

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 # 4874.01

Facility ID # 0-009270

Maricopa County

Circle K Store #2709187

295 South Arizona Avenue

Chandler, Arizona 85225

Circle K Store #2709187 (hereafter referred to as the “site”) is located at 295 South Arizona Avenue in Chandler. The property is located on the northeast corner of East Frye Street and South Arizona Avenue and is owned by Circle K Stores Inc. (Circle K) (Parcel 303-10-106A). The site has reportedly been occupied by retail gasoline facilities from 1946 to present. The west portion of the subjected site was previously occupied by former Frances/Ichorn gas station. ExxonMobil purchased the site property with multiple adjacent parcels and developed the properties into a retail fuel sales facility, during the summer of 2001. Soil and groundwater beneath the site has been impacted by petroleum hydrocarbons released from the former UST fuel distribution system associated with the former Frances/Ichorn gasoline fuel station that had operated at the subject site. ADEQ opened LUST case number 4874.01 in April 1998. ExxonMobil assumed volunteer status for the release in February 2001. ADEQ identified Circle K as a volunteer for the remediation of LUST 4874.01 after Circle K purchased the ExxonMobil station in June 2009. Current site use includes a Circle K branded convenience store with retail fuel sales and a self-serve car wash. The fuel system includes eight fuel dispensers located beneath a single canopy in the western half of the site. The fuel dispensers are connected to two double-wall fiberglass USTs which were installed at the site in June 2001. The USTs are located beneath a concrete pad in the southwestern quadrant of the property. The USTs include one 20,000-gallon regular unleaded gasoline tank and one compartmentalized tank containing premium gasoline (12,000-gallon capacity) and diesel (7,000-gallon capacity). Soil and groundwater beneath the site was impacted with petroleum hydrocarbons due to the release of gasoline from a former onsite underground storage tank (UST) system previously located near the southeast corner of the property. ADEQ assigned LUST case file number 4874.01 for the fuel release from the former Frances/Ichorn gas station located on the southwest corner of the subject site on April 8, 1998. A release of petroleum hydrocarbons was indicated by laboratory analytical results in a Phase II investigation performed at the site in March 1998 on behalf of the property owner at that time. The USTs and dispenser island associated with the former Frances/Ichorn gas station were removed in the Mid-1970s. The second LUST case file (#4874.02) was opened by ADEQ on February 15, 2001 for petroleum hydrocarbons reported in the soil samples collected from soil boring B-13 drilled near the former dispenser island. A total of seven soil borings were drilled during site characterization activities performed from 1999 through 2001. Additional soil borings drilling and sample collection was performed during groundwater monitoring (MW-2 through MW-4) and vapor extraction/air sparge (VE/AS-1 and VE/AS-2) wells installation conducted in 2001. Selected soil samples were analyzed for benzene, toluene, ethylbenzene and total xylene (BTEX) constituents using EPA Method 8021; total petroleum hydrocarbons (TPH) using EPA Method 8015; volatile organic compounds (VOCs) using EPA Method 8260; and polyaromatic hydrocarbon (PAH) Using EPA Method 8310. Laboratory analytical results indicated concentration of TPH and BTEX compounds reported above the ADEQ Residential Soil Remediation Levels (rSRLs) and laboratory reporting limits. Base on the soil sample analytical results the vertical extent of petroleum hydrocarbons in the soil for LUST case #4874.01 was defined to

groundwater, which occurs at approximately 110 feet bgs. The horizontal extent of petroleum hydrocarbons in soil was identified to within 20-foot radius around former UST area. Based on soil analytical results of the samples collected from soil boring B-13, MW-4 and ASVE-1 the vertical extent of petroleum hydrocarbons in the soil for LUST case #4874.02 was defined to 45 feet bgs and the horizontal extent of petroleum hydrocarbons was limited to within the excavation area of the former dispenser island. In May 2003 ADEQ determined that no further investigation was required for this LUST case and closure could be requested. LUST case #4874.02 was closed on April 2, 2007.

There are five groundwater monitoring wells (MW-1 through MW-5) and three nested VE/AS remediation wells (VE/AS-1 through VE/AS-3) associated with the site. The wells were installed between October 2001 and October 2007 as part of site assessment and remedial implementation activities. Analytical results of groundwater samples collected from the monitoring wells have historically indicated volatile organic compounds (VOCs) like benzene and 1, 2-Dichloroethane (1, 2-DCA) at concentrations that exceed the respective ADEQ Aquifer Water Quality Standards (AWQS). 1, 2-DCA was a lead scavenger used in leaded gasoline. The VOCs were detected in samples collected from wells MW-4 and MW-5. Additionally, non-aqueous phase liquids (free product) have historically been detected in monitoring well MW-1. In February 2001, free product was observed at a thickness of 0.33 feet in well MW-1. Utilizing passive-skimmer and hydrocarbon absorbent sock technologies, 0.65-gallons of free product was recovered from MW-1 between February & May 2001. Free product removal activities continued at the site and 40.5 gallons of free product were recovered between September 2005 and July 2008.

