

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 # 4190.01
Facility ID # 0-003332
Pima County

Tucson South Co SOC #121420
6300 South 6th Avenue
Tucson, Arizona 85706

The site is located at 6300 South 6th Avenue which is at the intersection of West Valeska Road and South 6th Avenue in Tucson. The site was occupied by offices, a dispatch yard and telecommunications equipment facility with private vehicle maintenance and gasoline fueling equipment. The UST owner/operator was Qwest Communications (now CenturyLink). The site formerly contained two 2,000-gallon gasoline USTs (UST #2, UST#3) with associated product piping and one product dispenser which operated between approximately 1977 and July 1995. The USTs were removed in July 1995 and January 1996, respectively. A 1,000-gallon gasoline UST (UST #1) was installed in 1982 and removed in July of 1995. ADEQ assigned LUST File No. 4190.01 to UST # 1. A new 6,000-gallon gasoline UST (UST #4) and ancillary equipment was installed in August 1995 and permanently removed in September 2015. LUST file No. 4190.02 was assigned to the gasoline dispenser in August 1995 and was closed in October 2008. LUST file No. 4190.03 was assigned to UST#4 in January 2016 based on soil data collected during the UST removal, and was closed in April 2016. Qwest and its consultant ATC Associates Inc. (ATC), submitted the *Site Characterization Report* which was approved by ADEQ on August 11, 2009.

The CenturyLink facility is located within the boundary of the Tucson International Airport Area (TIAA) Superfund Site (specifically the Tucson Airport Remediation Project area). Chemicals of concern (COCs) in groundwater associated with the TIAA Superfund Site include trichloroethylene (TCE) (among other non-gasoline constituents) which is the likely source of the TCE quantified in groundwater samples at the subject site. The groundwater at the site is contaminated with volatile organic compounds (VOCs) associated with petroleum releases in monitor well MW-4 (source area). As of May 2018, dissolved phase benzene, methyl tert butyl ether (MTBE) and TCE are present at concentrations exceeding their respective ADEQ established AWQS or Tier 1 Cleanup Standards at the location of monitor well MW-4, the source well. MTBE was used as an oxygen booster in unleaded gasoline until approximately 2004.

ATC submitted a *Corrective Action Completion Report and Closure Request* on behalf of CenturyLink, which was received September 17, 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:* ADEQ conducted a search of the Arizona Department of Water Resources (ADWR) electronic database for all registered groundwater wells within a one-half mile radius of the subject site. The results of the search indicate that there are six registered exempt wells, six non-exempt wells, and 55 wells registered as monitor or “other”. One of the registered exempt wells is an observation well for the TIAA Superfund site. An exempt well (55-64002) is registered to Emery Park Mobile Homes and withdrew only 38 acre-feet (ac-ft.) in 2013 (latest pumping data reported in ADWR database). According to the ADEQ Safe Drinking Water Database, this water system is regulated with the ID number of AZ0420041. The system was sampled for select VOCs which included petroleum related compounds in July 2017 with none reported. This well is located up gradient from the LUST site. One registered exempt well is capped and three other wells (55-638733 [up gradient of the LUST site], 55-635229 [up gradient] and 55-801799 [down gradient between ¼ and ½ mile, but well has been dry since 2001 according to the imaged record at ADWR]) list no pumping data, and are likely inactive. There are five non-exempt wells registered to the City of Tucson, of which three have been abandoned. Two City wells (55-620000 and 55-620001 have no pumping data available from ADWR). One non-exempt well (55-606493) is registered to Colonial Mobile Home Park which lists the water use as commercial and withdrew 11.4 ac-ft. in 2013, the latest data available. This well is located up gradient of the LUST site. According to the ADEQ Safe Drinking Water Database, Colonial Mobile Home Park is a regulated system with ID number AZ0420512. Select VOCs were last analyzed in December 2015 and included petroleum related compounds. None of the petroleum related compounds were detected. However, trichloroethylene was detected which is present in groundwater within the TIAA Superfund site.

