Motorola 52nd St. Superfund Site

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • December 2011

Five-Year Review Completed

In September 2011, the Arizona Department of Environmental Quality (ADEQ) and U.S. Environmental Protection Agency (EPA) completed the Five-Year Review of the remedial actions implemented at the Motorola 52nd Street Superfund Site (Site) in the Phoenix area of Maricopa County, Arizona (Figure 1). Interim remedies have been implemented for both Operable Unit 1 (OU1) and Operable Unit 2 (OU2) including groundwater extraction and treatment facilities designed to capture volatile organic compound (VOC) contamination within their respective boundaries while a final remedy addressing the aquifer at the Site is developed. This fact sheet summarizes the significant findings of the Five-Year Review Report for the period of August 2006 through October 2010. Actions that took place after October 2010 were not evaluated in this report.

The full report can be found at the information repositories and EPA website listed on the last page.

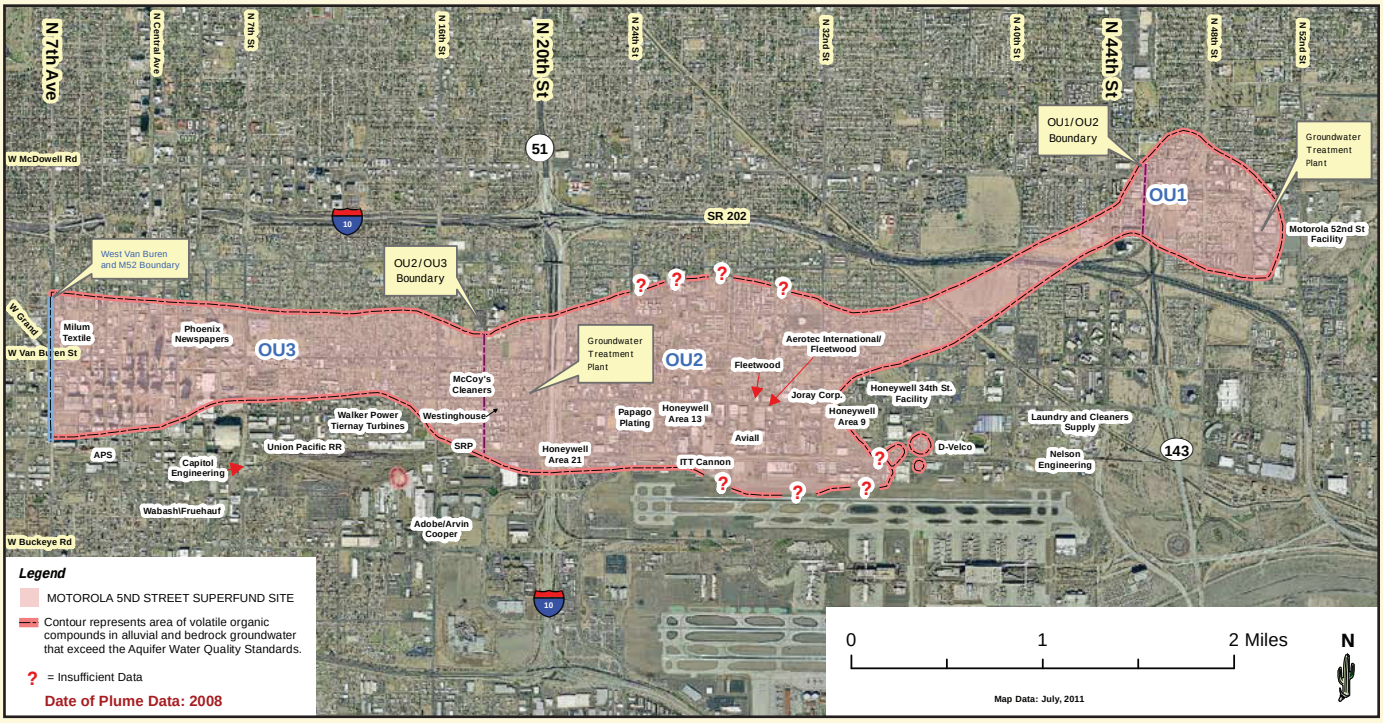

Figure 1: *Plume of groundwater contamination at the Motorola 52nd Street Superfund Site.*