Soil vapor extraction (SVE) and groundwater air sparging (AS) were chosen as the best-suited method to achieve soil and groundwater remediation goals at the site. The purpose of the remediation program was to reduce or eliminate petroleum hydrocarbon concentrations in vadose zone soils and groundwater beneath the site to concentrations at or below ADEQ regulatory standards. Blaes Environmental Management, Inc. (BEMI) submitted a *Risk Based Closure Evaluation-Addendum* on behalf of Circle K, which was received October 2, 2018. This report 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. A site specific risk assessment and detailed file/information search were also completed.

Based upon the results of remedial activities and site specific information, the above-referenced LUST site is eligible for alternative LUST closure under Arizona Revised Statutes (A.R.S.) §49-1005(E). Arizona Administrative Code (A.A.C.) R18-12-263.04 allows case closure of a LUST site with groundwater contamination above the Arizona AWQS or Tier 1 Corrective Action Standards. ADEQ has considered the results of a site specific assessment and the rule specific criteria below:

1. *Threatened or impacted drinking water wells:* BEMI evaluated the presence of registered wells within 0.25 mile of the site. According to the ADWR online database, there are 102 registered wells within an approximate 0.5-mile radius of the site. The results of the search indicate that there are two registered exempt wells (55-70719, 55-701549) which has no imaged records, two non-exempt wells registered to the City of Chandler and 98 wells registered as monitor or “other”. The City was sent a water provider questionnaire and it is included in this notice. The City does operate one drinking water well (#55-605308) that is located within ½ mile to the west of this LUST site. This well is drilled to 800 feet bgs and was installed in 1954. The other registered non-exempt City well (#55-605310) was abandoned by the City in 2007. According to the questionnaire, the City does not plan to develop any other well site within this distance. The City has *Assured Water Supply* number ADWR 86-002009.0001. The drinking

water distributed by the City of Chandler to its customers comes from three sources: the Chandler Surface Water Treatment Plant (SWTP) treats and disinfects water from the Salt River, Verde River, Central Arizona Project (Colorado River), and Salt River Project (SRP) wells whose water is transported to Chandler via the Consolidated Canal, thirty-one (31) active wells supply groundwater from aquifers underlying Chandler and the City of Chandler and the Town of Gilbert jointly own the Santan Vista Water Treatment Plant (SVWTP) located in the Town of Gilbert. This facility currently treats and distributes up to 12 million gallons per day of Colorado River water from the Central Arizona Project to each city. According to the 2017 *Water Quality Report*, no VOCs were reported over laboratory reporting limits. Any new or replacement well located at or near this site would need to meet the criteria of A.A.C. R12-18-1302 (B) (3).

2. *Other exposure pathways:* Based on the significant reduction of influent soil vapor concentrations from the subsurface during the vapor extraction remediation program, BEMI oversaw the drilling of a confirmation soil boring (CB-1) at the site on March 24, 2014. Confirmation soil boring CB-1 was drilled seven feet south of well VE/AS2 to a depth of 95 feet below ground surface (bgs). Soil samples were collected at approximate 5-foot depth intervals beginning at 15-foot bgs to 95 feet and were submitted for analysis of VOCs by EPA Method 8260. In addition, four soil samples (CB-1-15.0, CB-1-45.0, CB-1-65.0 and CB-1-95.0) were analyzed for polynuclear aromatic hydrocarbons (PAHs) according to EPA Method 8310. Laboratory analytical results indicated detectable concentrations of BTEX and/or other VOCs constituents at various concentrations. VOCs constituents detected above ADEQ residential Soil Remediation Levels (rSRLs) were found between 45 and 70 feet bgs. VOCs were not detected in the soil sample collected at 95 feet bgs. Because of the rising water table, the screen interval of vapor extraction well VE-2D was submerged 10-feet leaving 5-feet of usable screen for vapor extraction. Based on the near submergence of the VE-2D well screen, BEMI recommended the installation of an additional vapor extraction well to be used as a replacement well for VE 2D. Vapor extraction well VE-2R was installed at the site on May 12 to 13, 2015 as a replacement well for VE-2D. Soil samples were collected at 5-foot depth intervals beginning at 15-foot bgs to 90 feet. A total of 16 soil samples collected and analyzed for VOCs by EPA Method 8260. In addition, five soil samples (VE2R-15, VE2R-45, VE2R-65, VE2R-80 and VE2R-90) were analyzed for PAHs according to EPA Method 8310. Laboratory analytical results indicated no VOCs detected at concentrations exceeding their respective ADEQ rSRLs and/or above ADEQ GPLs. Concentrations of PAHs were not detected above ADEQ rSRLs and/or ADEQ GPLs in the soil samples collected from the depth intervals of 45, 65 and 80 feet bgs. BEMI conducted a survey of sensitive receptors such as schools, hospitals, day-care centers, nursing homes, etc. located within an approximate ¼-mile radius of the site that might be at risk due to the release at the subject site. The results of the survey indicated no potentially sensitive receptors located within the ¼-mile radius threshold. The site is located in a mixed commercial and residential area. The nearest residential properties are located approximately 560 feet west of the site.

