Honeywell 34th Street Facility - Jet Fuel Cleanup Site Map



0 0.1 0.2 Miles

October 24, 2008

Legend

-  Historical Extent of Jet Fuel Floating on Water Table
-  Honeywell 34th St Facility



and efficiently remediate the soil contamination and the jet fuel floating on the groundwater. Soil vapor extraction has been an effective technology used for decades at sites across the nation with similar geology and chemicals of concern. The BSVE system is currently being installed and is scheduled to start operation in Nov. 2008.

The vapor recovered by the Bio-enhanced Soil Vapor Extraction System system will be treated by a state-of-the-art treatment system at the surface and was permitted by the Maricopa County Air Quality Department. The Honeywell Title V Air Permit Revision was approved on Dec. 27, 2007 by the Maricopa County Air Quality Department. The system includes redundant air treatment technologies and monitoring to provide multiple safeguards ensuring that the treated air emitted will meet permit conditions and be protective of public health. The technologies include five separate treatment steps: thermal oxidation, quenching, scrubbing, carbon filtration and potassium permanganate filtration.

Because in some portions of the fuel release, the groundwater is also impacted by chemicals of concern of the 52nd Street Superfund Site, primarily chlorinated solvents, the technology to address the petroleum and solvent contaminated groundwater will be evaluated during the feasibility study for the Honeywell facility and OU2. The final groundwater remedy (cleanup) will address all the chemicals of concern for both the Superfund site and the UST releases.

MOTOROLA 52ND STREET SUPERFUND CLEANUP ACTIVITIES

Superfund Cleanup Progress

Significant progress has been made at the Motorola 52nd Street Superfund site.

OPERABLE UNIT 1 UPDATE

- As of Jan. 2008, the OUI groundwater treatment system (located at 5005 E. McDowell Road) has treated approximately 2.8 billion gallons of groundwater and 19,285 pounds of contaminants have been removed since July 1992.
- In July 2008, Freescale (a successor to Motorola) submitted a final Bedrock Extraction Pilot Test Workplan. This work plan set forth the requirements for a pilot study to collect additional bedrock permeability information and to evaluate bedrock groundwater extraction and its potential to remove mass and enhance the extent of vertical capture in the bedrock aquifer. The plan includes the installation of one bedrock extraction well and two bedrock monitoring wells, along with geophysical logging of the boreholes, short-term bedrock extraction well pumping tests, and extended extraction testing and water level and water quality monitoring.
- As of Sept. 30, 2008, the OU2 groundwater treatment system treated over 7.6 billion gallons of groundwater

and removed over 10,567 pounds of contamination since the system began operation in Dec. 2001.

OPERABLE UNIT 1 PAST ACTIVITY

- From Oct. 1984 to June 1987, Motorola completed a remedial investigation/feasibility study (RI/FS). The RI Report summarized the results of source characterization and site investigation. Twenty eight potential sources were identified and investigated. The FS Report established remedial objectives (ROs), identified alternative approaches, and evaluated alternative remedies.
- In June 1988, Motorola submitted a Draft Remedial Action Plan (RAP) to ADEQ that proposed a remedial alternative. In Sept. 1988, ADEQ and EPA issued official approval to implement the recommendations in the RAP in a Record of Decision (ROD) as an interim remedy. The OUI interim remedy selected consists of the following components:
 - On-site extraction and treatment of groundwater from the Courtyard and 50th St. area,
 - On-site extraction and treatment of vapor phase organic contaminants from soils from the Courtyard, Acid Treatment Plant, and Southwest Parking Lot areas,
 - Off-site extraction of groundwater designed to contain contaminant migration at the Old Crosscut Canal,
 - On-site treatment of groundwater extracted from off-site wells, and
 - Use of all treated groundwater at the Motorola 52nd Street facility.
- In June 1989, Motorola and ADEQ entered into a Consent Order, lodged with the Arizona Superior Court, requiring Motorola to design and implement interim groundwater and soil remedies in the OUI area.
- In Sept. and Dec. 2005, Freescale submitted a Groundwater Remedial Alternatives Analysis evaluating other remedial alternatives and potential optimizations to the groundwater treatment system.

OPERABLE UNIT 2 UPDATE

- ADEQ has negotiated a judicial Consent Decree for oversight of the operation and maintenance (O & M) of the OU2 groundwater treatment system.
- Over 7.5 billion gallons of water have been treated and put to beneficial use for irrigation purposes by the Salt River Project and over 10,000 pounds of VOCs have been removed from the groundwater.

OPERABLE UNIT 2 PAST ACTIVITY

- EPA/ADEQ issued a Record of Decision selecting a groundwater containment and treatment remedy in July 1994.

- In Nov. 1998, EPA issued an Administrative Order to Motorola and Honeywell to implement the remedial action.
- In September 1999, ADEQ and Honeywell entered into an Administrative Order on Consent requiring Honeywell to conduct a Focused Remedial Investigation of chlorinated solvent releases from the Honeywell 34th Street facility.
- In March 2000, pursuant to the 1998 Administrative Order issued by EPA, construction of the OU2 groundwater treatment system designed to clean up chlorinated solvent contamination in groundwater began.
- In September 2008, ADEQ approved Honeywell's final Focused Remedial Investigation and Addendum of chlorinated solvent releases from the Honeywell 34th Street facility. Work on the Focused Feasibility Study is planned to begin by the end of 2008.
- The OU2 groundwater treatment system became fully operational in 2001.
- The groundwater treatment system is designed to treat approximately 5,000 gallons per minute.
- The treated groundwater is discharged to the Salt River Project Grand Canal for irrigation use.
- EPA issued a revised Administrative Order in 2003 for Honeywell and Freescale to conduct O & M of the OU2 groundwater treatment system.

HONEYWELL ACTIONS in addition to the Superfund and UST Cleanups

Honeywell 34th Street Facility

In addition to the Superfund and UST cleanups summarized above, Honeywell performed the following remediation and investigation activities:

- Resolution of all violations alleged in the Notice of Violations (NOVs) issued by ADEQ.
- Performance of a comprehensive evaluation of the 34th Street wastewater treatment plant that treats liquid wastes prior to discharging to the City of Phoenix sewer system.
- The decommissioning and removal of an interceptor that had been discharging solvents to the City of Phoenix sewer system, and sampling to ensure that no residual contamination remained.
- Sampling of soil beneath the plating operations area to demonstrate that no soil contamination resulted from the un-permitted storage of hazardous waste.
- Supplemental survey of all subsurface structures potentially used to store liquids. The survey, which encompassed over 200 structures, was conducted to determine the contents of the structures, whether the structures and

their contents could potentially impact the environment, and whether they were being operated in compliance with environmental laws.

- Relocation of all underground fuel piping that was not properly protected from soil corrosion to above ground locations pursuant to an Administrative Order issued by ADEQ in 2006.

Honeywell Facility Audits

Honeywell retained an environmental consultant to conduct a comprehensive audit of all its facilities operating in Arizona. Audits were conducted at 14 facilities located across Arizona including Tucson, Glendale, Kingman, Tempe and North Phoenix. 233 findings of non-compliance and 27 findings of potential non-compliance were identified. The audit at the 34th Street facility resulted in 35 findings of non-compliance. All findings have been corrected by Honeywell.

Honeywell has also designed and implemented a comprehensive management system to monitor compliance with environmental regulations at all of its Arizona facilities.

HONEYWELL COST ESTIMATES FOR REMEDIAL ACTIONS

As described above, Honeywell has conducted extensive characterization and remediation associated with contamination at and emanating from the 34th Street facility. The Honeywell UST cleanup is not eligible for reimbursement from the State Assurance Fund (SAF) because the released was jet fuel. Jet fuel releases are not covered by the SAF. Honeywell's current and future expenditures include:

- Chlorinated solvent investigation and clean up associated with OU2 at the Motorola 52nd Street Site: **approximately \$33 million.**
- UST investigation and BSVE system installation: **approximately \$16 million.**
- Future costs associated with BSVE system and continued operation of the OU2 treatment system are **approximately \$15-20 million.**

MOTOROLA 52ND STREET (M52) SUPERFUND SITE

Community Involvement Public Meetings

* Denotes Jet Fuel Cleanup Discussed at these Meetings.

Documentation of Public Meetings/Open Houses

Remedial Action Plan Public Hearing, 7/11/88

Public Hearing Reporter's Transcript of Proceedings
Agenda, Presenters Notes and Overheads

Public Comments and Responsiveness Summary

Motorola Neighborhood Open House, 05/09/96

Community Awareness Public Meeting, 11/12/96

Neighborhood Open House, 12/13/97

Site-wide Public Meeting, 3/21/01

OUI Site Tour, 12/06/03
 OU2 Open Houses & Site Tours, 10/27/01
 ADEQ Presentations to Other Organizations'
 MAG Water Quality Advisory Committee, 04/12/01
 Sunbeam Neighborhood Association, 10/19/00
 Roosevelt Action Association, 04/18/01
 Sky Harbor Neighborhood Association,
 Community Advisory Group (CAG) Meetings
 CAG Meeting, 05/10/01 – Role of CAG, overview of site
 CAG Meeting, 06/07/01 – TAG discussion, Scope of CAG
 CAG Meeting, 07/19/01 – CAG structure, OUI history
 and description
 CAG Meeting, 09/20/01 – OU2 history, description &
 upcoming events
 CAG Meeting, 11/08/01 – OU3 study area activities
 *CAG Meeting, 02/06/02 – Jet Fuel issue first discussed
 with other HW issues (Keith Bower from HW)
 CAG Meeting, 05/01/02 – OUI 2nd 5-Year Review, OU2
 treatment system, HW Investigation, private well
 survey by ADHS
 CAG Meeting, 08/07/02 – OU3 activities and PRP search,
 update on HW activities
 CAG Meeting, 12/11/02 – OUI treatment system, OU2
 treatment system, OU3 well drilling, HW update
 *CAG Meeting, 03/13/03 – OU2 progress, OU3 drilling,
 HW Bioventing Pilot Study (Jim Hartley - Ch2M Hill)
 CAG Meeting, 06/25/03 – OUI update, vapor intrusion
 (ADHS)
 *CAG Meeting, 07/28/03 – OUI, OU2, OU3 updates,
 proposal to remove jet fuel
 *CAG Meeting, 10/22/03 – OUI Work Plan, Update on
 UST CAP – (Ian Bingham from UST)
 *CAG Meeting, 01/22/04 – West Sky Harbor fuel plume
 (COP), OUI & OU2 updates
 *CAG Meeting, 04/27/04 – COP Drinking Water System
 (COP), update on HW CAP (Joe Drosendahl from
 UST), OU2 & OU3 updates
 *CAG Meeting, 07/27/04 – Drought management (COP
 & SRP), HW draft RI report progress, HW revision of
 CAP (Joe Drosendahl from UST), OU2 and general
 updates
 *CAG Meeting, 09/29/04 – Health risks, OU3 PRP activities,
 HW CAP update
 CAG Meeting, 12/08/04 – TAG recipient announced
 (EPA), site progress, OU2 & OU3 updates
 *CAG Meeting, 02/23/05 – OUI Vapor Intrusion
 (Freescale), HW Focused Draft RI Report & UST
 CAP approval (HW)
 *CAG Meeting, 03/09/05 – HW 34th Street CAP presen-
 tation and announcement of public comment period
 (HW), UST CAP Approved (Joe Drosendahl and
 Phil McNeely from UST)
 CAG Meeting, 04/27/05 – TAG announcements, OU3
 RI/FS Work Plan, OU3 PRP investigations, OU2
 treatment system upgrade

*CAG Meeting, 08/03/05 – HW 34th St. Draft RI Report
 Presentation (HW)
 CAG Meeting, 08/11/05 – ADEQ Comments of HW
 Draft RI Report
 CAG Meeting, 12/07/05 – TAG announcements, OUI,
 OU2, OU3 & HW activities progress reports
 CAG Meeting, 07/26/06 – TAG announcements, OUI &
 OU2 treatment systems updates
 CAG Meeting, 11/01/06 – OU3 facility investigations,
 TAG announcements
 CAG Meeting, 11/08/06 – OUI & OU2 Five-Year
 Reviews, Site Geology
 *CAG Meeting, 04/19/07 – Combined with TAG to vote
 on HW UST BSVE Air Permit letter to county
 *CAG Meeting, 08/23/07 – OUI, OU2 & OU3 status
 reports, HW BSVE update (Phil McNeely from UST),
 County hearing report on BSVE permit (M. Moore
 from LPNA), review of TAG purpose
 CAG Meeting, 11/06/07 – OUI, OU2 & OU3 status
 reports, TAG activities report (M. Moore from
 LPNA), CIP update

Site-wide Open House at Saguaro Branch Library, 09/10/08
 Technical Assistance Grant (TAG) Community Meetings
 Gateway Neighborhood
 Technical Meeting, 06/19/96
 Informational Meeting, 05/07/98
 Public Comment Meeting, 07/11/98

Lindon Park Neighborhood Association
 TAG Meeting, 10/29/05, history of site, current remedi-
 ation activities
 *TAG Meeting, 09/07/06, UST CAP (Phil McNeely attended)
 *TAG Meeting, 04/19/07, BSVE Title V Air Permit and jet fuel
 TAG Meeting, 04/24/07, Water Workshop
 *TAG Meeting, 12/06/07, Jet Fuel and Chlorinated VOCs
 TAG Meeting, 03/06/08, Water treatment options
 TAG Meeting, 04/29/08, Vapor Intrusion
 TAG Meeting, 06/18/08, Cancer producing contamination
 *Tanks Programs UST Public Meeting regarding Honeywell
 Public Comment on Jet Fuel Spill CAP, 06/29/05
 *City Council Meeting on HW BSVE Air Permit, 8/29/07

Maricopa County Air Quality Department Meetings
 *Community Forum, 09/07/06, Wilson Primary School
 *Sky Harbor Association, 01/09/07
 *Salvation Army Shelter Public Hearing, 05/31/07

ADEQ CONTACT

Sherri L. Zendri, ADEQ Project Manager,
 (520) 770-3126 or (888) 271-9302
 E-mail: slz@azdeq.gov

Hearing impaired persons may call ADEQ's TDD line at
 (602) 771-4829.