A Five-Year Review and What it Means

ADEQ is the lead regulatory agency for both OU1 and OU2 and prepared the report with the support of the URS Corporation (URS) and input from EPA. Superfund law requires an evaluation of the remedy every five years, cleanup remedies leave contaminants in place at a Superfund site above levels that allow for unrestricted use and unrestricted exposure of impacted environmental media. The purpose of the Five-Year Review is to make sure the cleanup continues to protect human health and the environment. During the review, ADEQ and EPA look at cleanup actions taken and control measures in place at the Site. Site inspection and community interviews were also conducted to make technical assessments of site conditions.

The Five-Year Review report identifies site issues and recommendations and includes a protectiveness statement. A protectiveness statement explains whether the cleanup remedies continue to be effective and what other measures may still be needed at the Site.

Operable Unit 3 extends west of the OU2 boundary and was not included for evaluation of cleanup remedies in the Five-Year Review since no interim remedies are currently in place. However, a brief site status and history of the continuing remedial investigation activities being conducted by EPA are included in the report.

This Five-Year Review of the Motorola 52nd Street Superfund Site was completed in September 2011. The next Five-Year Review will evaluate activities that occurred between October 2010 and October 2015 and will be completed in September 2016.

Summary of Five-Year Review Findings

Operable Unit 1:

- Extraction of groundwater continued from source areas located at the former Motorola 52nd Street Facility. A well extraction network located at the Old Crosscut Canal treated extracted groundwater at the Integrated Groundwater Treatment Plant (IGWTP). Approximately 533 million gallons of groundwater were treated and approximately 3,211 pounds of trichloroethylene (TCE) and VOCs were removed during the Five-Year Review evaluation period.

- On Semiconductor is the current operator of the former Motorola 52nd Street Facility and intends to suspend manufacturing operations, after which it will have no use for the treated water. Alternative end uses for OU1 treated groundwater are currently being evaluated.

- Initiation of a Bedrock Extraction Pilot Study took place to evaluate long-term extraction of groundwater from impacted bedrock underlying the former Motorola 52nd Street Facility.

- EPA and Freescale Semiconductor Inc. have agreed to conduct an assessment of the vapor intrusion to indoor air pathway of VOC contamination within the boundaries of OU1.

- Groundwater monitoring data collected during the review period indicated that the extraction network is effectively decreasing TCE concentrations in both the vicinity of the groundwater extraction wells and in the alluvial groundwater plume to the west. These results support the conclusion that the contaminated area downgradient of OU1 is decreasing in size.

Operable Unit Two:

- Extraction of groundwater continued from three wells located just west of Interstate 10 at the 20th Street Groundwater Treatment Facility. Treated groundwater was discharged into the Salt River Project Grand Canal. Approximately 3,690 million gallons of groundwater were treated and approximately 3,742 pounds of VOCs were removed during the Five-Year Review evaluation period.

- A mixing zone was established to evaluate the discharge to the Grand Canal of boron present in the extracted groundwater.

- The concentration of VOCs in groundwater across OU2 have decreased since the last Five Year Review period. This decrease in contaminant concentration can be seen in a reduced plume width from north to south.

Treatment System Site Inspections

ADEQ and URS (a contracted engineering firm) conducted an inspection of the OU1 treatment facility on December 2, 2010. The inspection included review of on-site documentation, evaluation of site access restrictions and inspection of the process areas and equipment. Freescale maintains a high level of operational up-time of the OU1 treatment system, being between 91.7 and 97.7 % operational. The system currently shows signs of aging with wear and weathering of exposed equipment, and now operates below its original design capacity.