3. *Groundwater plume stability:* According to boring logs generated during characterization activities at the site, subsurface sediments consist of silty sands, gravelly sands, silty clays, and a mixture of poorly graded gravel, cobbles, and sand to approximately 132 feet below the ground surface (bgs). Groundwater within the alluvial-filled sub-basin occurs under perched, unconfined, and confined to semiconfined conditions. Groundwater was first encountered at a depth of 110 feet bgs during the installation of monitoring wells MW-1 through MW-5. Groundwater flow has varied between west, northwest, and northeast with hydraulic gradients ranging from 0.0008 to 0.0251 feet/foot. Historical groundwater monitoring data indicates a rising water table. Groundwater levels have increased on average 15.5 feet between June 2001 and February 2015. The residual benzene concentrations in groundwater are limited to the area proximal to monitoring well MW-1. Only benzene in the sample

collected from monitoring well MW-1 is currently detected above AWQS. BEMI collected a depth specific groundwater sample at 110 feet bgs in MW-1 to evaluate for a submerged source. Benzene was reported at 0.12 ug/L. All VOCs that were detected were reported at less than laboratory reporting limits but above method detection levels. All other monitoring wells located down gradient and cross-gradient have shown no detection of gasoline constituents in groundwater samples. To evaluate the stability of the groundwater plume beneath the site, BEMI utilized the Mann-Kendall method using post-remediation data (February 2014-February 2018). The Mann-Kendall indicated stable conditions for VOCs in MW-1.

4. *Characterization of the groundwater plume:* BEMI conducted groundwater monitoring and sampling from February 2001 through July 2008 and resumed following the startup of VE/ AS remediation on December 22, 2010 and continued through September 11, 2017. An additional groundwater monitoring event was conducted on February 2, 2018. Dissolved phase VOC laboratory analytical results of groundwater samples indicates that as of February 2018, dissolved phase benzene is present at concentrations exceeding the ADEQ established AWQS in MW-1. ADEQ requested a depth specific groundwater sample to evaluate MW-1 for a submerged source of contamination, BEMI collected a depth specific groundwater sample from MW-1 at 110 feet bgs on January 9, 2019. All detected VOCs concentrations, including benzene, were below laboratory reporting limits and above method detection limits.

5. *Natural Attenuation:* Natural attenuation processes include diffusion, dispersion, sorption, volatilization, and biodegradation. A decreasing trend in chemical concentrations in groundwater has been established, which supports natural attenuation is occurring. Hydrologic and geochemical data can be used to indirectly demonstrate the type(s) of natural attenuation processes. Monitored natural attenuation (MNA) field parameters like dissolved oxygen (DO) and redox potential (ORP) has been collected in MW-1 between 2013 and 2018 to evaluate the groundwater conditions. The ORP is positive at the source area (MW-1) which indicates an oxidative state in the groundwater. A high DO concentration at the source indicates aerobic conditions. Benzene will biodegrade under either aerobic or anaerobic conditions, but the preferred metabolic pathway is aerobic.

6. *Removal or control of the source of contamination.* Source control has been completed by the original USTs being removed in the mid 1970s. 0.65-gallons of free product was recovered from MW-1 between February & May 2001. An additional 40.5 gallons of free product was recovered between September 2005 and July 2008. The soil vapor extraction remediation program began at the site on June 23, 2010 and run to May 5, 2014. The groundwater AS remediation program began at the site on June 27, 2010 and run through February 9, 2016. VE/AS remediation activities have resulted in an estimated total mass removed from subsurface soils of 20,300 pounds of Volatile Fuel Hydrocarbons (VFH) which equates to 3,470 gallons.

7. *Requirements of A.R.S. §49-1005(D) and (E):* The results of the corrective action completed at the site assure protection of public health, welfare and the environment, to the extent practicable, the clean-up activities completed at this site allow for the maximum beneficial use of the site, while being reasonable, necessary and cost effective.

