

PROPOSED LEAKING UST (LUST) CASE CLOSURE

The Arizona Department of Environmental Quality (ADEQ) is considering closure of the following leaking underground storage tank (LUST) cases:

LUST Case File #: 345.01
Facility ID # 0-004757
Maricopa County

(the former) Total Roof
3883 North 36th Avenue
Phoenix, Arizona 85018

The Arizona Revised Statutes (A.R.S.) §49-1005(E) and Arizona Administrative Code (A.A.C.) R18-12-263.04 allow case closure of LUST sites with groundwater contamination above the Arizona Aquifer Water Quality Standards (AWQS) if certain site specific conditions are met. For the above-referenced LUST site, ADEQ has considered the following:

1. Characterization of the groundwater plume,
2. Removal or control of the source of contamination,
3. Groundwater plume stability,
4. Natural Attenuation,
5. Threatened or impacted drinking water wells,
6. Other exposure pathways,
7. Requirements of A.R.S. §49-1005(D) and (E), and
8. Other information that is pertinent to the LUST case closure approval.

The groundwater contaminant plume of release related compounds was reduced by soil vapor extraction and air sparging, followed by natural attenuation. There is a single monitor well on the above referenced property that does exceed the Arizona Aquifer Water Quality Standard for benzene (see table below) (MW-6). Depth to groundwater currently varies from approximately 131 – 134 feet at this facility. A 2015 ADWR database search indicated no down gradient drinking water receptor well within one-quarter mile. Historically groundwater has been reported to flow in an easterly direction.

Site specific information concerning this closure is available for review during normal business hours at the <http://www.azdeq.gov/function/assistance/records.html> , 1110 W. Washington St., Suite 140, Phoenix, AZ 85007. ADEQ welcomes comments on the proposed LUST case closure. Please call the UST File Room at 602-771-4380 to schedule an appointment. A 30-day public comment period is in effect commencing **January 29, 2016** and ending **February 29, 2016**. Comments should be submitted in writing to the Arizona Department of Environmental Quality, Waste Programs Division, Attention: John Robertson, 1110 W. Washington Street, Phoenix, AZ 85007.

If sufficient public interest is demonstrated during the public comment period, ADEQ will announce and hold a public meeting. ADEQ will respond to written comments following the

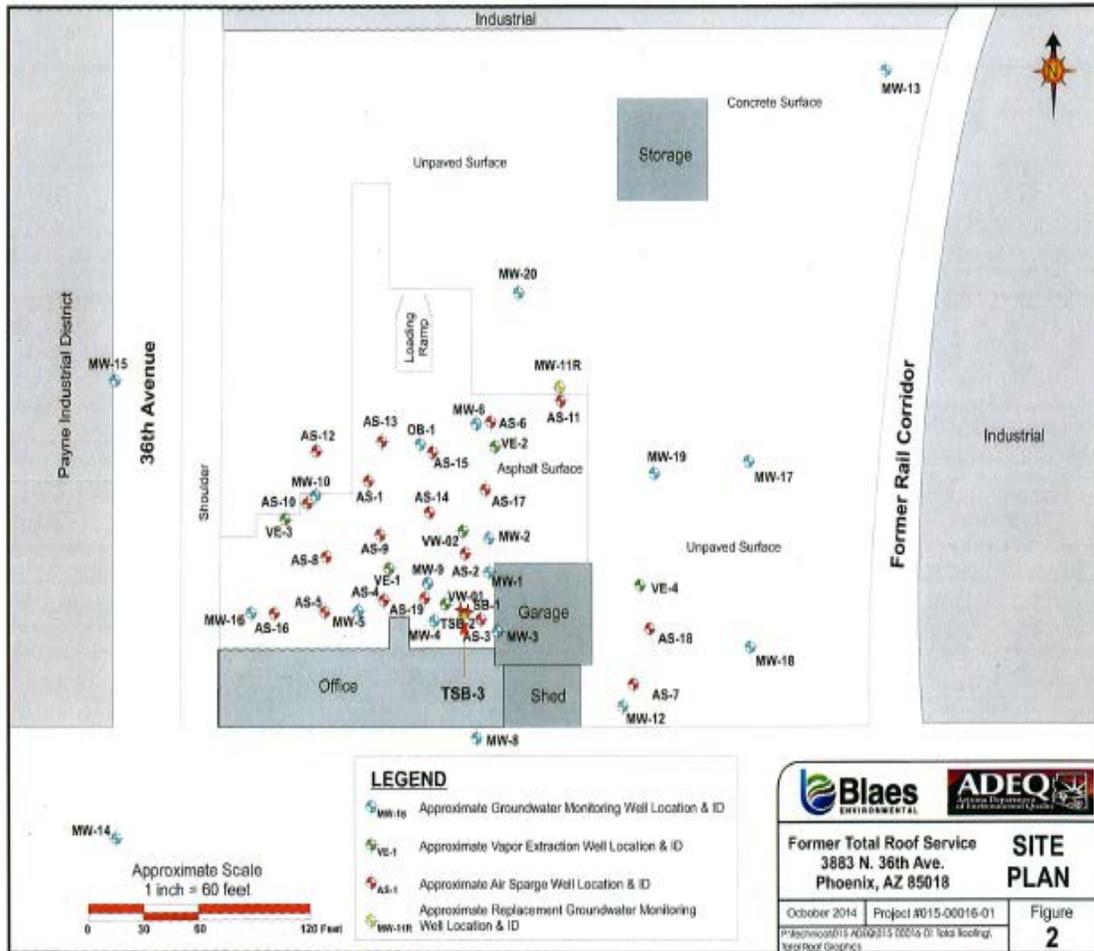
public comment period. For more information on this notice, please contact John Robertson at 602-771-4269 or 800- 234-5677 ext. 771-4269 or at jar@azdeq.gov.