ADEQ and URS conducted an inspection of the OU2 treatment facility on December 1, 2010. In general the treatment system was found to be in good repair and effectively maintained. Facility documentation and logs were readily available for review in the control room. Operational efficiency of the 18 granular activated carbon units is above 95%.

Community and Stakeholder Interviews

The purpose of the interviews was to obtain any additional information regarding the remedy protectiveness. ADEQ, EPA and URS conducted interviews in September 2010, October 2010 and February 2011 of community leaders and involved residents, contractor technical staff involved in the cleanup, and other stakeholders such as local politicians and activists. The interviews are summarized in the Report.

Technical Assessment

OU1

The OU1 Letter of Determination (LOD) and Record of Decision (ROD) signed in September 1988 called for containment of the plume and cleanup of contaminated soils. The OU1 interim remedy is functioning as intended by the LOD and ROD with the exception of:

- Incomplete soil cleanup activities at the Courtyard/50th Street, which has not been adequately evaluated.
- No soil cleanup in the Acid Treatment Plant area has been conducted to date.
- Updated soil data is needed to evaluate the potential impact to groundwater from contaminated soil and updated soil gas data is needed to begin the evaluation of the vapor intrusion to indoor air pathway.

OU2

- The OU2 interim remedy is meeting the objectives of the ROD signed in July 1994, which is containment of VOC contaminated groundwater in the alluvial aquifer by establishing a capture zone across the entire width and depth of the contaminant plume in the vicinity of 20th Street and Interstate 10.
- The annual effectiveness reports do not specifically address the concentrations of contaminants within the wells upgradient of the Treatment System to the southeast. There is contamination upgradient of the groundwater extraction system that exceeds the Arizona Aquifer Water Quality Standards (AWQS) and has the potential to travel along a flow path outside of the limit of capture. Further evaluation of remedial measures which would reduce the concentrations of contamination upgradient may be required. (See Figure 2.)
- The vapor intrusion to indoor air assessment has not been completed and will be addressed in the OU2 Site-wide Remedial Investigation.