8. *Other information that is pertinent to the LUST case closure approval:* The facility and LUST files were reviewed for information regarding prior cleanup activities, prior site uses and operational history of the UST system prior to removal.

Groundwater data for MW-1 (source area)

Date	Benzene AWQS is 5 µg/L	1,2-DCA AWQS is 5 µg/L	Depth to water (ft.)
July 2001	1,000	<1.0	107.61
October 2001	2,900	150	108.16
January 2002	800	194	107.40
April 2002	1,070	214	107.78
July 2002	4,350	398	111.91
October 2002	4,180	305	113.06
January 2003	3,100	<1.0	110.71
April 2003	2,890	601	107.24
July 2003-August 2012	Not sampled	Not sampled	---
February 2013	120	42	94.35
August 2013	92	19	96.13
April 2014	37	<1.0	94.32
July 2014	4.9	1.6	97.69
September 2014	1.1	<1.0	98.56
February 2015	11	<1.0	95.13
November 2015	<1.0	<1.0	96.35
January 2016	18	<1.0	96.44
Air Sparge ended February 2016	---	---	---
July 2017	21	3.4	96.04
February 2018	30	1.6	96.67
January 2019	0.12	<1.0	110 (depth specific sample)

Groundwater data for MW-5 (on-site down gradient of source area)

Date	Benzene AWQS is 5 µg/L	1,2-DCA AWQS is 5 µg/L	Depth to water (ft.)
October 2003	<1.0	<1.0	118.32
April 2004	<1.0	5.1	116.47
June 2005	1.6	38	115.98
October 2005	1.02	28	114.13
October 2006	<1.0	43	110.10
October 2007	2.09	52	110.62
April 2008	1.32	59	107.83
December 2010	<1.0	1.91	97.91
June 2011	<1.0	<1.0	97.40
August 2012	<2.0	<1.0	95.45
February 2013	<1.0	<2.0	94.17
August 2013	<2.0	<2.0	96.57
April 2014	0.34	<0.22	96.57

July 2014	Not sampled	Not sampled	98.68
September 2014	<1.0	<1.0	99.26
February 2015	<1.0	<1.0	96.94
November 2015	Not sampled	Not sampled	98.74
January 2016	<1.0	<1.0	98.73
July 2017	<0.12	<0.22	99.59
February 2018	0.45	<0.31	99.27

Site specific information concerning this closure is available for review during normal business hours at the ADEQ Records Center <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 Records Center at 602-771-4380 to schedule an appointment. A 30-day public comment period is in effect commencing **February 11, 2019 and ending March 12, 2019**. Comments may be submitted by mail or email. Written comments should be sent to:

Arizona Department of Environmental Quality
Waste Programs Division
Attn: Debi Goodwin
1110 W. Washington Street
Phoenix, AZ 85007