Appendix L: Sample Drilling Notices

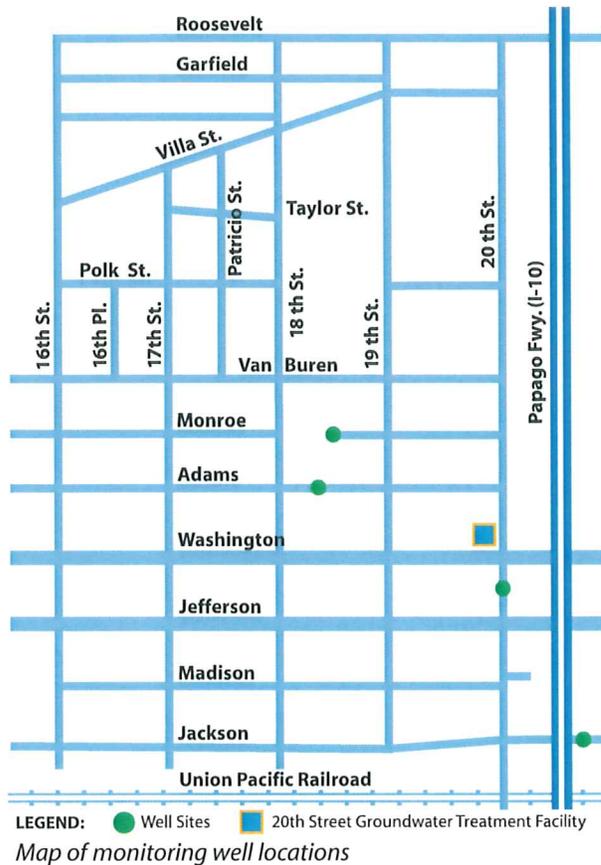


Photo of completed well with cover



Photo of drilling equipment you may see in your neighborhood

Construction Notice – Well Drilling

Honeywell and Freescale (Motorola), under the supervision of the Arizona Department of Environmental Quality (ADEQ) and U.S. Environmental Protection Agency (EPA), will be installing seven groundwater monitoring wells at four locations for the 52nd Street Superfund site. These wells will collect additional information about the groundwater, which will be added to information collected from other wells in the area. The locations for each of the monitoring wells are listed on the map above.

How does this affect you?

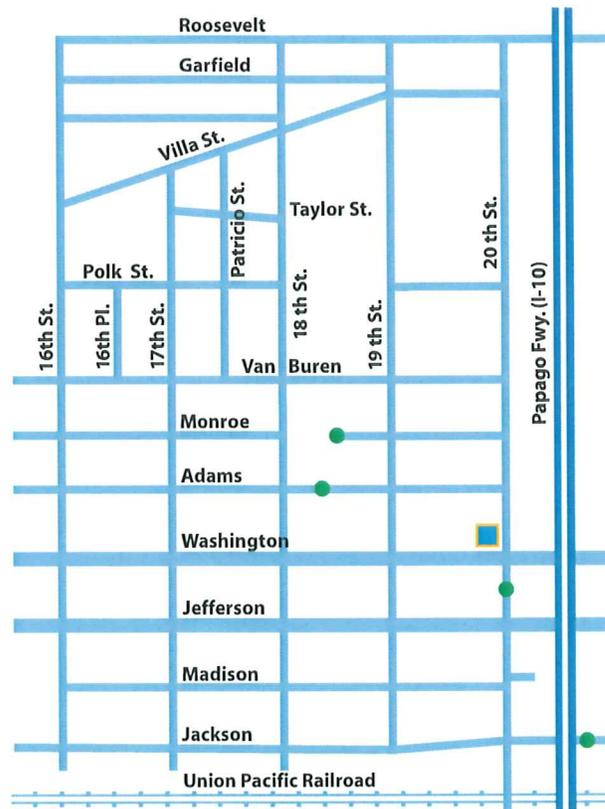
Groundwater monitoring wells will be installed from 6 a.m. to 6 p.m., Monday through Friday starting in early July, with scheduled completion in August 2007. Well installation will create noise and may impact traffic in your neighborhood. However, each

work site will be monitored to protect the public from construction hazards. Once the well installations are complete, you will occasionally see workers measuring the groundwater at each of the well sites.

Questions

Please contact Shelley Parnell at 602-277-9530 ext.222 or Manfred Plaschke at 602-749-9400, if you have any questions or concerns about the well drilling. If you would like to contact ADEQ or EPA, please call Harry Hendler (ADEQ) at 602-771-4609 or Leah Butler (EPA) at 415-972-3199.

We thank you for your patience and understanding during this important part of the investigation and apologize for any inconvenience caused by these activities. Every effort will be made to minimize the impact to surrounding businesses and residents.



Mapa de las ubicaciones de los pozos de monitoreo



Fotografía del pozo terminado con su tapa



Fotografía del equipo de perforación que usted puede ver en su vecindario

Aviso de Construcción – Perforación de Pozos

Honeywell y Freescale (Motorola), bajo la supervisión del Departamento de Calidad del Medio Ambiente de Arizona (ADEQ) y la Agencia de Protección Ambiental de los Estados Unidos (EPA), instalarán siete pozos de monitoreo del agua subterránea en cuatro ubicaciones para el sitio conocido como 52nd Street Superfund. Estos pozos recolectarán información adicional sobre el agua subterránea, la cual será agregada a la información recolectada de otros pozos en el área. La ubicación de cada uno de los nuevos pozos de monitoreo se muestra en el mapa de arriba.

¿Cómo le afecta esto a usted?

Los pozos de monitoreo del agua subterránea serán instalados de lunes a viernes, de 6 a.m. a 6 p.m., a partir de principio de Julio, y se ha programado que sean completados en Agosto 2007. La instalación de pozos producirá ruido y puede impactar al tráfico en su vecindario. Sin

embargo, cada sitio de las obras será monitoreado para proteger al público contra los peligros de la construcción. Una vez que se completen las instalaciones de los pozos, ocasionalmente usted verá a trabajadores midiendo al agua subterránea en cada pozo.

Preguntas

Por favor llame a Shelley Parnell al 602-277-9530 ext. 222 ó a Manfred Plaschke al 602-749-9400, si tiene usted cualquier pregunta o inquietud con respecto a la perforación de pozos. Si usted desea contactar al departamento ADEQ o a la agencia EPA, por favor llame a Harry Hendler (ADEQ) al 602-771-4609, ó a Leah Butler (EPA) al 415-972-3199. Le agradecemos su paciencia y entendimiento durante esta importante parte de la investigación, y nos disculpamos por cualquier inconveniencia causada por estas actividades. Se realizará todo esfuerzo por minimizar el impacto a los negocios y residentes del área alrededor del proyecto.

Appendix M: Dates for Community Outreach Activities and Meetings

► List of Previous CAG Meeting Dates

► Dates for Prior Community Outreach and Meetings

Below is a listing of all CAG meeting dates and other outreach activities held or scheduled. From the inception of the Community Advisory Group (CAG) in 2001, the CAG for the Motorola 52nd Street Superfund Site has met a total of 28 times as of the end of November 2007:

1996 Calendar Year

- Public Meeting November 12, 1996

1997 Calendar Year

- Open House December 1997

2001 Calendar Year

- Site Wide Meeting March 21, 2001
- May 10, 2001
- June 7, 2001
- July 19, 2001
- September 20, 2001
- Open House October 27, 2001
- November 8, 2001

2002 Calendar Year

- February 6, 2002
- May 1, 2002
- August 7, 2002
- December 11, 2002

2003 Calendar Year

- March 13, 2003
- June 25, 2003



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- July 28, 2003
- October 22, 2003

2004 Calendar Year

- January 22, 2004
- April 27, 2004
- July 27, 2004
- September 29, 2004
- December 8, 2004

2005 Calendar Year

- February 23, 2005
- March 9, 2005
- April 27, 2005
- August 3, 2005
- August 11, 2005
- December 7, 2005

2006 Calendar Year

- July 26, 2006
- November 1, 2006
- November 8, 2006

2007 Calendar Year

- April 19, 2007
- August 23, 2007
- November 6, 2007

2008 Calendar Year

- Open House September 10, 2008

Appendix N: Potential Locations for Public Meetings

Facilities identified by ADEQ and USEPA as potential locations to conduct public meetings and open houses include the following:

OU1:

Balsz School District Office
4825 E. Roosevelt St.
Phoenix, AZ 85008
(602) 629-6400

Griffith School
4504 E. Palm Lane
Phoenix, AZ 85008
(602) 629-6700

Orangedale School
5048 E. Oak
Phoenix, AZ 85008
(602) 629-6800

Gateway School
Contact: Kathy Tegarden
1100 N. 35th Street, Phoenix 85008
(602) 522-1000

OU2:

Wilson School District Offices
3025 E. Fillmore Street
Phoenix, AZ 85008
(602) 681-2200

Eastlake Recreation Center
1548 E. Jefferson Street
Phoenix, AZ 85007
(602) 262-6759

GateWay Community College
108 N. 40th Street
Phoenix, AZ 85034
(602) 286-8000

OU3:

Capitol Elementary School
330 N. 16th Avenue
Phoenix, AZ 85007
(602) 257-3835

Kenilworth Elementary School
1210 N. 5th Avenue
Phoenix, AZ 85003
(602) 257-3889

Senior Opportunities West
Senior Center
1220 S. 7th Ave.
Phoenix, AZ
Contact: Kathy Walsh
(602) 261-8984

Harmon Park
1239 S. 5th Avenue
Phoenix, AZ
(602) 262-6898

Burton Barr Library
1221 N. Central Ave.
Phoenix, AZ
(602) 262-4636



Appendix O: Local Schools

Zip Code 85003

Friendly House, Inc.
Contact: Desiree Castillo
802 S. First Avenue, Phoenix 85003
(602) 258-4353

Kenilworth Elementary School
Contact: Kenneth Baca
1210 N. 5th Avenue, Phoenix 85003
(602) 257-3889

Lowell School
Contact: Alice Trujillo
1121 S. 3rd Avenue, Phoenix 85003
(602) 257-3902

Maricopa County Regional District
Contact: Kit Wood
358 N. 5th Avenue, Phoenix 85003
(602) 452-4700

Phoenix Thomas J Pappas Regional
Elementary School
Contact: Dina Vance
355 N. 5th Avenue, Phoenix 85003
(602) 452-4750

Phoenix Thomas J. Pappas Regional Middle
School
Contact: Rich Rundhaug
374 N. 6th Avenue, Phoenix 85003

Zip Code 85004

Arizona Academy of Science and
Technology
1111 N. 1st Street, Phoenix 85004
(602) 253-1199

Arizona School For The Arts
1313 N. 2nd Street, Phoenix 85004
(602) 257-1444

APEX Education Systems, Inc.
1313 N. 2nd Street, Phoenix 85004
(602) 532-9245

Phoenix Day
115 East Tonto Street, Phoenix 85004
(602) 252-4911

Capital Academic Charter School Systems
2400 N. Central Avenue #101, Phoenix
85004

College Prep, Visual & Performing Arts
New World Educational Center
1313 N. 2nd Street, Phoenix 85004
(602) 238-9577

Desiderata
Contact: Linda Goins
512 E. Pierce Street, Phoenix 85004
(602) 764-1747

Friendly House Academia Del Pueblo
Elementary
Contact: Desiree Castillo
201 E. Durango Street, Phoenix 85004
(602) 258-4353

Khalsa Montessori Elementary School,
Contact: Satwant Khalsa
2536 N. 3rd Street, Phoenix 85004
(602) 252-3759

Metropolitan Arts Institute
Contact: Matthew Baker
660 E. Van Buren Street, Phoenix 85004
(602) 252-2530