The City of Tucson (COT) returned a water provider questionnaire to ADEQ. According to the response, COT has five groundwater production/remediation wells located within about a half mile from the LUST site. These wells comprise the southern well field of the Tucson Airport Remediation Project (TARP) EPA Superfund site. These five wells are contaminated with chlorinated solvents associated with the Superfund site. Tucson Water constructed the Advanced Oxidation Process (AOP) Water Treatment Facility between July 2012 and January 2014. It operates in conjunction with the adjacent TARP facility to produce up to seven million gallons of purified water a day. The AOP technology is capable of treating both chlorinated and non-chlorinated VOCs such as dissolved phase TCE, benzene and MTBE present in groundwater. COT has several inactive production wells within one mile of the LUST site that are no longer in service due to their proximity to the TARP Superfund site. COT identified two registered private wells located to the south of the LUST site which they recommended for evaluation by ADEQ. These two wells are discussed previously in this section and are inactive wells. According to the *2018 Status and Quality of the Aquifer* report from Tucson Water, the main water supply is Colorado River water. If there are interruptions in the Colorado River water delivery system, Tucson Water can pump groundwater from the Central Well Field. Tucson Water has been storing available Colorado River water in the aquifer. If there is a shortage on the Colorado River system, Tucson Water is prepared to supplement its resources by pumping and delivering stored water. 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:* According to the Conceptual Site Model, the dermal contact and ingestion exposure pathways are incomplete for the petroleum hydrocarbon impacted soil and groundwater associated with LUST File No. 4190.01. To address the inhalation exposure pathway, ATC performed a Tier 3 risk evaluation to determine the cumulative Excess Lifetime Cancer Risk (ELCR) for carcinogenic COC and/or Hazard Index (HI) for non-carcinogenic COC. The soil vapor data used for this evaluation was obtained during soil vapor probe installation and sampling activities, as documented in the *Periodic Site Status Report* submitted to ADEQ on June 4, 2015. ATC utilized the screening level

implementation of the Johnson and Ettinger (J&E) screening level Vapor Intrusion Model with site specific coupled with the default parameters to model the migration of soil vapors into a hypothetical slab-on-grade structure. The J&E results indicated that the cumulative indoor air ELCR was 9.931×10^{-7} and an HI of 0.058 for the petroleum related CoCs which do not exceed the carcinogenic target risk level of 10^{-6} and the hazard index of 1.0. In July 2018, ATC oversaw the advancement of one confirmation soil boring (CB-1) that was located approximately four feet southwest of MW-4. Six soil samples were collected between 50 and 75 feet below ground surface (bgs) to evaluate current VOC concentrations with those detected in 1995 at SB-1 and in 2009 when MW-4 was installed. Soil samples were prepared for laboratory analysis of tetraethyl lead (TEL) using EPA Method 8270C and for analysis of VOC using EPA Method 8260B. Soil samples were analyzed for TEL given the age of the original UST system. Laboratory analytical data indicates the presence of sorbed phase VOC including benzene at concentrations exceeding the ADEQ established residential soil remediation levels (rSRLs) or ADEQ established minimum groundwater protection levels (GPLs) between 60 and 75 feet bgs. TEL was not detected at concentrations exceeding its method reporting limit. Ethylbenzene and methyl tert butyl ether (MTBE) was detected in all six soil samples but at concentrations below their applicable regulatory standards. No schools, daycare facilities, hospitals or nursing homes were observed within a one-quarter mile radius of the site. There are residential homes within ¼ mile of the site, but the subsurface VOC soil contamination is located on-site and not accessible.