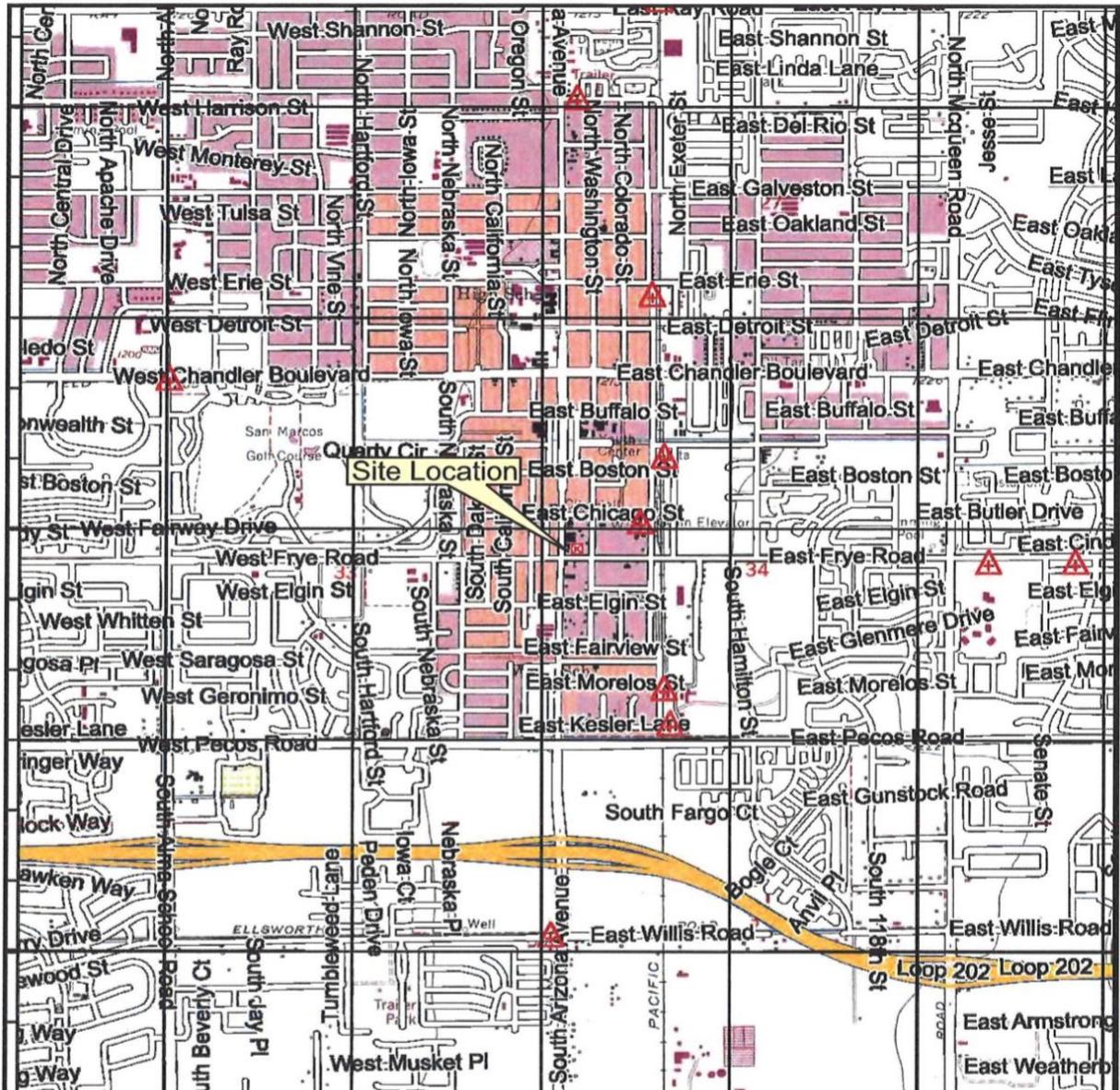
or electronically mailed to: dg1@azdeq.gov.

If sufficient public interest is demonstrated during the public comment period, ADEQ may announce and hold a public meeting. ADEQ will consider all submitted comments and reserves the right to respond to those comments following the public comment period. For more information on this notice, please contact the Sr. Risk Assessor, Debi Goodwin at (602) 771-4453 or at dg1@azdeq.gov or the Case Manager, Marcella Caldwell at (602) 771-4464 or at mc13@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

ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write or understand English and/or to those with disabilities. Requests for language interpretation, ASL interpretation, CART captioning services or disability accommodations must be made at least 48 hours in advance by contacting Ian Bingham, Title VI Nondiscrimination Coordinator at 602-771-4322 or Bingham.Ian@azdeq.gov. Teleprinter services are available by calling 7-1-1 at least 48 hours in advance to make necessary arrangements.

ADEQ tomará las medidas razonables para proveer acceso a los servicios del departamento a personas con capacidad limitada para hablar, escribir o entender inglés y / o para personas con discapacidades. Las solicitudes de servicios de interpretación de idiomas, interpretación ASL, subtítulos de CART, o adaptaciones por discapacidad deben realizarse con al menos 48 horas de anticipación contactando a Ian Bingham, Coordinador de Anti-Discriminación del Título VI al 602-771-4322 o Bingham.Ian@azdeq.gov. Los servicios de teleimpresores están disponibles llamando al 7-1-1 con al menos 48 horas de anticipación para hacer los arreglos necesarios.



Source: MapTech Terrain Navigator - US Geological Survey 7.5 minute topographic map: Chandler Quadrangle, Arizona-Maricopa Co., 1952 - Photo Revised 1981



Approximate Scale
1:24,000
1 inch = 2000 feet



ADEQ Facility ID: 0-009270
Circle K Store #2709187
295 South Arizona Avenue
Chandler, Arizona 85225