School for Integrated Academics and
Technologies
518 S. 3rd Street, Phoenix 85004
(602) 254-5921



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Summit Elementary
1131 N. 2nd Street, Phoenix 85004
(602) 252-7727

Suns-Diamondback Education Academy
Contact: Linda Goins
1505 N. Central Avenue, Phoenix 85004
(602) 764-1700

Tutor Time Charter School - Paradise Valley
2400 N. Central Avenue, Phoenix 85004
(602) 200-9100

Zip Code 85006

Excelencia School
Contact: Rey Cruz
2181 E. McDowell Road, Phoenix 85006
(602) 808-1350

Garfield School
Contact: Teresa Covarrubias
811 N. 13th Street, Phoenix 85006
(602) 257-3029

Phoenix Elementary District
Contact: Rene Diaz
1817 N. 7th Street, Phoenix 85006
(602) 257-4003

Phoenix Prep Academy
Contact: Nava Consuelo
735 E. Fillmore Street, Phoenix 85006

Ralph Waldo Emerson Elementary School
Contact: Frank Tanori
915 E. Palm Lane, Phoenix 85006
(602) 257-3853

Summit High School
728 E. McDowell Road, Phoenix 85006
(602) 258-8959

Thomas A Edison School
Contact: Danny Hernandez
804 N. 18th Street, Phoenix 85006-3658
(602) 257-3848

Whittier Elementary School
Contact: Ronnie Pitre
2000 N. 16th Street, Phoenix 85006
(602) 257-3925

William T Machan Elementary School
Contact: Lynn Davey
2140 E. Virginia Avenue, Phoenix 85006
(602) 381-6120

Zip Code 85008

Balsz Elementary District
Contact: Cathy Esposito
4825 E. Roosevelt Street, Phoenix 85008
(602) 629-6400

Balsz School
Contact: Roxanne Motreenc
4309 E. Belleview Street, Phoenix 85008
(602) 629-6500

Brunson-Lee Elementary School
Contact: Louis Laffitte
1350 N. 48th Street, Phoenix 85008
(602) 629-6905

Creighton Elementary School
Contact: Rosemary Agneessens
2802 E. McDowell Road, Phoenix 85008
(602) 381-6060

David Crockett School
Contact: Jeanne Sorci
501 N. 36th Street, Phoenix 85008
(602) 629-6600

Gateway School
Contact: Kathy Tegarden



Motorola 52nd Street Superfund Site
Appendices for the Community Involvement Plan



1100 N. 35th Street, Phoenix 85008
(602) 522-1000

Griffith Elementary School
Contact: Mary Ruddy
4505 E Palm Lane, Phoenix 85008 4123
(602) 629-6700

Orangedale Elementary School
Contact: Rick Stephen
5048 E Oak St., Phoenix 85008 2597
(602) 629-6800

Papago School
Contact: Vicente Ontiveros
2013 N 36th St., Phoenix 85008

Sterling Academy of Mathematics and
Science
5025 E. VanBuren, Phoenix 85008

Wilson Elementary District
Contact: Antonio Sanchez
3025 E. Fillmore Street, Phoenix 85008
(602) 683-2400

Wilson High School
Contact: Jane Juliano
3005 E. Fillmore Street, Phoenix 85008
(602) 850-2600

Wilson Primary School
Contact: Leanne Morse
415 N. 30th Street, Phoenix 85008
(602) 683-2500

Zip Code 85034

Ann Ott School
Contact: Alberto Castruita
1801 S. 12th Street, Phoenix 85034
(602) 257-3915

Augustus H Shaw Jr School
Contact: Shirley Johnson
123 North 13th Street, Phoenix 85034
(602) 257-3898

Faith North
Contact: Tom Weaver
910 E. Washington Street, Phoenix 85034
(602) 257-3914

Gateway Community High School
Contact: Yvonne Watterson
108 N. 40th Street, Phoenix 85034
(602) 286-8754

Silvestre S Herrera School
Contact: Mark Yslas
1350 S. 11th Street, Phoenix 85034

Tertulia Pre-College Community
Intermediate Campus
Contact: Jesús Aguirre
1145 E. Washington St., Phoenix 85034
(602) 262-2200



Appendix P: Technical Assistance Grant Fact Sheet



EPA

United States
Environmental Protection
Agency

Technical Assistance Grant (TAG) Program: Fact Sheet



What Is a Technical Assistance Grant?

Often, there are many technical issues at Superfund sites that are hard for people to understand. The EPA's Technical Assistance Grant (TAG) program provides money to community groups so they can pay for technical advisors to interpret and explain technical reports, site conditions, and EPA's proposed cleanup proposals and decisions.

EPA's cleanup decisions depend on several different things, including what studies say about site conditions, the kinds of wastes found, and the cleanup methods that would work at a particular site. A technical advisor can help community members participate in decision making by helping them to better understand what is going on at the site.

Who May Apply for a TAG?

Your group may apply for a TAG if your members' health, economic well being, or enjoyment of the environment is, or may be, hurt by a Superfund site. Your group does not need to be incorporated to apply for a TAG; however, to receive a TAG, your group must incorporate for the purpose of participating in decision-making at the site. Groups that are already incorporated for other purposes may also be eligible under certain circumstances.

EPA encourages applications from groups that are interested in becoming more involved in the decision-making process for a nearby Superfund site, but need help understanding the technical issues and want to share



information with the whole community. Here are a few types of community groups that can apply for a TAG:

- A community group or citizens' association which was formed because of issues and concerns it had about the site.
- A group that has been actively involved at the site and that includes all the affected individuals and groups who joined in applying for the TAG.
- A group made up of several groups (like those described above) that came together to deal with community concerns about the site and its effects on the surrounding area.

Groups That Are Not Eligible for a TAG Are:

- Potentially responsible parties (PRPs), who are the individuals, cities/townships, or companies that may be responsible for, or may have contributed to, pollution problems at the Superfund site. PRPs can include facility owners, operators, transporters, or generators of hazardous waste.
- Groups representing or receiving money or services from a PRP.
- Academic institutions like colleges or universities.
- Groups affiliated with a national organization.
- Political subdivisions like states, counties, cities, townships or tribes.
- Groups created by, representing, or receiving money or services from any of the groups described above that are not eligible.

How Does My Group Apply for a TAG?

EPA may award only one TAG per Superfund site. To make sure that all eligible groups have an equal opportunity to apply for a single TAG, the application process follows these steps:

Step 1: Your group writes EPA a letter telling of its interest in a TAG. This "letter of intent" should include the name of the Superfund site or sites the TAG is for. It also should include the name, daytime telephone number, and address of your group's contact person. EPA will send you the TAG Application Package.

Step 2: EPA informs the rest of the community that your group is interested in a TAG. EPA usually notifies the community by publishing an ad in a local newspaper. The notice also explains that other groups interested in a TAG may contact your group and join with you or may submit their own Letter of Intent.

Step 3: Other interested groups in your community then have 30 days to get in touch with your group to talk about working together to submit one application to EPA. If your group and other interested groups decide they don't want to form a coalition, other



groups that intend to apply for the TAG must write EPA a letter of intent within this 30-day period.

Step 4: After the initial 30-day period, interested groups will have another 30 days to submit applications. If EPA receives more than one application, it will rank each applicant based on whether the group represents the affected community, the group's plans for using a technical advisor, and the group's ability and plans to inform other community members about site-related information provided by the technical advisor. EPA is available to provide help to all groups preparing TAG applications.

How Much Money Can My Group Receive?

Initially, EPA will award a TAG for up to \$50,000. Additional funds may be available. There can be only one TAG for each Superfund site.

To get a TAG, your group must contribute a matching share to the project. Your match must equal at least 20 percent of the total project costs. This match usually is not difficult to provide: most groups make their match by donating volunteer hours and other "in-kind" services. Sometimes, EPA can waive the matching-share requirement or require your group to contribute a smaller match. EPA will help your group determine what "in-kind" and donated services can be counted as match.

How Does My Group Get Its TAG Money?

EPA reimburses your group for its eligible costs. Reimbursement means that your group must first incur a cost and then ask EPA to pay for it. For the most part, your group may not get money up front. However, new recipients of TAGs may ask for a one-time advance payment of up to \$5,000. To get an advance payment, you must explain in your TAG application how your group plans to spend the advance payment. Your group can use the advance payment to pay some of the costs for starting up your group. Start-up costs might include opening a bank account, buying or leasing office supplies and equipment, or advertising for a technical advisor. You cannot use an advance payment to pay for incorporating your group or to pay a technical advisor or for other contractor services. (Although your group cannot use the advance payment to pay incorporation costs, your group can be reimbursed for incorporation costs later.)

What Can My Group Do with a TAG?

Your group must use most of its TAG money to pay for one or more technical advisors to help you understand information about the site. For example, you may want someone to



explain how the site affects the air or water in the site area and someone else to evaluate any health issues related to the site. The technical advisor reviews and explains existing information about the site developed as part of the Superfund cleanup process. Technical advisors should produce reports that are easily understood by the community. Technical advisors cannot, however, conduct additional studies or generate any new data or information.

Here are some examples of what your group might pay a technical advisor to do:

- Review site-related documents from EPA or others.
- Meet with your group and other community members to explain site information.
- Make site visits, when appropriate and necessary, to learn more about site activities.
- Travel to meetings and hearings about the site.
- Evaluate plans for reusing the site after it is cleaned up.
- Interpret and explain health-related information.

Your group may use a small amount of its TAG funds to pay for supplies, office equipment, and rent. Your group also may pay someone to manage your TAG. If your group incorporates as a non-profit organization just so it can receive a TAG, the expenses for incorporation can also be charged to your TAG if your group is chosen to receive one. If EPA does not award a TAG to your group, however, you will not be reimbursed for the incorporation costs.

What Can't We Do with TAG Money?

There are several activities you cannot pay for with TAG money. Here are some examples:

- Travel expenses of group members (only technical advisor travel expenses can be paid).
- Lawsuits or other legal actions, including preparing testimony or hiring expert witnesses.
- Lobbying.
- Social activities, fund raising, or amusement.
- Tuition or training expenses for group members or technical advisors (except for one-time health and safety training for the advisor to gain access to the site).
- Collection of new health or primary data through, for example, medical testing or well drilling and testing.
- Reopening or challenging final EPA decisions.



How Does EPA Decide If Our Group Can Get a TAG?

The TAG application asks for information that will help EPA decide whether your group can manage a TAG. The application also asks your group to describe its history, goals, plans for using TAG funds, and how your group plans to share information learned from the technical advisor with the rest of your community. Your group must include in the application to EPA a work plan and a budget that shows the time and resources the group will commit to TAG activities.

How Do We Find and Hire a Qualified Technical Advisor?

After EPA awards your TAG, your group needs to choose a qualified technical advisor. EPA has a list of sources where your group might find qualified advisors. You should choose a technical advisor who has the skills to address the specific issues and concerns at your site. A technical advisor must have these qualifications:

- Demonstrated knowledge of hazardous or toxic waste issues or relocation, redevelopment, or public health issues at your group's site.
- College or university training, and preferably a degree, in the relevant fields.
- The ability to explain technical information to your community in ways you understand.

Like all grants awarded by EPA, TAGs have certain regulatory requirements. Besides finding an advisor with the right background for your community's needs, you must also find and hire your technical advisor in accordance with EPA's grant regulations. The grant regulations require that you go through certain steps that make sure you find your advisor through a fair and competitive process.

How Does My Group Manage Its TAG?

Your group must keep track of how it spends TAG funds. This means your group must:

- Create a bookkeeping system and keep complete financial records of how TAG funds and your required matching funds or in-kind services are used.
- Ask EPA for reimbursement so you can pay your technical advisor on time and in full.
- Prepare and give quarterly progress reports and other reports to EPA.

Your group can use a small amount of TAG funds to pay a grant administrator to manage the TAG. But remember: Most TAG money must go toward your technical advisor, so the cost for a grant administrator should be both reasonable and necessary, and you must follow federal procurement regulations when hiring a grant administrator.



What If My Group Needs More Information?