3. *Groundwater plume stability:* Dissolved phase petroleum hydrocarbon CoCs have been absent in down-gradient wells MW-1 and MW-2 in 13 sampling events since 2009. Based on groundwater elevation data collected between 1996 and May 2018 the average calculated flow direction is north-northwest under an average calculated gradient of 0.0040 foot per foot. In May 2018 the depth to groundwater was approximately 86 feet bgs. Compliance sample analytical results demonstrated that the dissolved phase concentrations of benzene and MTBE in excess of their ADEQ established AWQS or Tier I Cleanup Standard occur only at monitor well MW-4. Post-purge samples collected at the down and cross gradient monitor wells (MW-1 and MW-2) and up gradient monitor well (MW-3). The GSI Mann-Kendall Toolkit output (presented in the 2017 *Periodic Site Status Report*) indicated no discernable trend for either benzene or MTBE in groundwater. Site stratigraphy plays an important role in the natural attenuation and leaching of petroleum hydrocarbons in the vadose zone, as soil from just below the asphalt parking lot to an approximate depth of 50 feet bgs is predominantly silty sand, underlain by clay to an approximate depth of 75 feet bgs (as logged while drilling CB-1). Benzene and MTBE isopleth maps were generated using Surfer v.13® to eliminate human bias. Plume stability is generally considered to be a strong characteristic of natural attenuation. Variable concentrations of dissolved phase benzene and MTBE occur at monitor well MW-4 but are not present at monitor well locations MW-1, MW-2 or MW-3. This strongly suggests that dissolved phase concentrations of benzene and MTBE are not present up gradient of the release point (as documented at MW-3) and attenuate to non-detectable concentrations less than 60 feet down gradient of the release point (as documented at MW-1 and MW-2). To evaluate the updated concentrations of benzene and MTBE in soil and groundwater and their respective ability to naturally attenuate, ATC utilized the EPA BIOSCREEN Natural Attenuation Support System (Version 4.1). BIOSCREEN software uses a combination of site-specific data and assumed values to simulate contaminant transport and attenuation through biodegradation. The software allows the user to analyze a groundwater plume under one of three assumptions regarding the rate of natural attenuation: No Decay, First-Order Decay or Instantaneous Decay. According to the EPA BIOSCREEN Natural Attenuation Decision Support System User's Manual, the First-Order Decay Model is most appropriate for petroleum hydrocarbon contamination. The model output indicates that the maximum lateral distance from the source (MW-4) that benzene and MTBE exceeding their respective AWQS or Tier 1 Cleanup Standard will travel is approximately 35 feet

and 21 feet, respectively, each in approximately two to three years (assuming a first order rate of decay is representative of site conditions). Based on this new empirical data, natural attenuation will continue to occur, further reducing the concentrations of benzene and MTBE in soil and groundwater.

4. *Characterization of the groundwater plume:* Dissolved phase impacts in groundwater have been monitored at this site since 1996. MW-4 was installed in 2009 and added significantly to the understanding of the degree of impacts at the approximate release location/source area. Dissolved phase VOC laboratory analytical results of groundwater samples indicates that as of May 2018, dissolved phase benzene, MTBE and TCE are present at concentrations exceeding their respective ADEQ established AWQS or Tier 1 Cleanup Standards at the location of monitor well MW-4. As mentioned earlier, TCE in the groundwater at the site is associated with the TIAA Superfund site.

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) parameters were collected in May 2018. MNA field parameters like dissolved oxygen (DO) and redox potential (ORP), have been collected between 2015 and 2018 to evaluate the groundwater conditions. The ORP is positive at the source area 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. ATC analyzed the biodegradation and transport of dissolved phase benzene and MTBE down gradient of MW-4 using BIOSCREEN. The model supports that natural attenuation is occurring as previously mentioned in the *Groundwater Plume Stability* section. Variable concentrations of dissolved phase benzene and MTBE occur at monitor well MW-4 but are not present elsewhere as demonstrated by data collected from MW-1, MW-2 or MW-3. This strongly suggests that dissolved phase concentrations of benzene and MTBE are not present up gradient of the release point (as documented at MW-3) and attenuate to non-detectable concentrations less than 60 feet down gradient of the release point (as documented at MW-1 and MW-2).

6. *Removal or control of the source of contamination.* Source control has been completed by the original USTs being removed in 1995 and the former UST system being removed in 2015. Secondary source of contamination (impacted soil mass) has reduced through natural attenuation and vertical migration (leaching) as demonstrated in Table 1 of the submittal.

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. The federal Superfund project manager and the ADEQ Superfund project manager concur with this risk based LUST case closure.

Groundwater data for MW-4 (source area)

Date	Benzene AWQS is 5 µg/L	MTBE Tier 1 Corrective Action Standard is 94 µg/L	TCE AWQS is 5 µg/L	Depth to water (ft.)
March 2009	70	560	50	91.59
April 2009	6.7	240	40	91.13
May 2010	2.5	190	22	92.51
May 2011	<0.50	790	19	91.13
May 2012	100	1,200	14	85.98
April 2013	100	1,000	9.3	83.95
May 2014	910	2,900	6.1	86.24
November 2014	21	21	7.7	86.69
April 2015	<1.0	1.2	6.1	88.25
March 2016	495/480	138/136	7.51/7.05	87.61
May 2017	612/626	180/156	6.69/6.68	85.93
May 2018	16.3/15.5	114/109	7.76/6.81	86.74