Copies of the cited statutes and rules can be found at:

<http://www.azleg.gov/ArizonaRevisedStatutes.asp?Title=49>, and

http://www.azsos.gov/public_services/Title_18/18-12.htm

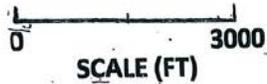
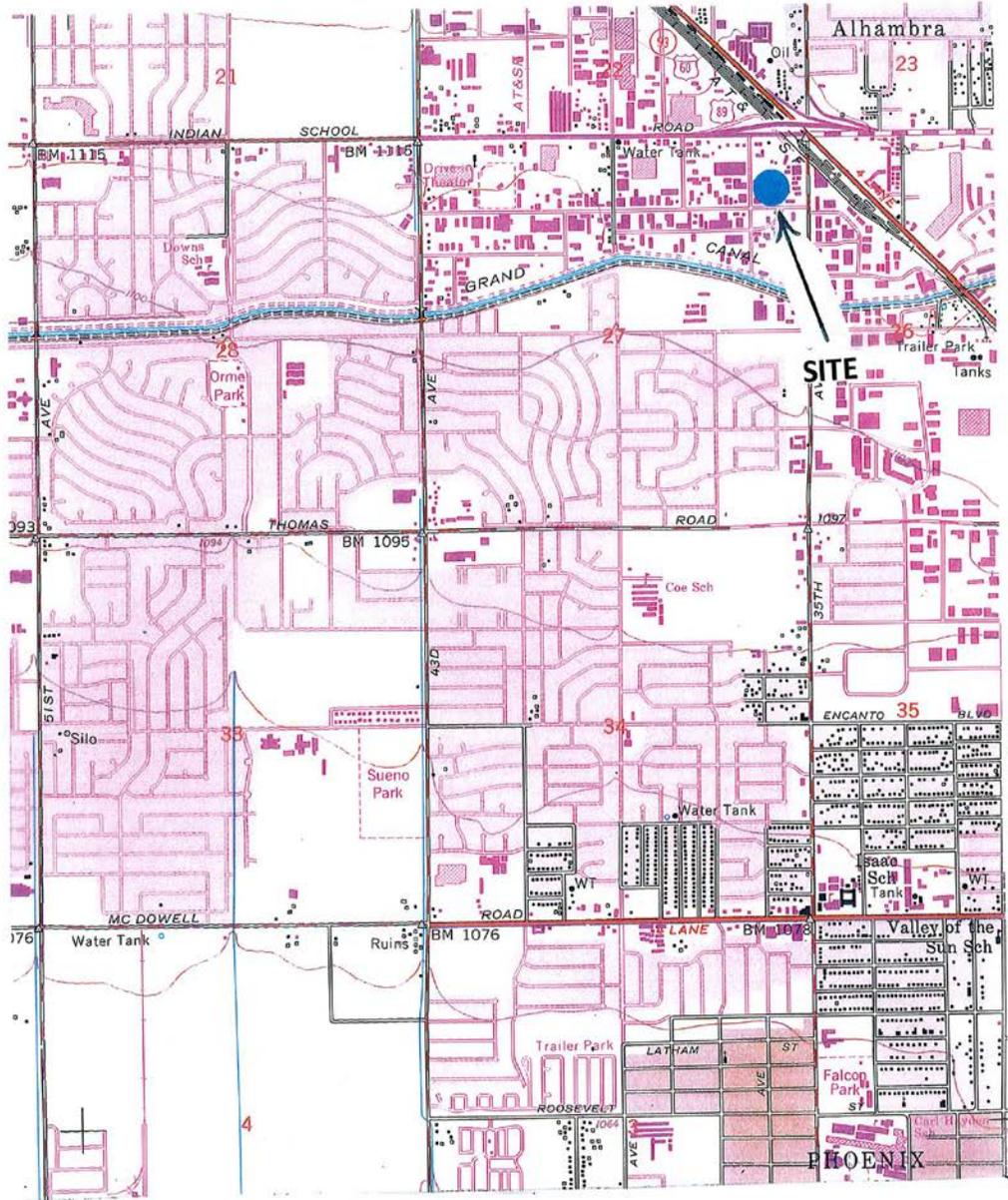
Date of sampling	Benzene contaminant levels in micrograms per liter in monitor well MW-11
November 26, 2013	24.9
February 19, 2014	10
May 14, 2014	7.3
October 8, 2014	9.6
January 22, 2015	12
September 3, 2015	7.7
November 3, 2015	2.2
Aquifer Water Quality Standard	5.0