Visit the TAG program web site at: www.epa.gov/superfund/tools/tag/htm. Your EPA regional office is available to answer your questions. Here is the list of TAG contacts at EPA regional offices:

Regional TAG Contacts

Region 1 [CT, MA, NH, VT, RI, ME]

Mike McGagh
U.S. EPA Region 1 (MC: HBS)
One Congress Street
Boston, MA 02114-2023
Phone: 617-918-1428

Region 2 [NY, NJ, PR, VI]

Carol Hemington
U.S. EPA Region 2 (MC: 2OPM-GCMB)
290 Broadway
New York, NY 10007-1866
Phone: 212-637-3420

Region 3 [DC, DE, MD, PA, VA, WV]

Amelia Libertz
U.S. EPA Region 3 (MC: 3H543)
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: 215-814-5522

Region 4 [AL, FL, GA, KY, MS, NC, SC, TN]

Rosemary Patton, Sharon Chandler,
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Appendix Q: Interview Questions and Responses

This Appendix presents the summarized interview information for each operable unit (OU) within the Site. The interviews were conducted by ADEQ and USEPA from July 25 through August 31, 2007. While the same questionnaire was used for each OU, project activities differ for each area. The OU1 area was the location of the initial cleanup activities. Current project activities for OU1 include the continued operation of the interim remedy selected to address groundwater contamination at the 52nd Street plant; evaluating alternatives for replacing the existing groundwater treatment system or optimizing the existing groundwater treatment system; and conducting a soil-vapor intrusion risk assessment in the OU1 area. Project activities for the OU2 area currently focus on operation of a new groundwater pump and treat system (installed in 2001). Honeywell and ADEQ are currently conducting a focused remedial investigation at Honeywell's 34th Street facility. A search for potentially responsible parties (PRPs) in the OU2 area was completed in September 2003. The OU3 Study Area is currently undergoing investigations to determine the extent and origin of groundwater contamination for this area. A PRP search for the OU3 Study area was also completed in September 2003. Below is a listing of the responses provided by the interviewees for each of the three OUs.

Description of Community Interviews

ADEQ and USEPA conducted informal interviews with members of the local community and local business representatives. The interviews were conducted in person and by phone by ADEQ and USEPA. In general, each interviewee was asked three categories of questions:

1. History/Knowledge of Site (Questions #1 through #4);
2. Information and Materials (Questions #5 through #9); and
3. Community Involvement (Questions #10 through #12).

A total of 33 people were interviewed during the period from June 19, 2007 to August 31, 2007. The representation from each of the three project areas is described below:

1. OU1 Interviews – six people
2. OU2 Interviews – thirteen people (OU2 includes Honeywell facility)
3. OU3 Interviews – fourteen people

In addition to the 33 individuals identified above, 27 other people were either contacted or attempted to contact for interviews. However, these individuals were unable or unavailable to participate in the interview process. Although the actual people interviewed and their responses are confidential, detailed lists of the responses provided to each question are provided below. ADEQ and USEPA believe that interviewees are more likely to be candid in their responses if the actual responses and names of interviewees are kept confidential.

Summary of Interview Responses for OU1

There were six people interviewed to represent community input from the OU1 area. This includes people who were considered to reflect community interests throughout the entire Site and not solely OU1. Below is a summary of the responses provided by the three people interviewed to represent community concerns and interest for the OU1 area.

History/Knowledge of Site – OU1

1. How long have you lived/worked in this area?

0-10 years	5 people
11-20 years	1 person
21-30 years	0 people
31+ years	0 people

2. When did you first become aware of the environmental contamination at the Motorola 52nd Street Superfund Site?

0-10 years	6 people
11-20 years ago	0 people

3. What is your understanding of the contamination related to the Motorola 52nd Street Site?

The general understanding of the interviewees was that chemicals have contaminated the groundwater.

4. What are your concerns about this Site?

The concerns about the Site revolve around health issues, the timeline for remediation, and possible future consumption of the groundwater.

a. Do you know if anything has been done to address these concerns?

Those interviewed were unaware of any attempt to address the health concerns or treatment of the groundwater; however, one was aware of barriers used to prevent the contamination from spreading

Information and Materials – OU1

5. How are you currently receiving information about the Site?

All of the people interviewed are currently receiving information solely from ADEQ newsletters in the mail.

6. Is the information clear and easy to understand?

Most of the individuals interviewed felt the information provided in the newsletter was clear and easy to understand.

7. Do you feel you have been kept adequately informed?

One interviewee felt adequately informed, while the others did not feel adequately informed and felt there is information missing in order to have a clear understanding of the Site.

8. What additional information would you like to receive?

Additional information requested included the physical hazards and health risks of the chemicals in the groundwater, what actions are being taken to clean up the Site, and a detailed background and history of the Site as well as future plans for the Site.

9. What is the best way to provide information to you? (Newsletters, fact sheets, community meetings, CAGs, other)

The consensus from all of the interviewees was that the best way to provide information was through direct mailings.

How frequently?

Mailings were requested annually or semiannually, or as needed when new information is available.

Community Involvement – OUI

10. Have you participated in any public meetings and/or community advisory group meetings for the site?

Most of the people interviewed have not attended any meetings associated with the Site.

a. If no, why not?

They did not participate in any public meetings because they were not aware the meetings existed; however, two are interested in attending a meeting.

b. If yes, do you have any suggestions for improvement?



No response provided.

11. How do you feel about the level of community involvement and outreach from ADEQ and USEPA to the residences and businesses affected by the site?

Two interviewees felt the community involvement and outreach by ADEQ and USEPA has been poor because they were unaware of any activity by ADEQ and/or USEPA beyond the newsletters in the mail. A third person interviewed felt the involvement and outreach was pretty good. Others were uncertain.

12. Can you suggest any other individuals or groups that should be contacted for additional information or to be added to the mailing list?

The community members that were interviewed were not aware of additional groups or individuals who should be contacted for further information or be added to the mailing list.

Summary of Interview Responses for OU2

There were fourteen people interviewed to represent community input from the OU2 area. Below is a summary of the responses provided by the fourteen people interviewed to represent community concerns and interest for the OU2 area as well as the entire site.

History/Knowledge of Site – OU2

1. How long have you lived/worked in this area?

0-10 years	1 people
11-20 years	5 people
21-30 years	2 people
31+ years	5 people

2. When did you first become aware of the environmental contamination at the Motorola 52nd Street Superfund Site?

0-10 years	5 people
11-20 years ago	8 people

3. What is your understanding of the contamination related to the Motorola 52nd Street Site?

Most of the people interviewed referred back to the most recent newsletter as the source of their understanding of the Site. All fourteen interviewees stated that the groundwater was contaminated. Three mentioned solvents and/or TCE specifically; two mentioned Motorola as the cause of the contamination; and one community member stated that many companies are at fault, not just Motorola.

4. What are your concerns about this Site?

Five community members did not have any concerns about the Site. One of which mentioned that ADEQ is doing all they can and a great job. Another discussed concerns that take priority including immediate personal health problems and the health problems of friends and family.

Concerns about the drinking water quality were mentioned by four community members in terms of both current and future water supply.

Five interviewees expressed concerns for the general health of anyone living in the area and mentioned specific cases where they themselves or someone they know have/had

health problems and discussed a possible relationship between them and the contamination at the Site.

Two community members were concerned about how the contamination at the Site will affect the way we live and the environmental in which we live.

Do you know if anything has been done to address these concerns?

Six of the people interviewed were not aware of anything being done to address their above mentioned concerns or to remediate the contamination; one of which suggested a tour or video to show the community what has been and is currently being done.

A class action lawsuit was mentioned by two community members, both unaware of any settlement.

Five community members were aware of general cleanup attempts at the Site; two thought the attempts have been unsuccessful; one thought the contamination had been remediated; and one discussed monitoring of the groundwater and the use of barriers to contain the contamination.

One individual was aware of general attempts to clean up the contamination, however, felt the contamination will never be able to be completely remediated. This community member believes the contamination and remediation would have been a bigger priority and been taken care of by now if it occurred in an affluent area instead of an area with primarily minorities residing.

Information and Materials – OU2

5. How are you currently receiving information about the site?

The fourteen interviewees all receive information about the Site in the mail. Five people discussed receiving additional information from the newspaper and media in the earlier stages of the Site; however have not heard anything in quite awhile. Two individuals have also received information from attending public meetings.

6. Is the information clear and easy to understand?

The information has been clear and easy to understand for eight of the interviewees; one of which requested a video to help understand the Site better. Three individuals felt the information was not clear enough, stating they still have questions. Three of the interviewees were not able to remember if the information they had received in the mail was clear and easy to understand, or not.

7. Do you feel you have been kept adequately informed?

Five of the individuals felt they have been kept adequately informed; three were not sure if they know all the information they should; four people felt they need more information

and clarification; one individual stated there is room for improvement; and one individual felt information was provided adequately early on in the Site characterization, however, there has been a dramatic decrease in information over the years.

8. What additional information would you like to receive?

Any and all information available was requested by three interviewees; one individual would like to receive a timeline of the future of the Site and when the remediation will be completed; four of the people interviewed requested general updates including recent analytical results from groundwater testing and a summary of background information; two individuals felt like they were being lied to by ADEQ and requested proof the drinking water is not contaminated and honesty from ADEQ; one individual requested any information pertinent to his physical well being; one individual felt she has received sufficient information; and one community member wants to receive an update on the litigation that took place.

9. What is the best way to provide information to you? (Newsletters, fact sheets, community meetings, CAGs, other)

All fourteen interviewees stated mail was the best way to provide information to them. One individual suggested email and one individual suggested sending questionnaires through the mail to help answer any questions.

How frequently?

Seven of the interviewees suggested information to be provided whenever new information is available pertaining to the Site; three individuals suggested quarterly updates; one person suggested monthly updates of information; three individuals were unsure on the appropriate frequency of informational updates.

Community Involvement – OU2

10. Have you participated in any public meetings and/or community advisory group meetings for the Site?

Three of the thirteen people interviewed for the OU2 area stated they have attended public meetings and/or CAG meetings for the site.

a. If no, why not?

Five of the interviewees stated they have a difficult time mobilizing due to their age and/or disabilities; three individuals were not aware public meetings took place and are interested in attending at least one; two people interviewed do not feel a public meeting is productive and are not interested in attending one; one individual had no desire to attend a meeting; and one has never had time, but is interested in attending one.

b. If yes, do you have any suggestions for improvement?

One interviewee who has attended meetings for the Site stated she was very impressed with the people who put on the meetings and that they are doing everything they can to communicate information. The other two individuals could not provide any suggestions for improvement.

11. How do you feel about the level of community involvement and outreach from ADEQ and USEPA to the residences and businesses affected by the site?

Five of the interviewees believe the community involvement and outreach by ADEQ and USEPA is poor and the only outreach they were aware of was the most recent newsletter to which they responded; three individuals felt the community involvement and outreach was good/fair; three people interviewed were not sure if the outreach/community involvement was good or bad; one individual stated that ADEQ cannot be effective in their community involvement and/or outreach due to the excessive amount of turnover that occurs within the department; one individual stated the outreach is getting better, but there is a lot of room for improvement; and one individual felt the outreach was good many years ago, but now, because it is no longer a hot topic, there is no interest to keep up with community involvement and outreach.

12. Can you suggest any other individuals or groups that should be contacted for additional information or to be added to the mailing list?

The following groups and demographics were suggested to be added to the mailing list and/or to provide additional information.

- Senior Centers in the area
- Everyone working or living in the area of the Superfund Site.
- Neighborhood Associations
- The Catholic Church on Oak Street
- Gerard High School
- Everyone should know about this
- Villa Verde Home Owners Association
- Elsinore Neighborhood Association

Josie and Richard (Last Name Unknown)
602-275-2544

This couple is very involved in the Neighborhood Association as well as effective communicators to the non-English speaking residents.

Halaria Lopez
Elsinore Neighborhood Association President

Summary of Interview Responses for OU3

There were six people interviewed to represent community input from the OU3 area. Below is a summary of the responses provided by the six people interviewed to represent community concerns and interest for the OU3 area as well as the entire site.

History/Knowledge of Site – OU3

1. How long have you lived/worked in this area?

0-10 years	2 people
11-20 years	0 people
21-30 years	4 people
31+ years	0 people

2. When did you first become aware of the environmental contamination at the Motorola 52nd Street Superfund Site?

0-10 years	5 people
11-20 years ago	1 person

3. What is your understanding of the contamination related to the Motorola 52nd Street Site?

Three community members had general background information including the dumping of chemicals into the ground by manufacturing facilities. Three people interviewed admitted having very little understanding of the contamination at the Site except for that the groundwater is contaminated.

4. What are your concerns about this Site?

One individual expressed concern for the well being of the City of Phoenix with hope that we have learned from our mistakes, and the importance for the public to know that remediation is the key for preservation of the land for future use. The second individual showed concern for environmental issues in her immediate neighborhood including car batteries dumped in the alleyways and paint being poured into the sewer from an apartment building. Three interviewees discussed concerns about the cleanup at the Site; one of whom mentioned concern for the current monitoring of manufacturing companies to confirm chemicals are no longer dumped into the ground. One interviewee expressed concern for his baby and if playing in the yard would cause health hazards.

Do you know if anything has been done to address these concerns?

Five interviewees were unaware of any effort to address the groundwater contamination at the Site, one of whom was only aware of *plans* to address the groundwater contamination. One community member interviewed was aware that clean up at OU1 and OU2 was being addressed.

Information and Materials – OU3

5. How are you currently receiving information about the Site?

Two individuals interviewed have received information from the newspaper and the mail, however, nothing on a regular basis; three interviewees have only received the single newsletter to which they had responded; and one individual receives information from attending the South Phoenix Planning Committee meetings as well as from other individuals living in the area.