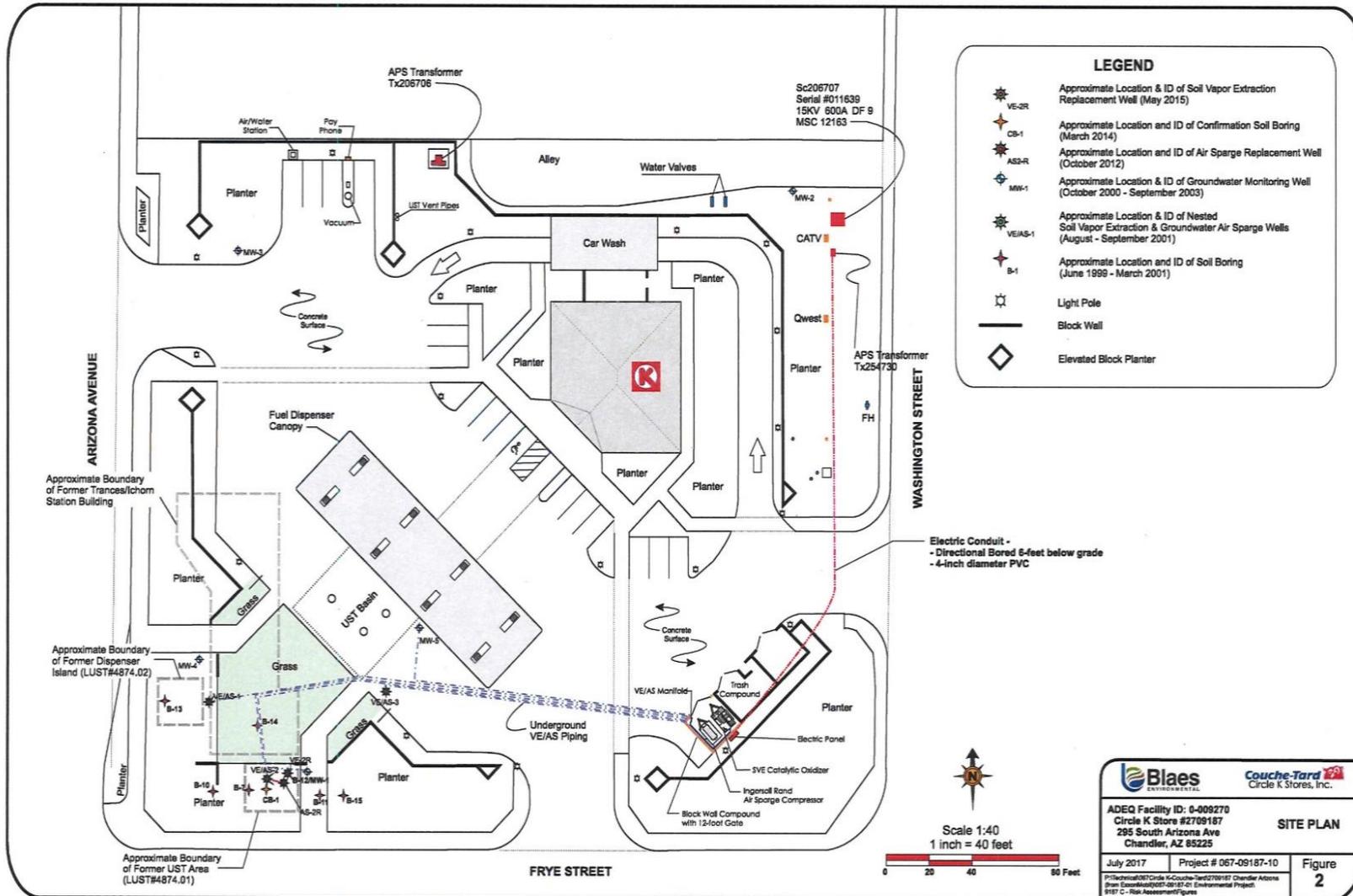
**SITE LOCATION
MAP**

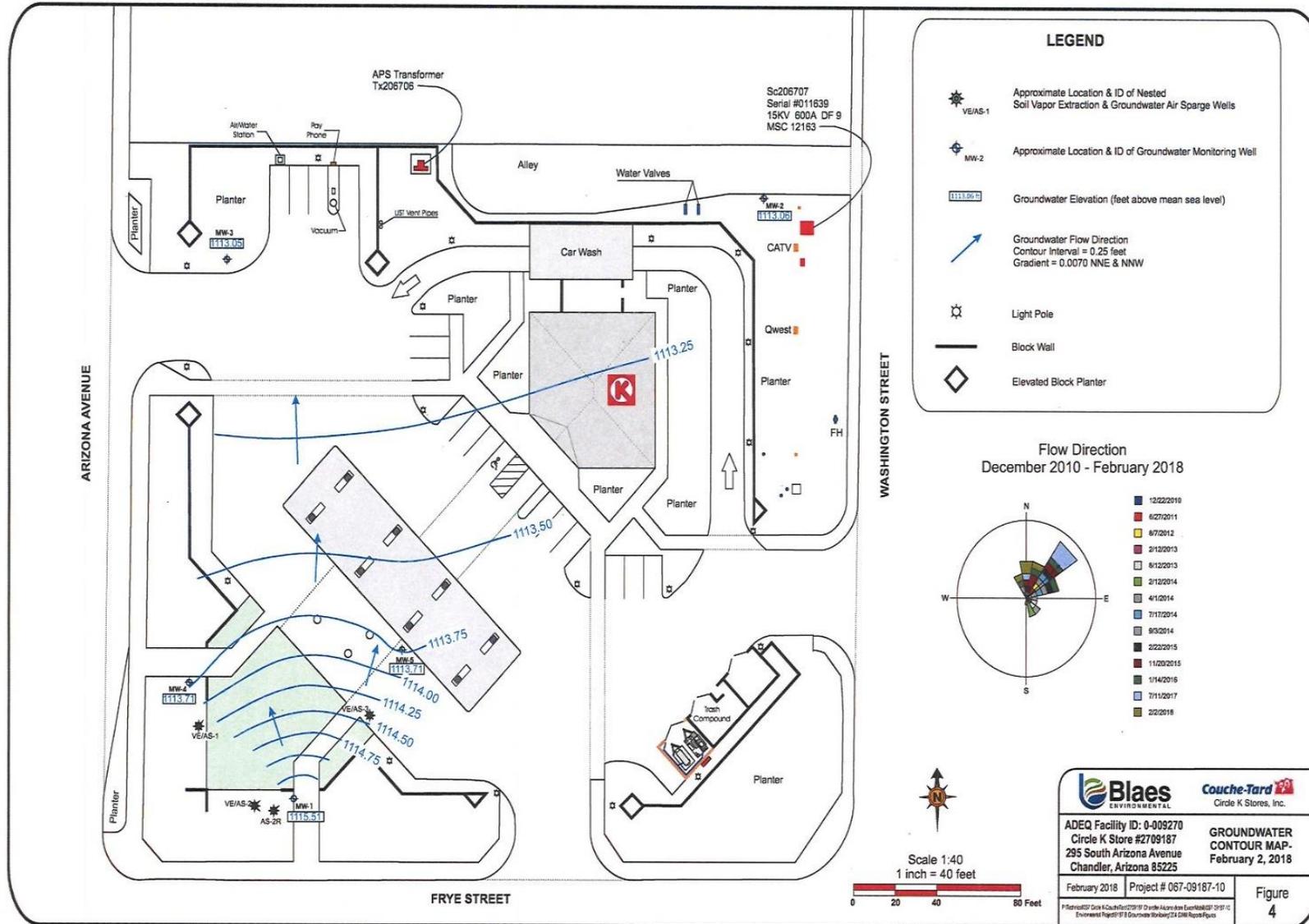
July 2017 Project # 067-09187-10

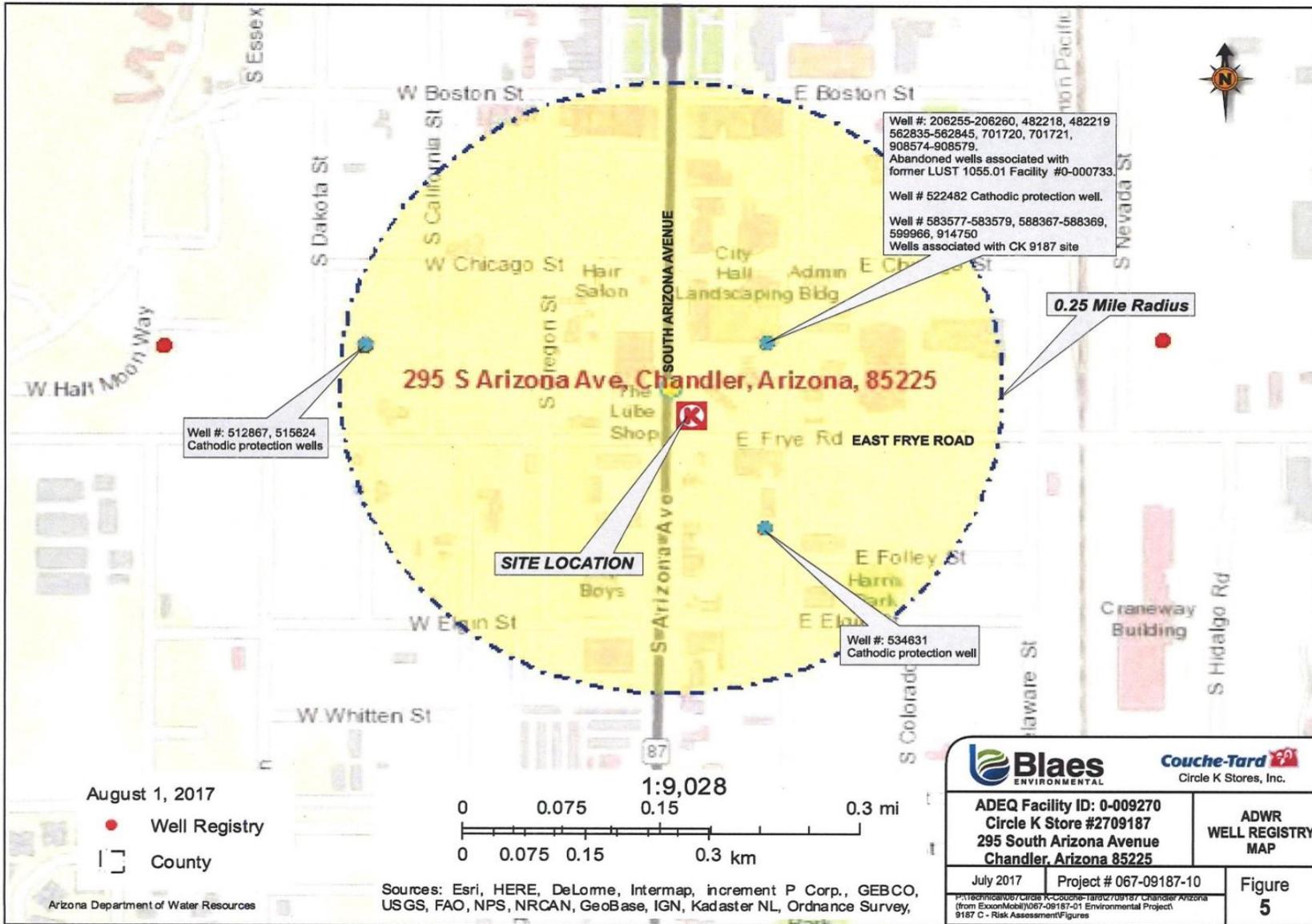
Figure
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(from ExxonMobil)\067-09187-01 Environmental Project
9187 C - Risk Assessment\Figures