Groundwater data for MW-1 (on-site down gradient of source area)

Date	Benzene AWQS is 5 µg/L	MTBE Tier 1 Corrective Action Standard is 94 µg/L	TCE AWQS is 5 µg/L	Depth to water (ft.)
April 1996	7.1	---	130	99.00
April 1999	2.5	<8	96	98.02
March 2009	<1	<5	53	91.71
April 2009	<5.0	<5.0	43	91.00
May 2010	<1	<1	21	92.36
May 2011	<0.50	<0.50	18	91.00
May 2012	<0.50	<0.50	14	85.60
April 2013	<0.50	<0.50	9.7	83.77
May 2014	<1.0	<1.0	8.0	86.06
November 2014	<1.0	<1.0	7.7	86.62
April 2015	<1.0	<1.0	5.5	88.21
March 2016	<1.00	<1.00	8.73	87.53
May 2017	<1.00	<1.00	8.12	85.83
May 2018	<1.00	<1.00	9.01	86.65

Groundwater data for MW-2 (on-site cross gradient of source area)

Date	Benzene AWQS is 5 µg/L	MTBE Tier 1 Corrective Action Standard is 94 µg/L	TCE AWQS is 5 µg/L	Depth to water (ft.)
April 1996	<0.5	---	120	99.10
April 1999	3.1	---	65	98.20

March 2009	<1	<5	46	91.80
April 2009	<5.0	<5.0	40	91.15
May 2010	<1	<1	20	92.48
May 2011	<0.50	<0.50	16	91.12
May 2012	<0.50	<0.50	15	85.98
April 2013	<0.50	<0.50	8.8	83.90
May 2014	<1.0	<1.0	7.3	86.21
November 2014	<1.0	<1.0	7.0	86.75
April 2015	<1.0	<1.0	6.2	88.29
March 2016	<1.00	<1.00	6.70	87.64
May 2017	<1.00	<1.00	5.22	85.94
May 2018	<1.00	<1.00	4.80	86.76

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 **April 17, 2019 and ending May 17, 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

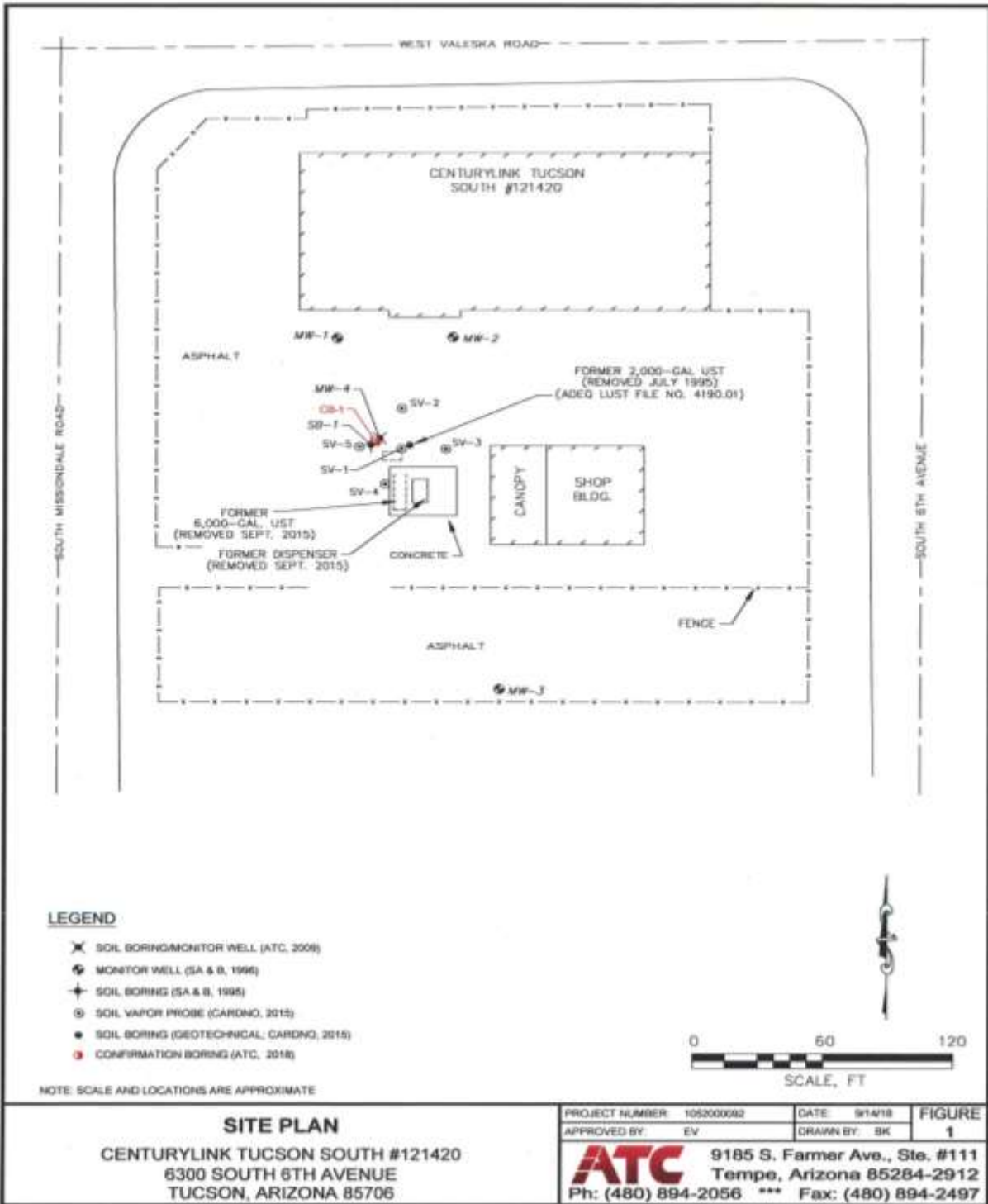
or electronically mailed to: goodwin.debi@azdeq.gov.