6. Is the information clear and easy to understand?

The information was clear and easy to understand for all interviewees; one stated the information was clear enough to peak curiosity and want more information; another could not remember the information discussed, but did remember it was easy to understand.

7. Do you feel you have been kept adequately informed?

Three of the interviewees wanted to learn more information; two felt adequately informed; and one felt poorly informed because he has lived in the area for four years with his family and the May 2007 newsletter was the first information he has received, specifically about the OU3 area.

8. What additional information would you like to receive?

One individual stated she would like any information available on the Site; the second requested information such as a plan of mitigation, details, people involved, the money involved, etc; the third individual requested information on the future processes involved with the Site and what health issues to be concerned about; two of the interviewees requested information on clean up activities stating they were interested in volunteering to help with the remediation. In general, the interviewees want general updates on the Site.

9. What is the best way to provide information to you? (Newsletters, fact sheets, community meetings, CAGs, other)

Four individuals stated they were interested in attending a public/CAG meeting to obtain more information and that the easiest way to provide information is through the mail; two individuals stated mailings is the easiest way to provide information.

How frequently?

Three interviewees agreed that quarterly informational updates would be sufficient; two requested monthly updates; and one suggested semiannual updates.

Community Involvement – OU3

10. Have you participated in any public meetings and/or community advisory group meetings for the Site?

Four of the people interviewed have attended public meetings in the past, however, not pertaining to the Site.

a. If no, why not?

Five individuals have not been aware of any meeting held pertaining to the Site, however, are interested in attending a meeting; one interviewee does not have time to attend meetings.

b. If yes, do you have any suggestions for improvement?

11. How do you feel about the level of community involvement and outreach from ADEQ and USEPA to the residences and businesses affected by the Site?

One individual interviewed felt the level of community involvement and outreach from ADEQ and USEPA to the residences and businesses affected by the Site is poor because the one newsletter to which he responded is the first piece of information he has received on the Site in the mail in 10 years; a second individual felt Arizona specifically is far more advanced in environmental education and public health than most states; a third community member felt the community involvement and outreach has been limited and it seems “they” just do the minimum; three interviewees feel the community involvement and outreach has been very good.

12. Can you suggest any other individuals or groups that should be contacted for additional information or to be added to the mailing list?

The following groups and individuals were suggested to contact for further information and/or to be added to the mailing list.:

People running for City Council

The Senior Center located at 19th Avenue and McDowell Road

The Coronado Neighborhood Association

- President: Diane Brennan – president@gcna.info



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- Vice President: Matt Conn – matthewvp@gcna.info

Board of Directors
Embassy Home Owners Association
805 North 4th Avenue
Phoenix, AZ 85003

The Willow Historical District Neighborhood Association
thewillowhistoricaldistrict.com

Lucy Ducharme
2836 East Polk Street
Phoenix, Arizona
85008

Jane Ducharme
3622 East Piccadilly Road
Phoenix, Arizona
85018

May McFarland
1716 East Granada Road
Phoenix, Arizona
85006

Carrie Chaffin
1712 East Granada Road
Phoenix, Arizona
85006

Faye Michaud
1848 East Coronado Road
Phoenix, Arizona
85006

Appendix R: Toxicological Information for Contaminants of Concern

The current contaminants of concern in groundwater include the following volatile organic compounds (VOCs):

- dichloroethane (DCA) -- $C_2H_4Cl_2$
- dichloroethene (DCE) -- $C_2H_2Cl_2$
- 1,1,1-trichloroethane (TCA) -- $C_2H_3Cl_3$
- trichloroethene (TCE) -- C_2HCl_3
- perchloroethene (PCE) -- C_2Cl_4 (PCE's official name is tetrachloroethene)
- vinyl chloride -- C_2H_3Cl
- 1,4-dioxane

Contaminants of concern at the site may change as new data become available.

Other contaminants that the community has inquired about either at public meetings or through the community interview process are provided below:

- Automotive Gasoline
- Jet Fuel (JP4 and JP7; JP5 and JP8)
- Kerosene

Toxicological information is provided by the Agency for Toxic Substances and Disease Registry (ATSDR) ToxFAQsTM fact sheets. The ATSDR ToxFAQsTM is a series of summaries about hazardous substances developed by the ATSDR Division of Toxicology. Copies of the ATSDR ToxFAQs fact sheets for all constituents listed above are provided in this appendix.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Its specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-888-422-8737
FAX: (404)498-0057



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ToxFAQs™ for 1,1-Dichloroethane (1,1-DCA)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1-dichloroethane. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: 1,1-Dichloroethane is used to make other chemicals and to dissolve and remove grease. Breathing very high levels can affect your heart and animal studies have seen kidney disease from long-term exposure to high levels in air. 1,1-Dichloroethane has been found in at least 248 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,1-dichloroethane?

(Pronounced 1,1-dī' klôr' ō ěth' ān')

1,1-Dichloroethane is a colorless, oily liquid with a sweet odor. It evaporates easily at room temperature and burns easily. It does not occur naturally in the environment.

In the past, 1,1-dichloroethane was used as a surgical anesthetic, but it is no longer used this way. Today it is used primarily to make other chemicals, to dissolve substances such as paint, varnish, and finish removers, and to remove grease.

What happens to 1,1-dichloroethane when it enters the environment?

- 1,1-Dichloroethane is released from industrial processes primarily to the air.
- 1,1-Dichloroethane evaporates from water rapidly into the air.
- It can also be found in the air as a breakdown product of another chemical, 1,1,1-trichloroethane.

- 1,1-Dichloroethane does not dissolve easily in water.
- Small amounts of 1,1-dichloroethane released to soil can evaporate into the air or move into groundwater.
- It is not known how long it stays in soil.
- 1,1-Dichloroethane is not expected to build up in the body tissues of animals.

How might I be exposed to 1,1-dichloroethane?

- Breathing air containing it from industrial releases or hazardous waste sites.
- Drinking contaminated tap water.
- Touching soil containing it.
- Touching contaminated materials in the workplace.

How can 1,1-dichloroethane affect my health?

Very limited information is available on the effects of 1,1-dichloroethane on people's health. The chemical was discontinued as a surgical anesthetic when effects on the heart, such as irregular heart beats, were reported.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

Studies in animals have shown that 1,1-dichloroethane can cause kidney disease after long-term exposure to high levels in air. Delayed growth was seen in the offspring of animals who breathed high concentrations of the chemical during pregnancy.

How likely is 1,1-dichloroethane to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified 1,1-dichloroethane for carcinogenicity.

1,1-Dichloroethane caused cancer in one study in which rats and mice were fed large doses of the chemical for their lifetimes.

Is there a medical test to show whether I've been exposed to 1,1-dichloroethane?

Tests are available that measure 1,1-dichloroethane in urine, blood, breath, and body tissues. These tests aren't available at most doctors' offices, but can be done at a special laboratory that has special equipment.

The tests must be done soon after exposure occurs, because most of the 1,1-dichloroethane that is taken into the body leaves within 2 days. In addition, these tests cannot tell you when you were exposed, or whether health effects will occur.

Has the federal government made recommendations to protect human health?

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of 1,1-dichloroethane be

reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 400 milligrams of 1,1-dichloroethane per cubic meter of air (400 mg/m³) for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommend the same exposure limit in air.

NIOSH currently recommends that a level of 12,150 mg/m³ be considered immediately dangerous to life and health. This is the exposure level of 1,1-dichloroethane that is likely to cause permanent health problems or death.

The federal recommendations have been updated as of July 1999.

Glossary

Anesthetic: A substance used to cause numbness.

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or gas.

Milligram (mg): One thousandth of a gram.

References

Agency for Toxic Substances and Disease Registry. 1990. Toxicological profile for 1,1-dichloroethane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for 1,2-Dichloroethane (1,2-DCA)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-Dichloroethane. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,2-dichloroethane usually occurs by breathing contaminated air in workplaces that use 1,2-dichloroethane. Breathing or ingesting high levels of 1,2-dichloroethane can cause damage to the nervous system, liver, kidneys, and lungs and may cause cancer. This substance has been found in at least 570 of the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,2-dichloroethane?

1,2-Dichloroethane, also called ethylene dichloride, is a manufactured chemical that is not found naturally in the environment. It is a clear liquid and has a pleasant smell and sweet taste.

The most common use of 1,2-dichloroethane is in the production of vinyl chloride which is used to make a variety of plastic and vinyl products including polyvinyl chloride (PVC) pipes, furniture and automobile upholstery, wall coverings, housewares, and automobile parts. It is also used to as a solvent and is added to leaded gasoline to remove lead.

What happens to 1,2-dichloroethane when it enters the environment?

- Most of the 1,2-dichloroethane released to the environment is released to the air. In the air, 1,2-dichloroethane breaks down by reacting with other compounds formed by sunlight. It can stay in the air for more than 5 months before it is broken down.
- 1,2-Dichloroethane can also be released into rivers and lakes. It breaks down very slowly in water and most of it will evaporate to the air.

- 1,2-Dichloroethane released in soil will either evaporate into the air or travel down through the soil and enter underground water.

How might I be exposed to 1,2-dichloroethane?

- The general population may be exposed to 1,2-dichloroethane by breathing air or drinking water that contains 1,2-dichloroethane.
- People who work or live near a factory where 1,2-dichloroethane is used, may be exposed to higher than usual levels.
- People living near uncontrolled hazardous waste sites may also be exposed to higher than usual levels of 1,2-dichloroethane.

How can 1,2-dichloroethane affect my health?

Nervous system disorders, liver and kidney diseases, and lung effects have been reported in humans ingesting or inhaling large amounts of 1,2-dichloroethane.

In laboratory animals, breathing or ingesting large amounts of 1,2-dichloroethane have also caused nervous system disorders and liver, kidney, and lung effects. Animal studies also suggest that 1,2-dichloroethane may damage the

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

immune system. Kidney disease has also been seen in animals ingesting low doses of 1,2-dichloroethane for a long time. Studies in animals indicate that 1,2-dichloroethane does not affect reproduction.

How likely is 1,2-dichloroethane to cause cancer?

Human studies examining whether 1,2-dichloroethane can cause cancer have been considered inadequate. In animals, increases in the occurrence of stomach, mammary gland, liver, lung, and endometrium cancers have been seen following inhalation, oral, and dermal exposure.

The Department of Health and Human Services (DHHS) has determined that 1,2-dichloroethane may reasonably be expected to cause cancer. The EPA has determined that 1,2-dichloroethane is a probable human carcinogen and the International Agency for Cancer Research (IARC) considers it to be a possible human carcinogen.

How can 1,2-dichloroethane affect children?

We do not know if exposure to 1,2-dichloroethane will result in birth defects or other developmental effects in people. Studies in animals suggest that 1,2-dichloroethane does not produce birth defects.

It is likely that health effects seen in children exposed to high levels of 1,2-dichloroethane will be similar to the effects seen in adults.

How can families reduce the risk of exposure to 1,2-dichloroethane?

The general population is not likely to be exposed to large amounts of 1,2-dichloroethane. In the past, it was used in small amounts in household products such as cleaning agents, pesticides, and wallpaper and carpet glue. Risk of

exposure from this source could be eliminated if these older products were immediately discarded.

Children should avoid playing in soils near uncontrolled hazardous waste sites where 1,2-dichloroethane may have been discarded.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethane?

Tests are available to measure 1,2-dichloroethane in breath, blood, breast milk, and urine of exposed people. Because 1,2-dichloroethane leaves the body fairly quickly, these tests need to be done within a couple of days of exposure. These tests cannot be used to predict the nature or severity of toxic effects. These tests are not usually done in the doctor's office.

Has the federal government made recommendations to protect human health?

The EPA allows 0.005 milligrams of 1,2-dichloroethane per liter of drinking water (0.005 mg/L).

The Occupational Safety and Health Administration has set a limit of 50 parts of 1,2-dichloroethane per million parts of air (50 ppm) in workplace air for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Toxicological Profile for 1,2-Dichloroethane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQsTM for 1,1-Dichloroethene (1,1-DCE)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to 1,1-dichloroethene occurs mainly in the workplace. Breathing high levels of 1,1-dichloroethene can affect the liver, kidney, and central nervous system. This chemical has been found in at least 515 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is 1,1-dichloroethene?

(Pronounced 1,1-dī'klôr'ō ěth'ēn)

1,1-Dichloroethene is an industrial chemical that is not found naturally in the environment. It is a colorless liquid with a mild, sweet smell. It is also called vinylidene chloride.

1,1-Dichloroethene is used to make certain plastics, such as flexible films like food wrap, and in packaging materials. It is also used to make flame retardant coatings for fiber and carpet backings, and in piping, coating for steel pipes, and in adhesive applications.

What happens to 1,1-dichloroethene when it enters the environment?