Site Location: T1S, R5E, Sect. 34
33° 17' 57.02" North Latitude 111° 50' 28.09" West Longitude









Email completed form to: dq1@azdeq.gov

UST- LUST Section
GROUNDWATER USE QUESTIONNAIRE

LUST FACILITY NAME Circle K Store #2709187
ADDRESS 295 South Arizona Avenue
LUST FACILITY ID 0-009270
LUST CASE NO 4874.01

Please answer all questions. Mark "UNK" if the answer is unknown to you at the time of completion. Please attach any additional pages as needed.

Water user municipality/utility name: City of Chandler
Date Questionnaire was completed: 11/8/18
Contact Name: Chris Connor
Title: Utility Regulatory Affairs Manager
Address: PO Box 4008, Mail Stop 905
Chandler, AZ 85244-4008
Phone Number: 480-782-3586
Email address: Christopher.connor@chandleraz.gov

1. Please indicate current or near future anticipated groundwater development by the municipality/utility within 1 mile of the above named LUST site.

Groundwater Use Questionnaire

Page 2 of 3

Chandler currently operates one drinking water well within a mile of the site (Frye well, 55-605308). The City had another well site (55-605310) within the mile boundary, but that site has been abandoned by the City.

At this time the utility has no plans to develop any other well site within that boundary.

2. What is the future use (up to 100 years) for groundwater within 1 mile of the above named LUST site?

Well 55-605308 will continue to be used for municipal uses for the next 100 years. The well is part of our Assured Water Supply designation and is important to our water portfolio. The usage at that well may increase due to increased water demands within our system, surface water shortages, or other unforeseen changes.

3. Is the municipality/utility currently sampling groundwater wells within 1 mile of the above named LUST site? If so, how often is the sampling conducted? Are analytical results being submitted electronically to ADEQ's the groundwater database? If not, will you share the data with ADEQ?

The utility samples according to the schedule set forth in the Safe Drinking Water Act, which requires us to sample the Entry Point to the Distribution System (EPDS) and not specifically the well. Well 55-605308 feeds one of our EPDS's, along with treated surface water.

No results specific to the well are currently being submitted to ADEQ's groundwater database. In the event of a contamination impacting the well, analytical results could be shared with ADEQ.

4. Are there any groundwater wells owned by the water provider that are known to have been affected by the above named LUST site? If so, please list the ADWR well identification numbers. What is the current status of these wells (e.g.- shut down, still pumping)?

No, there are no wells that are currently known to have been impacted by this LUST site. The only other well that is within the mile radius is the aforementioned 55-605310, which is no longer used and has been abandoned by the City of Chandler.

5. What is the future use (up to 100 years) for any wells that have been impacted by the above named LUST site?

We currently have no known impacts to our wells from the LUST site. In the future, if any of our wells became impacted from the LUST site, the City would look to ADEQ and the owner of the LUST site for assistance in remediation of those impacted wells.

6. Is there any other information you wish to provide to assist ADEQ in the LUST case closure evaluation of this site?

No, we have no other information at this time.