VICINITY MAP

THE FORMER TOTAL ROOF FACILITY

PHOENIX



ADEQ  **Memorandum**
Arizona Department
of Environmental Quality

Date: January 15, 2016
To: LUST File
From: Debi Goodwin, UST Risk Assessor
State Lead Unit
WPD Corrective Action Section
Subject: Tier 3 Risk Assessment
A Total Roof Service
Facility No. 0-004757 LUST No. 345.01



Background

The Site is located at 3883 N. 36th Avenue in Phoenix. The USTs were reportedly installed in 1972 and removed in 1989. Five borings were installed within approximately 20 feet of the former product lines and the dispenser island in 1988 to depths ranging from 50 to 70 feet. Low levels of hydrocarbon impact were reported (benzene at 0.468 mg/Kg). Two additional borings were installed in 1990, one to 120 feet in the former tank pit, and the other to 101 feet "near" the piping and dispenser island. Soil samples from the tank pit boring (Boring "SB-1") were only collected between 71-91 feet and showed the greatest benzene impact to be at 71 feet (26 mg/Kg). Seven monitor wells were installed in 1997, three of which were located within or adjacent to the former tank pit. They showed benzene impact to the groundwater with concentrations ranging between 1,900 µg/L and 41,000 µg/L. In January, 1998, the Grand Canal (located approximately ¼ mile south of the site) was lined with concrete, effectively shutting down this apparent source of recharge to the aquifer. Subsequently, the groundwater flow direction changed from north-northeasterly to southwesterly, and water levels dropped from approximately 95 feet prior to the canal lining, down to approximately 130 feet by 2011.

Purpose

Current data provided by Blaes Environmental (Blaes), contractor to the State Lead Unit, and all other available site information has been used by ADEQ to determine whether remaining levels of contaminants at the site are adequately protective of human health and the environment.

Data Evaluation

Groundwater

In 2011, the State Lead Unit (SLU) took over corrective actions at this site. In the summer of 2012, the SLU installed four additional monitor wells, a vapor extraction well, an air sparge well, and conducted pilot testing, which indicated air sparge/vapor extraction to be a viable remedial option for use at this site. In the summer of 2013, 19 air sparge wells, 3 vapor extraction wells and an air sparge/vapor extraction remediation system were installed. The remedial system was started October 1, 2013. Two additional monitor wells (MW-19 and MW-20) were installed in January, 2015, to ensure there was no hydrocarbon impact north and east of MW-11 (the only well still exceeding the AWQS) which was confirmed. The vapor extraction system was shut down and removed from the site in February, 2014, while air sparging was continued until April, 2014, when it was shut down permanently and the remedial system was completely removed from the site. By the end of 2013, all monitor wells except MW-11 were below AWQS. Slightly elevated benzene levels (9-12 µg/L) in MW-11 persisted through January, 2015, so in May, 2015, it was decided to try ISCO treatments. MW-11 was replaced with MW-11R in

August 2015. After one Persulfox treatment the benzene level had dropped to 7.7 µg/L in September, 2015. The most recent data was collected in November 2015 from MW-11 only. The benzene concentration dropped to 2.2 µg/L. The benzene concentrations in MW-11 have continued to drop since its high concentration of 180 µg/L in August 2013.