- 1,1-Dichloroethene enters the environment from industries that make or use it.
- 1,1-Dichloroethene evaporates very quickly from water and soil to the air.
- In the air, it takes about 4 days for it to break down.
- 1,1-Dichloroethene breaks down very slowly in water.
- It does not accumulate very much in fish or birds.
- In soil, 1,1-dichloroethene is slowly transformed to other less harmful chemicals.

How might I be exposed to 1,1-dichloroethene?

- Workers may be exposed in industries that make or use 1,1-dichloroethene (these industries are mainly in Texas and Louisiana).
- Food that is wrapped in plastic wrap may contain very low levels of 1,1-dichloroethene. The government controls these levels to prevent harm to your health.
- A small percentage (3%) of the drinking water supplies may contain very low levels of 1,1-dichloroethene.
- Air near factories that make or use 1,1-dichloroethene and air near hazardous waste sites may contain low levels of it.

How can 1,1-dichloroethene affect my health?

The main effect from breathing high levels of 1,1-dichloroethene is on the central nervous system. Some people lost their breath and fainted after breathing high levels of the chemical.

Breathing lower levels of 1,1-dichloroethene in air for a long time may damage your nervous system, liver, and lungs. Workers exposed to 1,1-dichloroethene have reported a loss in liver function, but other chemicals were present.

ATSDR Internet home page via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

Animals that breathed high levels of 1,1-dichloroethene had damaged livers, kidneys, and lungs. The offspring of some of the animals had a higher number of birth defects. We do not know if birth defects occur when people are exposed to 1,1-dichloroethene.

Animals that ingested high levels of 1,1-dichloroethene had damaged livers, kidneys, and lungs. There were no birth defects in animals that ingested the chemical.

Spilling 1,1-dichloroethene on your skin or in your eyes can cause irritation.

How likely is 1,1-dichloroethene to cause cancer?

The Environmental Protection Agency (EPA) has determined that 1,1-dichloroethene is a possible human carcinogen.

Studies on workers who breathed 1,1-dichloroethene have not shown an increase in cancer. These studies, however, are not conclusive because of the small numbers of workers and the short time studied.

Animal studies have shown mixed results. Several studies reported an increase in tumors in rats and mice, and other studies reported no such effects.

Is there a medical test to show whether I've been exposed to 1,1-dichloroethene?

Tests are available to measure levels of 1,1-dichloroethene in breath, urine, and body tissues. These tests are not usually available in your doctor's office. However, a sample taken in your doctor's office can be sent to a special laboratory if necessary.

Because 1,1-dichloroethene leaves the body fairly quickly, these methods are useful only for finding exposures that have occurred within the last few days. These tests can't tell you if adverse health effects will occur from exposure to 1,1-dichloroethene.

Has the federal government made recommendations to protect human health?

The EPA has set a limit in drinking water of 0.007 parts of 1,1-dichloroethene per million parts of drinking water (0.007 ppm). EPA requires that discharges or spills into the environment of 5,000 pounds or more of 1,1-dichloroethene be reported.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 1 ppm of 1,1-dichloroethene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) currently recommends that workers breathe as little 1,1-dichloroethene as possible.

Glossary

Carcinogen: A substance that can cause cancer.
CAS: Chemical Abstracts Service.
Ingesting: Taking food or drink into your body.
ppm: Parts per million.
Tumor: An abnormal mass of tissue.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for 1,1-dichloroethene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for 1,2-Dichloroethene (1,2-DCE)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. *cis*-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). *trans*-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (*cis*- or *trans*-) was not specified.

What is 1,2-dichloroethene?

(Pronounced 1,2-dī-klōr' ō-ēth'ēn)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called *cis*-1,2-dichloroethene and the other is called *trans*-1,2-dichloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5-12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13-48 weeks to break down.

- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills.
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes.
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace.

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high

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levels of *trans*-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died.

Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

No EPA cancer classification is available for *trans*-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum allowable level of *cis*-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and *trans*-1,2-dichloroethene at 0.1 mg/L.

The EPA requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the EPA.

The Occupational Health Safety and Health Administration (OSHA) has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Fertility: Ability to reproduce.

Ingest: To eat or drink something.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Solvent: A chemical that can dissolve other substances.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for 1,1,1-Trichloroethane (1,1,1-TCA)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1,1-trichloroethane. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to 1,1,1-trichloroethane usually occurs by breathing contaminated air. It is found in building materials, cleaning products, paints, and metal degreasing agents. It can cause unconsciousness and other effects if inhaled in large amounts, but usually the effects will disappear after exposure ends. This substance has been found in at least 696 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,1,1-trichloroethane?

(Pronounced trī-klōr'ō-ēth'ān')

1,1,1-Trichloroethane is a colorless liquid with a sharp, sweet odor. Even though it is usually found as a liquid, it evaporates quickly and becomes a vapor. It is also known as methyl chloroform, methyltrichloromethane, and trichloromethylmethane; its registered trade names are Chloroethene NU and Aerothene TT. Use of trade names is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry, the Public Health Service, or the U.S. Department of Health and Human Services.

1,1,1-Trichloroethane does not occur naturally in the environment. It is found in many common products such as glue, paint, industrial degreasers, and aerosol sprays. By 1996, 1,1,1-trichloroethane will no longer be made in the United States due to its effects on the ozone layer.

What happens to 1,1,1-trichloroethane when it enters the environment?

- Most of the 1,1,1-trichloroethane released into the environment is evaporated into the air, where it may last for about 6 years.
- It may travel to the ozone layer, where sunlight can break it down into chemicals that destroy the ozone layer.

- Contaminated water from hazardous waste sites may also contaminate surrounding soil and nearby surface or groundwater.
- From lakes and rivers, most of the 1,1,1-trichloroethane evaporates quickly into the air.
- Water can carry 1,1,1-trichloroethane through the soil and into the groundwater where it can evaporate and pass through the soil as a gas, then be released to the air.
- Organisms living in soil or water may also break down 1,1,1-trichloroethane.
- It will not build up in plants or animals.

How might I be exposed to 1,1,1-trichloroethane?

- Breathing contaminated air; it is used in many building materials, so you are likely to be exposed to higher levels indoors than outdoors or near hazardous waste sites.
- Breathing contaminated air in the workplace while using cleaning products, aerosol sprays, paint, and metal degreasing agents.
- Ingesting contaminated drinking water and food.
- Allowing liquids containing it to touch your skin.

How can 1,1,1-trichloroethane affect my health?

If you breathe air containing high levels of 1,1,1-trichloroethane for a short time you may become dizzy, light-headed, and may lose your balance. These symptoms will dis-

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

appear if you stop breathing contaminated air. Breathing much higher levels may cause unconsciousness, low blood pressure, and loss of heartbeat. The effects of breathing 1,1,1-trichloroethane for a long time are not known. In animals such as rats and dogs, exposure to high levels damages the breathing passages, affects the nervous system, and causes mild effects on the liver.

After pregnant rats or rabbits were exposed to 1,1,1-trichloroethane, effects on the offspring, such as delayed development and changes in the setting of the bone structure, were usually only seen at levels that were toxic to the mother. It isn't known whether this chemical affects human reproduction or development.

There are no studies in people to tell whether harmful health effects occur from eating food or drinking water contaminated with 1,1,1-trichloroethane. Placing large amounts of it in an animal's stomach has caused effects on the nervous system, mild liver damage, unconsciousness, and even death.

If your skin comes into contact with 1,1,1-trichloroethane, you might feel some irritation. Studies in animals have shown that skin contact may affect the liver and very large amounts may cause death.

How likely is 1,1,1-trichloroethane to cause cancer?

No information is available to show that 1,1,1-trichloroethane causes cancer. The International Agency for Research on Cancer (IARC) has determined that 1,1,1-trichloroethane is not classifiable as to its human carcinogenicity.

Is there a medical test to show whether I've been exposed to 1,1,1-trichloroethane?

Breath, blood, and urine samples can be tested to determine if you have recently been exposed to 1,1,1-trichloro-

ethane. These tests can sometimes estimate how much 1,1,1-trichloroethane has entered your body. Blood and breath tests need to be taken within a few hours of exposure, and urine tests need to be taken within 1-2 days. These tests, however, can't tell whether your health will be affected as a result of your exposure. The exposure tests aren't routinely available in hospitals and clinics because special equipment is required to perform them.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.2 parts of 1,1,1-trichloroethane per million parts of drinking water (0.2 ppm). EPA has recommended that the level of 1,1,1-trichloroethane in lakes and streams shouldn't exceed 18 ppm to prevent possible health effects from drinking water or eating contaminated fish.

The Occupational Safety and Health Administration (OSHA) has set a workplace exposure limit of 350 ppm for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Long time: Lasting one year or longer.

ppm: Parts per million.

Short time: Lasting 14 days or less.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for 1,1,1-trichloroethane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for 1,1,2-Trichloroethane (1,1,2-TCA)

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1,2-trichloroethane. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: 1,1,2-Trichloroethane is primarily used as a solvent and a chemical intermediate in industry. Breathing high levels of it caused effects on the liver, kidney, and nervous system in animals. This chemical has been found in at least 45 of the 1,177 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,1,2-trichloroethane?

(Pronounced 1,1,2-trī-klôr'ō-ěth'ān')

1,1,2-Trichloroethane is a colorless, sweet-smelling liquid. It does not burn easily, can be dissolved in water, and evaporates easily. It is used as a solvent (a chemical that dissolves other substances) and as an intermediate in the production of the chemical, 1,1-dichloroethane. 1,1,2-Trichloroethane is sometimes present as an impurity in other chemicals, and it may be formed when another chemical breaks down in the environment under conditions where there is no air.

What happens to 1,1,2-trichloroethane when it enters the environment?

- Most 1,1,2-trichloroethane released into the environment will go into the air.
- 1,1,2-Trichloroethane breaks down slowly in air; it takes approximately 49 days for half of it to break down.
- 1,1,2-Trichloroethane may enter the groundwater by filtering through the soil.
- It appears to stay in water for a long time; it takes years for it to break down.

How might I be exposed to 1,1,2-trichloroethane?

- Breathing outdoor air that contains it from industrial releases.
- Drinking contaminated water.
- Breathing contaminated workplace air.
- Touching it when used as a solvent in the workplace.
- Breathing air near a hazardous waste site that contains 1,1,2-trichloroethane.

How can 1,1,2-trichloroethane affect my health?

No information is available on how breathing or swallowing 1,1,2-trichloroethane may affect your health. Applying 1,1,2-trichloroethane to the skin of a person resulted in stinging and burning of the skin.

When animals breathed high levels of 1,1,2-trichloroethane, it affected the liver and kidneys. Nervous system effects, such as excitation and sleepiness, were also seen. When animals swallowed food or water containing 1,1,2-trichloroethane, effects on the stomach, blood, liver, kidneys, and nervous system were seen.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

We do not know whether 1,1,2-trichloroethane can affect reproduction in people. Animal studies have not shown the chemical to affect normal reproduction and development.

How likely is 1,1,2-trichloroethane to cause cancer?

No information is available on whether or not 1,1,2-trichloroethane will cause cancer in people. Only one study is available on the ability of 1,1,2-trichloroethane to cause cancer in animals. This study found an increase in liver cancer in mice, but not in rats, who were fed the chemical for their lifetime.

The International Agency for Research on Cancer (IARC) has determined that 1,1,2-trichloroethane is not classifiable as to its carcinogenicity to humans.

Is there a medical test to show whether I've been exposed to 1,1,2-trichloroethane?

Samples of your breath, blood, and urine can be tested to determine if you have been recently exposed to 1,1,2-trichloroethane. These tests must be done soon after the exposure occurred. These tests will not tell you whether your health will be affected by 1,1,2-trichloroethane and are not routinely available in hospitals and clinics because they require special equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.005 milligrams of 1,1,2-trichloroethane per liter of drinking water (0.005 mg/L).

Discharges, spills, or accidental releases of 100 pounds or more of 1,1,2-trichloroethane must be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 45 milligrams 1,1,2-trichloroethane per cubic meter of air (45 mg/m³) for an 8-hour workday in a 40-hour workweek.

The American Conference of Governmental and Industrial Hygienists (ACGIH) and the National Institute for Occupational Safety and Health (NIOSH) also recommend an occupational exposure limit of 45 mg/m³ for 1,1,2-trichloroethane.

The federal recommendations have been updated as of July 1999.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

National Priorities List: A list of the nation's worst hazardous waste sites.

Solvent: A substance that dissolves another substance.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1989. Toxicological profile for 1,1,2-trichloroethane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for Trichloroethene (TCE)

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- ❑ Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- ❑ Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- ❑ Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- ❑ Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- ❑ Trichloroethylene does not build up significantly in

plants and animals.

How might I be exposed to trichloroethylene?

- ❑ Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- ❑ Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- ❑ Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- ❑ Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood

and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or gas.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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ToxFAQs™ for Tetrachloroethene (PCE)

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tět'rə-klôr' õ-ěth'ə-lēn')

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ToxFAQs Internet home page via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be per-

formed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for Vinyl Chloride

This fact sheet answers the most frequently asked health questions (FAQs) about vinyl chloride. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to vinyl chloride occurs mainly in the workplace. Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer. This substance has been found in at least 496 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is vinyl chloride?