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 goodwin.debi@azdeq.gov.

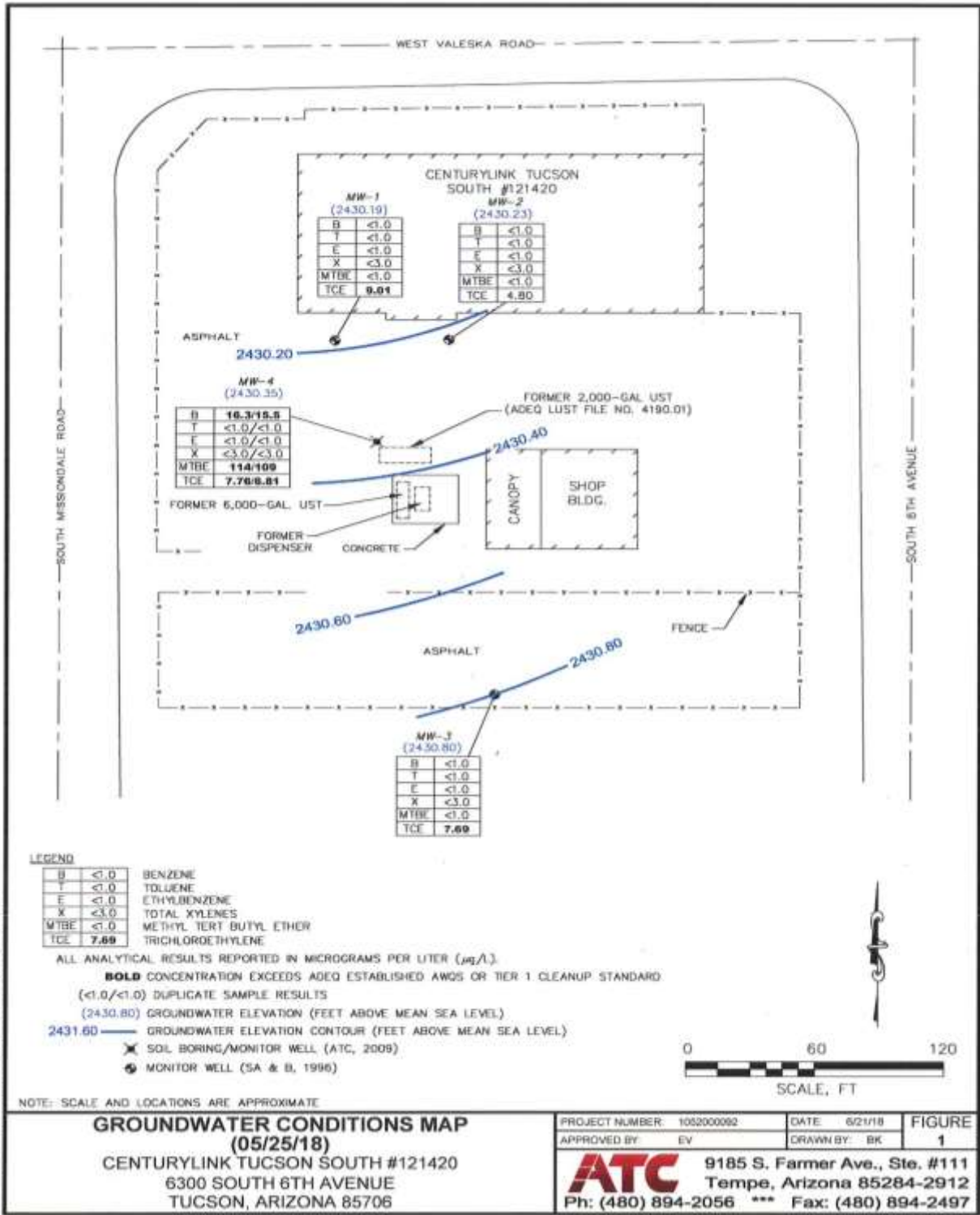
Copies of the cited statutes and rules can be found at:
<http://www.azleg.gov/ArizonaRevisedStatutes.asp?Title=49>, and
http://www.azsos.gov/public_services/Title_18/18-12.htm