Soil

Due to the limited soil sampling that was done in SB-1, the SLU installed two additional soil borings "TSB-1" [which is labeled SB-1 by Blaes], in May, 2013; and "TSB-2" in July, 2014. Soil samples were collected at 10 foot intervals from 15-105 feet in TSB-1; and from 15-125 feet in TSB-2. VOC contamination was present over applicable rSRLs between 25 and 105 feet. However, because the soil samples collected at TSB-2 didn't include sampling from the 5-15 foot interval, an additional boring ("TSB-3") was installed in January, 2015, as close as possible to TSB-2 to address any potential risk from ingestion and dermal contact with shallow soil. All soil samples were analyzed for VOCs by EPA Method 8260B by TestAmerica. No VOCs were found over laboratory reporting limits in TSB-3.

Soil Vapor

To evaluate any possible residual subsurface soil VOC contamination remaining after active remediation a shallow soil vapor survey was conducted in September 2014 by Blaes. Three temporary soil vapor probes were installed at 5 feet. Airtech Environmental Laboratories (AEL) analyzed the samples for VOCs by EPA Method TO-15 and did include the ADHS approved additional compounds. Laboratory and field quality assurance (QA) measures are adequate for risk assessment data quality objectives. A *Summary of September 2014 TO15 Sample Laboratory Analytical Results* table was provided by Blaes.

Tier 3 Risk Assessment

The maximum concentrations of chemicals were modeled for both the cancer risk value (ELCR) and the hazard index (HI) or non-carcinogenic health hazard. ADEQ modeled the soil vapor data using the EPA on-line screening version of the Johnson and Ettinger (J&E) model and chemicals are eliminated from inclusion in the risk assessment if they are not present at levels above 1/10th of the EPA Regional Screening Level for resident air dated May 2014, levels below the laboratory reporting limit, were a common laboratory contaminant and found at levels less than 5 times the concentration found in the field (equipment) blank, or if insufficient toxicity data is available or the chemical is not listed in the chemical pull down list. The risk assessment includes all compounds of concern (CoCs) associated with the fuel release and also non-petroleum related compounds (PCE) to determine cumulative risk. Loamy Sand was used in the model for soil type, since the field notes state sand and gravel. Typical residential inputs were used. ADEQ's results show that the ELCR for the petroleum related compounds is 8.2×10^{-7} . The HI value for the petroleum related compounds is less than 1. The PCE ELCR and HI also show no unacceptable risk.

For alternative groundwater closure under A.A.C. R-18-12-263.04, several criteria must be met. Existing groundwater data shows that the groundwater plume is characterized, the source of contamination (former UST system) has been removed/controlled by the active remediation system that operated, the groundwater plume is stable, and based on an ADWR ¼ mile well search, there are no active drinking water wells among the 43 registered wells. The VOC contamination that is present in groundwater is limited on-site to MW-11R, and the benzene concentration in November 2015 was below the applicable AWQS. The other monitoring wells have no VOC contamination over laboratory reporting limits.

Conclusions and Recommendations

A.A.C. R-18-7-206(D) and A.A.C. R-18-12-263.01 and A.A.C. R-18-12-263.04 allow for a site specific risk assessment. Under A.A.C. R-18-7-206(D), multiple contaminants, multiple pathways of exposure,

uncertainty of exposure and sensitive populations are evaluated as part of a site specific risk assessment. Any residual petroleum related soil contamination may be present in the subsurface, so there isn't a risk posed by the dermal contact or ingestion exposure routes. The soil vapor survey demonstrates the inhalation exposure route shows an acceptable risk to any remaining VOC contamination in the subsurface soil. The benzene contamination in the on-site MW-11R doesn't pose a risk to any drinking water sources and no sensitive receptors were identified.

Based on the data collected, it is recommended that LUST releases 2991.01-.03 be closed under A.A.C. R-18-12.263.03 for soil and A.A.C. R-18-12-263.04 for groundwater.

If you have any questions regarding this memo, please contact me at (602) 771-4453 or dq1@azdeq.gov.