(Pronounced vī'nəl klôr'id')

Vinyl chloride is a colorless, flammable gas at normal temperatures with a mild, sweet odor. It is a manufactured substance that is used to make polyvinyl chloride (PVC). PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and the furniture and automobile upholstery.

Vinyl chloride also results from the breakdown of other substances, such as trichloroethane, trichloroethylene, and tetrachloroethylene. Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

What happens to vinyl chloride when it enters the environment?

- Liquid vinyl chloride evaporates easily into the air. Vinyl chloride, if it is near the surface of soil or water, can also evaporate.
- Vinyl chloride in the air can break down within a few days to other substances, some of which can be harmful.
- Small amounts of vinyl chloride can dissolve in water.
- Vinyl chloride formed from the breakdown of other chemicals can enter groundwater.

- Vinyl chloride is unlikely to build up in plants or animals.

How might I be exposed to vinyl chloride?

- Breathing vinyl chloride that has been released from plastics industries, hazardous waste sites, and landfills.
- Breathing vinyl chloride in air or during contact with your skin or eyes in the workplace.
- Drinking water from contaminated wells.

How can vinyl chloride affect my health?

Breathing high levels of vinyl chloride can cause you to feel dizzy or sleepy. Breathing very high levels can cause you to pass out, and breathing extremely high levels can cause death.

Most of the studies on long-term exposure (365 days or longer) to vinyl chloride are about workers that make or use vinyl chloride. They were exposed to much higher levels of vinyl chloride in the air than is the general population. People who breathe vinyl chloride for long periods of time can have changes to the structure of their livers.

People who work with vinyl chloride have developed nerve damage and immune reactions. Other workers have

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

developed problems with the blood flow in their hands; the tips of their fingers turn white and hurt when they are in cold temperatures. Sometimes, the bones in the tips of their fingers have broken down.

Animal studies have shown that long-term (365 days or longer) exposure to vinyl chloride can damage the sperm and testes. It has not been proven that vinyl chloride causes birth defects in humans, but animal studies have shown that breathing vinyl chloride can harm unborn offspring and may also cause increases in early miscarriages.

The effects of drinking high levels of vinyl chloride are unknown. If you spill vinyl chloride on your skin, it will cause numbness, redness, and blisters.

How likely is vinyl chloride to cause cancer?

The Department of Health and Human Services (DHHS) has determined that vinyl chloride is a known human carcinogen. Vinyl chloride exposure results in liver cancer in people.

Is there a medical test to show whether I've been exposed to vinyl chloride?

The results of several tests can sometimes show if you've been exposed to vinyl chloride. If breath samples are taken just after exposure, vinyl chloride can be measured, but this is not helpful for measuring very low levels of the chemical.

Better information is gotten by measuring a breakdown product of vinyl chloride, thiodiglycolic acid, in the urine shortly after exposure. However, this test will not give information on the level of exposure. Exposure to other chemicals can produce the same breakdown product in the urine.

The binding of vinyl chloride to genetic material in your blood or tissue can tell whether you have been exposed to

vinyl chloride, but this is not sensitive enough to determine the effects resulting from exposure. These tests are not available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA requires that the amount of vinyl chloride in drinking water not exceed 0.002 milligrams of vinyl chloride per liter of water (0.002 mg/L). The EPA requires that spills or accidental releases into the environment of 1 pound or more of vinyl chloride be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set the maximum allowable level of vinyl chloride in workroom air during an 8-hour workday in a 40-hour workweek at 1 part vinyl chloride per million parts of air (1 ppm).

Glossary

Carcinogen: A substance with the ability to cause cancer.

Immune reaction: Sensitizing response of the body to a chemical.

Milligram (mg): One thousandth of a gram.

Miscarriage: Pregnancy loss.

ppm: Parts per million.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Vinyl Chloride (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for 1,4-Dioxane

1,4-DIOXANE FACT SHEET

INTRODUCTION

1,4-Dioxane is a relatively common compound in our society; it is present in many cosmetics and toiletries, as well as outdoor and indoor air. 1,4-Dioxane may also be commonly present in food products, where the FDA has approved it as an unintentional food additive. U.S. EPA has classified 1,4-dioxane as a Probable Human Carcinogen, recognizing the possibility that repeated exposure may increase the risk of developing cancer if contact rates are too high and occur for too long. A number of states have set drinking water guidelines ranging from 3 to 85 ppb (parts per billion); no federal drinking water standard has been set.

WHAT IS 1,4-DIOXANE?

1,4-Dioxane is a compound which is both a solvent itself and a stabilizer for other solvents. It is present in products such as paints, varnishes, lacquers, paint & varnish removers, cosmetics and toiletries. It is used: (1) as a degreasing agent, (2) in the manufacture of fats, oils, waxes, resins and (3) in the pulping of wood. It is also used as a stabilizer for chlorinated solvents such as 1,1,1-trichloroethane (TCA). Millions of pounds of 1,4-dioxane are used in the U.S. annually.

Note: 1,4-Dioxane is not "dioxin".

WHERE IS 1,4-DIOXANE FOUND & HOW MIGHT SOMEONE BE EXPOSED?

Cosmetics & Toiletries: 1,4-Dioxane is present in many commercial cosmetics and toiletries (e.g., shampoos, liquid soaps, lotions). A number of studies have found 1,4-dioxane in one-half or more of tested cosmetics, with levels ranging from 3,000 to 100,000 ppb. 1,4-Dioxane is not added intentionally to these products, rather it is introduced via the use of ethoxylated detergents and surfactants (e.g., polyethylene glycol), where it is a by-product of their manufacture. The Food & Drug Administration (FDA) has recognized the presence of 1,4-dioxane in these products and notes "... *it is uncertain how much is available for absorption [into the body] and how much evaporates instead of penetrating the skin.*"

Ambient & Indoor Air: Measurable levels of 1,4-dioxane are a common finding in outdoor and indoor air. Results from four U.S. EPA studies have shown 1,4-dioxane in up to 55% of outdoor and indoor air samples at concentrations ranging 0.11 - 140 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Food: Human exposure may also occur due to the potential presence of 1,4-dioxane in foods. 1,4-Dioxane may gain access to foods due to its presence in some adhesives used in packaging or from the use of pesticides (where 1,4-dioxane is an "inert ingredient"). FDA has recognized this exposure and approved 1,4-dioxane as an *unintentional food additive*.

HOW CAN 1,4-DIOXANE ENTER & LEAVE ONE'S BODY?

Developed by Gerry Hiatt, U.S. Environmental Protection Agency Toxicologist

Uptake into the Body: 1,4-Dioxane can be absorbed into the body following oral (via the mouth, e.g., eating, drinking), inhalation (via breathing) and dermal (across the skin) exposure.

Elimination from the Body: 1,4-Dioxane is eliminated from the body mainly in the urine, both as 1,4-dioxane itself and as breakdown products. Some also leaves through exhaled breath.

Bioconcentration Potential: There is no evidence that 1,4-dioxane bioconcentrates in the body.

WHAT ARE POTENTIAL HEALTH EFFECTS ASSOCIATED WITH 1,4-DIOXANE?

Cancer: 1,4-Dioxane has been demonstrated to cause or increase the incidence of cancer in animal studies (these are mainly cancers of the nasal cavity and liver). To date, it has not been shown to cause or increase the incidence of cancer in humans (there have been 3 studies).

U.S. EPA has classified 1,4-dioxane as a *Probable Human Carcinogen*; this is the same classification given to TCE (trichloroethylene). As a carcinogen, 1,4-dioxane is of similar potency to TCE. It has the same potency as TCE by oral (via the mouth) exposure. When inhaled, it is approximately twice as potent as TCE.

Non-cancer toxicity: Chronic (repeated) drinking water exposures in animals have caused increased mortality, and kidney & liver damage. In these studies, no effects were observed at levels in drinking water less than 100,000 ppb.

As with all compounds, "toxic" or otherwise, the level (amount) of exposure is the primary factor determining if someone is likely to experience a health effect, whether an increased risk of developing cancer or some other health effect.

WHAT LEVELS ARE CONSIDERED HEALTH-PROTECTIVE?

There currently is no federal drinking water standard for 1,4-dioxane under the Safe Drinking Water Act, nor has Arizona set a state drinking water standard. Some other states have set drinking water guidelines, which are summarized in the following table:

State	Concentration	Type
California	3 ppb	Action Level
Florida	5 ppb	Guideline
North Carolina	7 ppb	Action Level
Maine	32 ppb	Guideline
Massachusetts	50 ppb	Guideline
Michigan	85 ppb	Health Advisory

U.S. EPA Region 9 has set a *Preliminary Remediation Goal* (PRG) for 1,4-dioxane at **6.1 ppb** in drinking water. U.S. EPA estimates that people who drink water containing 1,4-dioxane at 6.1 ppb daily for 30 years will have no more than a one-in-one-million (1 in 1,000,000) increased chance of developing cancer. The Office of Drinking Water has set a *Health Advisory* at **3 ppb** in drinking water, based on the estimate of an increased chance of no more than a one-in-one-million from an entire lifetime.



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ToxFAQs™ for Automotive Gasoline

This fact sheet answers the most frequently asked health questions (FAQs) about automobile gasoline. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to automotive gasoline most likely occurs from breathing its vapor at a service station while filling a car's fuel tank. At high levels, automotive gasoline is irritating to the lungs when breathed in and irritating to the lining of the stomach when swallowed. Exposure to high levels may also cause harmful effects to the nervous system. Automotive gasoline has been found in at least 23 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is automotive gasoline?

(Pronounced ô'tə-mō'tīv gās'ə-lēn')

The gasoline discussed in this fact sheet is automotive used as a fuel for engines in cars. Gasoline is a colorless, pale brown, or pink liquid, and is very flammable.

Gasoline is a manufactured mixture that does not exist naturally in the environment. Gasoline is produced from petroleum in the refining process.

Typically, gasoline contains more than 150 chemicals, including small amounts of benzene, toluene, xylene, and sometimes lead. How the gasoline is made determines which chemicals are present in the gasoline mixture and how much of each is present. The actual composition varies with the source of the crude petroleum, the manufacturer, and the time of year.

What happens to automotive gasoline when it enters the environment?

- Small amounts of the chemicals present in gasoline evaporate into the air when you fill the gas tank in your car or when gasoline is accidentally spilled onto surfaces and soils or into surface waters.

- Other chemicals in gasoline dissolve in water after spills to surface waters or underground storage tank leaks into the groundwater.
- In surface releases, most chemicals in gasoline will probably evaporate; others may dissolve and be carried away by water; a few will probably stick to soil.
- The chemicals that evaporate are broken down by sunlight and other chemicals in the air.
- The chemicals that dissolve in water also break down quickly by natural processes.

How might I be exposed to automotive gasoline?

- Breathing vapors at a service station when filling the car's fuel tank is the most likely way to be exposed.
- Working at a service station.
- Using equipment that runs on gasoline, such as a lawn mower.
- Drinking contaminated water.
- Being close to a spot where gasoline has spilled or leaked into the soil.

How can automotive gasoline affect my health?

Many of the harmful effects seen after exposure to gasoline are due to the individual chemicals in the gasoline mix-

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

ture, such as benzene and lead. Inhaling or swallowing large amounts of gasoline can cause death.

Inhaling high concentrations of gasoline is irritating to the lungs when breathed in and irritating to the lining of the stomach when swallowed. Gasoline is also a skin irritant. Breathing in high levels of gasoline for short periods or swallowing large amounts of gasoline may also cause harmful effects on the nervous system.

Serious nervous system effects include coma and the inability to breathe, while less serious effects include dizziness and headaches.

There is not enough information available to determine if gasoline causes birth defects or affects reproduction.

How likely is automotive gasoline to cause cancer?

The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified automotive gasoline for carcinogenicity. Automotive gasoline is currently undergoing review by the EPA for cancer classification.

Some laboratory animals that breathed high concentrations of unleaded gasoline vapors continuously for 2 years developed liver and kidney tumors. However, there is no evidence that exposure to gasoline causes cancer in humans.

Is there a medical test to show whether I've been exposed to automotive gasoline?

Laboratory tests are available that can measure elevated blood or urine levels of lead (as an indication of exposure to leaded gasoline only), benzene, or other substances that may result from exposure to gasoline or other sources. These meth-

ods are sensitive enough to measure background levels and levels where health effects may occur. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has established many regulations to control air pollution. These are designed to protect the public from the possible harmful health effects of gasoline.

The American Conference of Governmental Industrial Hygienists (ACGIH) set a maximum level of 890 milligrams of gasoline per cubic meter of air (890 mg/m³) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Crude petroleum: Petroleum that has not been processed.

Dissolve: To disappear gradually.

Evaporate: To change into a vapor or a gas.

Irritant: A substance that causes an abnormal reaction.

Mixture: A combination of two or more components.