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.



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Tucson International Airport Superfund Site





Email completed form to: dq1@azdeg.gov

UST- LUST Section
GROUNDWATER USE QUESTIONNAIRE

LUST FACILITY NAME Century Link Tucson South #121420
 ADDRESS 6300 South 6th Avenue
 LUST FACILITY ID 0-003332
 LUST CASE NO 4190.01

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: Tucson Water
 Date Questionnaire was completed: 5 December 2018
 Contact Name: Chad Lapora
 Title: Water Program Superintendent
 Address: 4401 S. Tucson Estates Parkway
 Tucson, AZ 85735
 Phone Number: (520)837-2435 or (520)419-0821
 Email address: chad.lapora@tucsonaz.gov

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

Tucson Water has five groundwater production/remediation wells located within about a half mile from the above mentioned LUST site. These five wells comprise the Southern Well-field of the Tucson Airport Remediation Project (TARP) EPA Superfund site. These wells (R-001A, R-002A, R-003A, R-004A, and R-005A) pump water contaminated with TCE, 1,4-dioxane and PFAS and pipe it directly to the TARP/AOP Plant for treatment prior to being sent into Tucson Water's distribution system.

Tucson Water also has several inactive production wells with the one mile radius of the above mentioned LUST site. They include B-102A and B-103A (0.93), C-064A and C-064B (0.30 miles), C-066A (0.96), C-068A (0.60), C-077A and C-078A (0.80), and C-080A (0.96). All of these wells are no longer in service due to their proximity to the TARP Superfund site.

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

The 5 R-wells are expected to remain in service for the life of the TARP Superfund site.

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?

Tucson Water currently samples the 5 R-wells and several monitoring wells as part of the TARP FOP (Field Operations Plan). Samples are routinely taken for TCE, 1,4-dioxane and PFAS. Analytical data for the five R-wells are provided to ADEQ and results for all of the monitoring wells are reported in the SASR's (Semi-annual Status Reports) which ADEQ is provided a copy.

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)?

Tucson Water is not specifically aware that the above mentioned LUST site has impacted any of the groundwater wells within a mile radius. As mentioned above, this LUST site is adjacent to the TARP EPA Superfund Site.

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

All of the wells mentioned above will remain active for production/remediation and monitoring purposes for the foreseeable future.

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

Private well 55-638733 (170 feet south of the LUST site) and private well 55-635229 (474 feet south of the LUST site) should be evaluated for possible impactation by the

Groundwater Use Questionnaire

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LUST site. There is also an unregistered well located about 160 feet south of the LUST site that should also be evaluated.

In Arizona, all groundwater is considered potential drinking water and thus Tucson Water seeks to have the above mentioned LUST site remediated to the Aquifer Water Quality Standards set forth by ADEQ.