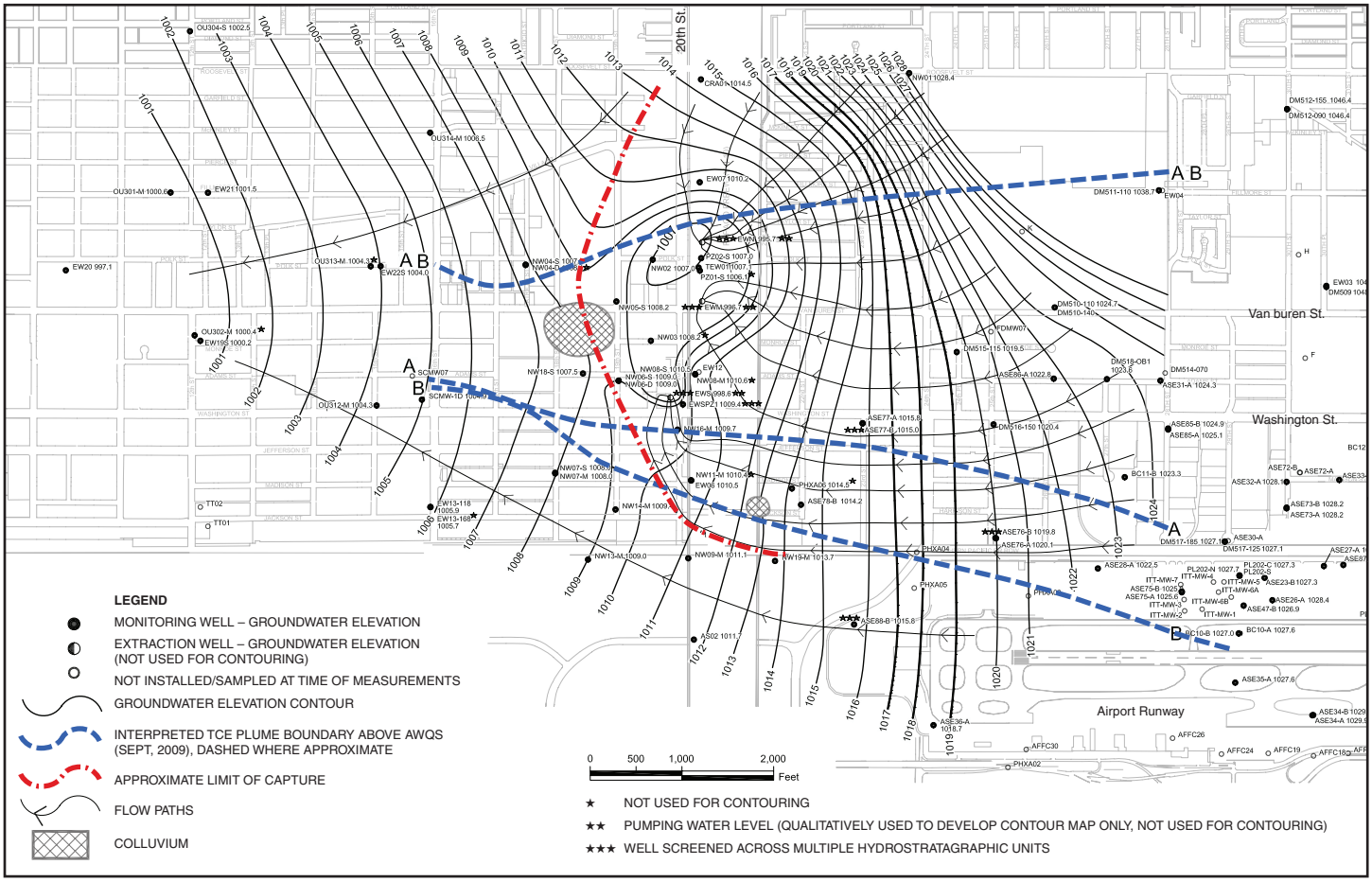

Figure 2: *This map from the 5 Year Review Report shows the approximate limit of capture and the plume boundary in Subunits A and B in OU2.*

Protectiveness Statement

OU1

- A protectiveness determination of the interim remedy at OU1 cannot be made at this time until further information is obtained. Further information will be obtained by completing a soil gas and vapor intrusion to indoor air investigation on the former Motorola facility. It is expected that this investigation will be completed no later than the next Five-Year Review.

- This Five Year Review also identified other issues that may affect long term protectiveness: the presence of contamination in the bedrock at the Motorola facility; declining groundwater levels that may affect extraction rates; and the age and condition of the equipment that may lead to future operational issues.

OU2

- A protectiveness determination of the interim remedy at OU2 cannot be made at this time until further information is obtained. Further information will be obtained by completing a soil gas and vapor intrusion to indoor air investigation within the OU2 area. It is expected that this investigation will be completed by the next Five-Year Review.

- The interim remedy provides hydraulic containment of the contamination across the width and depth of the VOC plume in groundwater near I-10. However, because of the potential for the plume to migrate west and outside the current capture zone, a long-term protectiveness statement cannot be made.

Issues

OU1

1. Dense non-aqueous phase liquid (DNAPL) is present in the bedrock near the former Motorola 52nd Street Facility and continues to serve as an ongoing source of groundwater contamination.

2. A new beneficial end-use of the treated groundwater needs to be implemented.

3. The groundwater table has been lowering and the extracted groundwater rates have declined.

4. The age and weathering of exposed equipment as well as a high level of operational complexity required to maintain the effectiveness of the system may lead to further operational issues.

5. The effectiveness of completed soil cleanup activities has not been adequately evaluated. Soil cleanup in the Acid Treatment Plant area as required by the ROD/LOD has not been completed.