Refining process: The process by which petroleum is purified to form gasoline.

Tumor: An abnormal mass of tissue.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for automotive gasoline. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for Jet Fuel – Jet 4 and Jet 7

This fact sheet answers the most frequently asked health questions (FAQs) about jet fuels JP-4 and JP-7. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: JP-4 and JP-7 are liquid mixtures produced from petroleum and used by the U.S. Air Force as aircraft fuels. Breathing large amounts of the vapors from these fuels may cause nausea and nervous system effects. JP-4 has been found in at least 4 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). JP-7 has not been found at any sites.

What are jet fuels JP-4 and JP-7?

(Pronounced jět fyōō'əlz JP-4 and JP-7)

Jet fuels JP-4 and JP-7 (jet propellant-4 and jet propellant-7) are flammable, colorless to straw-colored liquid mixtures that come from crude petroleum. They smell like kerosene. Jet fuels are blends of other chemicals made according to U.S. Air Force standards for use as aircraft fuels.

Although JP-4 and JP-7 are liquids at room temperature, they also evaporate easily.

What happens to JP-4 and JP-7 when they enter the environment?

- JP-4 and JP-7 enter the environment when they are spilled or leak into water or soil during their manufacture, storage, disposal, or release from jets during flight.
- Some chemicals found in JP-4 may dissolve in water, while others may evaporate into the air.
- Some chemicals found in JP-4 may stick to particles in water, which will eventually cause them to settle to the bottom sediment.
- Some of the chemicals found in JP-4 may be broken down slowly in air, water, and soil by sunlight or small organisms.

- There is no information about what happens to JP-7 when it enters the environment, but it probably acts similarly to JP-4.
- There is no information on whether JP-4 and JP-7 build up significantly in plants and animals.
- It is likely that some of the chemical components of JP-4 and JP-7 build up in plants and animals.

How might I be exposed to JP-4 and JP-7?

- Exposure to JP-4 occurs primarily in workers who manufacture, transport, or use jet fuels.
- Exposure to JP-4 is most likely to occur through skin contact or breathing contaminated air.
- You may be exposed to JP-4 by breathing some of the chemicals that evaporate from a spill or leak site.
- You may also be exposed through drinking or swimming in water that has been contaminated with JP-4, or from touching soil contaminated from a spill or leak.
- There is no information about how individuals may be exposed to JP-7, but it is reasonable to assume that you could be exposed in the same ways as for JP-4.

How can JP-4 and JP-7 affect my health?

Little information is available about the health effects

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that may be caused by JP-4 and JP-7. Inhaling large amounts of JP-4 vapor may cause painful breathing and a feeling of suffocation, as well as headache, dizziness, nausea, depression, anxiety, memory loss, and irritability.

Animal studies have shown that inhaling extremely large amounts of JP-4 or JP-7 vapor does not cause death. However, animals breathing high levels of JP-4 vapor for short periods exhibited poor coordination and convulsions. A depressed activity level has been seen in animals breathing low levels of JP-4 vapor. Other effects seen in animals breathing JP-4 or JP-7 vapor have been skin and eye irritation, changes in liver cells, and decreased numbers of white blood cells.

We do not know whether JP-4 or JP-7 can cause birth defects or if they affect reproduction in people.

How likely are JP-4 and JP-7 to cause cancer?

The International Agency for Research on Cancer (IARC) has stated there is not enough information to determine how likely JP-4 and JP-7 are to cause cancer in humans.

Studies with mice and rats have suggested that skin contact with JP-4 may cause skin cancer, although this is not certain. There is also no clear evidence that breathing, eating, or drinking JP-4 or JP-7 causes cancer in animals.

Is there a medical test to show whether I've been exposed to JP-4 and JP-7?

There is no medical test that shows if you have been exposed to JP-4 and JP-7. Tests are available to determine if some of the chemicals commonly found in jet fuels are in your blood. However, the presence of these chemicals in blood may not necessarily mean that you have been exposed to JP-4 or JP-7.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 500 parts of petroleum distillates per million parts of air (500 ppm) for an 8-hour workday, 40-hour workweek.

The Air Force Office of Safety and Health (AFOSH) has set an exposure limit of 400 ppm petroleum distillates for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 350 milligrams of petroleum distillates per cubic meter of air (350 mg/m³) for a 40-hour workweek.

The Department of Transportation (DOT) lists JP-4 and JP-7 as hazardous materials and, therefore, regulates their transportation.

Glossary

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or a gas.

Milligram: One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for jet fuels JP-4 and JP-7. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for Jet Fuel – Jet 5 and Jet 8

This fact sheet answers the most frequently asked health questions (FAQs) about jet fuels JP-5 and JP-8. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to jet fuels JP-5 and JP-8 occurs mainly in the workplace or from accidents or spills. Breathing in large amounts of JP-5 and JP-8 may result in headaches, difficulty in concentrating, coordination problems, and fatigue. These chemicals have been found in at least 22 of the 1,445 National Priorities List sites identified by the Environmental Protection Agency.

What are jet fuels JP-5 and JP-8?

(Pronounced jět fyōō'əlz JP-5 and JP-8)

Jet fuels JP-5 and JP-8 are substances used as aircraft fuels by the military. JP-5 and JP-8 is shorthand for jet propellants 5 and 8. JP-5 is the U.S. Navy's primary jet fuel, and JP-8 is one of the jet fuels used by the U.S. Air Force.

Both of the substances are composed of a large number of chemicals, and both are colorless liquids that may change into gas vapor. They smell like kerosene, since kerosene is the primary component of both JP-5 and JP-8. They are made by refining either crude petroleum oil deposits found underground or shale oil found in rock.

What happens to jet fuels JP-5 and JP-8 when they enter the environment?

- Some chemicals in JP-5 and JP-8 will evaporate into air from open containers or when they are spilled into water or soil.
- JP-5 and JP-8 in air may break down by reacting with sunlight or chemicals in air.
- Chemicals in JP-5 and JP-8 may slowly move from the soil into groundwater.

- Other chemicals in JP-5 and JP-8 will attach to particles in water and may sink to the bottom sediments.
- Chemicals in JP-5 and JP-8 may be broken down by bacteria and other organisms in soil and water.
- JP-5 and JP-8 may stay in the soil for more than 10 years.

How might I be exposed to jet fuels JP-5 and JP-8?

- Most people would not be exposed to jet fuels JP-5 and JP-8 unless they work with these substances or live very close to where they are used or spilled.
- Breathing air in an area where an accident or leak of jet fuels JP-5 and JP-8 has occurred.
- Drinking water contaminated with JP-5 or JP-8.
- Touching soil contaminated with jet fuels JP-5 and JP-8.
- Working refueling military aircraft or transporting jet fuels.
- Living near a hazardous waste site where jet fuels JP-5 and JP-8 are disposed of.

How can jet fuels JP-5 and JP-8 affect my health?

Little is known about the effects of jet fuels JP-5 and JP-8 on people's health. Breathing large amounts of JP-5 and JP-8

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for a short period may result in headaches, difficulty in concentrating, coordination problems, and fatigue. Breathing lower levels of JP-5 and JP-8 for a longer period could result in lack of initiative, sleep disturbances, and dizziness.

Much information is available on accidental poisonings in children from drinking kerosene. Effects seen include vomiting, diarrhea, stomach cramps, coughing, drowsiness, and loss of consciousness. Drinking very large amounts can result in death. Skin exposure to kerosene results in skin irritation, consisting of itchy, red, peeling, and sore skin.

It is not known whether jet fuels JP-5 and JP-8 can affect reproduction or cause birth defects in people or animals.

How likely are jet fuels JP-5 and JP-8 to cause cancer?

The International Agency for Research on Cancer has concluded that jet fuels are not classifiable as to their carcinogenicity to humans.

No carcinogenicity studies on jet fuels JP-5 and JP-8 are available in people. A study on the use of kerosene stoves found no association between their use and bronchial cancer, while another study found an increase in oral cancer in men who used kerosene stoves. Other studies in people are inconclusive. An animal study showed no increase in kidney tumors when rats breathed air containing high levels of JP-5 or JP-8 for 90 days. Skin tumors were seen in mice when their skin was exposed to jet fuel JP-5 for 60 weeks.

Is there a medical test to show whether I've been exposed to jet fuels JP-5 and JP-8?

No test shows if you have been exposed to JP-5 or JP-8.

However, tests can determine if your blood contains some of the chemicals found in JP-5 and JP-8. However, the concentrations of these chemicals in JP-5 and JP-8 are very low, and if they were detected in your blood, it would not necessarily mean that you were exposed to JP-5 or JP-8.

Has the federal government made recommendations to protect human health?

Very few regulations or advisories are specific to jet fuels JP-5 and JP-8. The following is a recommendation for petroleum products, which are similar to jet fuels JP-5 and JP-8.

The Occupational Safety and Health Administration and the Air Force Office of Safety and Health have set an exposure limit of 400 milligrams of petroleum products per cubic meter of air (400 mg/m³) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1998. Toxicological profile for jet fuels (JP-5 and JP-8). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





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ToxFAQs™ for Fuel Oils – Including Kerosene

This fact sheet answers the most frequently asked health questions (FAQs) about fuel oils. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Fuel oils are liquid mixtures produced from petroleum, and their use mostly involves burning them as fuels. Drinking or breathing fuel oils may cause nausea or nervous system effects. However, exposure under normal use conditions is not likely to be harmful. Fuel oils have been found in at least 26 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are fuel oils?

(Pronounced fyoo'oilz)

Fuel oils are a variety of yellowish to light brown liquid mixtures that come from crude petroleum. Some chemicals found in fuel oils may evaporate easily, while others may more easily dissolve in water.

Fuel oils are produced by different petroleum refining processes, depending on their intended uses. Fuel oils may be used as fuel for engines, lamps, heaters, furnaces, and stoves, or as solvents.

Some commonly found fuel oils include kerosene, diesel fuel, jet fuel, range oil, and home heating oil. These fuel oils differ from one another by their hydrocarbon compositions, boiling point ranges, chemical additives, and uses.

What happens to fuel oils when they enter the environment?

- Some chemicals found in fuel oils may evaporate into the air from open containers or contaminated soil or water.
- Some chemicals found in fuel oils may dissolve in water after spills to surface waters or leaks from underground storage tanks.

- Some chemicals found in fuel oils may stick to particles in water, which will eventually cause them to settle to the bottom sediment.
- Some of the chemicals found in fuel oils may be broken down slowly in air, water, and soil by sunlight or small organisms.
- Some of the chemicals found in fuel oils may build up significantly in plants and animals.

How might I be exposed to fuel oils?

- Using a home kerosene heater or stove, or using fuel oils at work.
- Breathing air in home or building basements that has been contaminated with fuel oil vapors entering from the soil.
- Drinking or swimming in water that has been contaminated with fuel oils from a spill or a leaking underground storage tank.
- Touching soil contaminated with fuel oils.
- Using fuel oils to wash paint or grease from skin or equipment.

How can fuel oils affect my health?

Little information is available about the health effects that may be caused by fuel oils. People who use kerosene

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stoves for cooking do not seem to have any health problems related to their exposure.

Breathing some fuel oils for short periods may cause nausea, eye irritation, increased blood pressure, headache, light-headedness, loss of appetite, poor coordination, and difficulty concentrating. Breathing diesel fuel vapors for long periods may cause kidney damage and lower your blood's ability to clot.

Drinking small amounts of kerosene may cause vomiting, diarrhea, coughing, stomach swelling and cramps, drowsiness, restlessness, painful breathing, irritability, and unconsciousness. Drinking large amounts of kerosene may cause convulsions, coma, or death. Skin contact with kerosene for short periods may cause itchy, red, sore, or peeling skin.

How likely are fuel oils to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that some fuel oils (heavy) may possibly cause cancer in humans, but for other fuel oils (light) there is not enough information to make a determination. IARC has also determined that occupational exposures to fuel oils during petroleum refining are probably carcinogenic in humans.

Some studies with mice have suggested that repeated contact with fuel oils may cause liver or skin cancer. However, other mouse studies have found this not to be the case. No studies are available in other animals or in people on the carcinogenic effects of fuel oils.

Is there a medical test to show whether I've been exposed to fuel oils?

There is no medical test that shows if you have been exposed to fuel oils. Tests are available to determine if some of

the chemicals commonly found in fuel oils are in your blood. However, the presence of these chemicals in blood may not necessarily mean that you have been exposed to fuel oils.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) and the Air Force Office of Safety and Health (AFOSH) have set a permissible exposure level (PEL) of 400 parts of petroleum distillates per million parts of air (400 ppm) for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 350 milligrams of petroleum distillates per cubic meter of air (350 mg/m³) for a 40-hour workweek.

The Department of Transportation (DOT) lists fuel oils as hazardous materials and, therefore, regulates their transportation.

Glossary

Carcinogenic: Able to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or a gas.

Hydrocarbon: Any compound made up of hydrogen and carbon.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for fuel oils. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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