For More Information

Web Pages

Information about the Site is available at the following Web pages:

ADEQ: http://azdeq.gov/environ/waste/sps/phxsites.html#mot52a
EPA: http://www.epa.gov/region09/motorola52ndst

Information Repositories

The information repositories listed below holds the Five-Year Review Report for the Motorola 52nd Street Superfund Site as well as other documents related to the investigation and cleanup of this Superfund Site:

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

ADEQ Records Center
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-2300 (800) 234-5677

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

EPA Superfund Records Center
95 Hawthorne Street (4th floor)
San Francisco, CA 94105
(415) 820-4700.

The five year review report will be discussed at the next Motorola 52nd St. Community Informational Group (CIG) meeting at:

6:15-8:15pm
Jan. 25, 2012
BioScience High School
512 E. Pierce St., Phoenix, AZ 85004

6. An evaluation of vapor intrusion to indoor air and the extent to which this potential contaminant pathway affects nearby residents and site workers has not been adequately evaluated.

OU2

1. A long-term issue with capture is indicated for an area southeast of the extraction system. There is contamination upgradient that exceeds the Aquifer Water Quality Standards and is expected to travel along a flow path outside the limit of capture.

2. The vapor intrusion to indoor air pathway has not been fully evaluated across OU2.

3. More robust groundwater elevation and groundwater quality data would better define the northern boundary of the OU2 groundwater plume.

How to Contact Us

If you have questions or concerns about the Motorola 52nd Street Superfund Site, please contact any of the staff listed below

Felicia Calderon
Community Involvement Coordinator
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4167
(800) 234-5677
calderon.felicia@azdeq.gov

Wendy Flood
Project Manager
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4410
(800) 234-5677
flood.wendy@azdeq.gov

Brian Stonebrink
Project Manager
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4197
(800) 234-5677
stonebrink.brian@azdeq.gov

Leana Rosetti
Community Involvement Coordinator
U.S. EPA Region 9
75 Hawthorne St.
San Francisco, CA 94105
(415) 972-3070
(866) 372-9378
rosetti.leana@epa.gov

Janet Rosati
Remedial Project Manager
U.S. EPA Region 9
75 Hawthorne St.
San Francisco CA 94105
(415) 972-3165
(866) 372-9378
rosati.janet@epa.gov

Martin Zeleznik
Remedial Project Manager
U.S. EPA Region 9
75 Hawthorne St.
San Francisco CA 94105
(415) 972-3543
(866) 372-9378
zeleznik.martin@epa.gov

4. A high concentration zone on the upgradient and downgradient sides of the Honeywell bedrock ridge may need additional remediation measures to effectively reduce concentrations of contamination in this area.

Recommendations

OU1

1. Continue review and investigation of approaches to mitigate the impact of DNAPL in bedrock.

2. Select a demonstrated beneficial end use alternative for treated groundwater and implement a decision document modifying the end use defined in the Record of Decision/ Letter of Decision.

3. Conduct an engineering review of the Integrated Groundwater Treatment Plant to improve efficiency.

4. Conduct additional investigations to demonstrate compliance of completed soil cleanup activities with appropriate remediation criteria and assess whether additional soil cleanup is required.

5. Evaluate the vapor intrusion to indoor air contaminant pathway in the residential neighborhood between the former 52nd Street Facility and the Old Crosscut Canal and in the former facility.

OU2

1. Develop a work plan to address the contamination southeast and upgradient of the OU2 groundwater extraction system that has the potential to migrate west and outside the limit of capture.

2. Evaluate the vapor intrusion to indoor air pathway across the entire OU2 area.

Motorola 52nd St. Superfund Site

Five-Year Review Completed

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Versión en español adentro

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75 Hawthorne Street (SFD-6-3)
San Francisco, CA 94105
Attn: Leana Rosetti (M52 12/11)

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