

Vance Air Force Base, Oklahoma

2018 Vance AFB RCRA Post Closure Permit Class 2 Modification – Technical Support Document

Draft Final

July 2018

Environment

Submitted to:
AIR FORCE CIVIL ENGINEER CENTER
LACKLAND AIR FORCE BASE, TEXAS
AND
VANCE AIR FORCE BASE
OKLAHOMA
CONTRACT NO. FA8903-10-D-8596-0075
CDRL A001d
Project No. XTLF20127190B

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DRAFT FINAL
2018 Vance AFB RCRA Post Closure
Permit Class 2 Modification – Technical
Support Document

VANCE AIR FORCE BASE, OKLAHOMA

**Contract No. FA8903-10-D-8596-0075
CDRL A001d**

Project No. XTLF20127190B

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July 2018

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List of Acronyms and Abbreviations

1,1-DCE	1,1-dichloroethene
1,2-DCA	1,2-dichloroethane
AF	Air Force
AFB	Air Force Base
AST	aboveground storage tank
BASH	Bird Aircraft Strike Hazard
BCE	Base Civil Engineer
bgs	below ground surface
CCR	Construction Completion Report
CGTF	Central Groundwater Treatment Facility
cis-1,2-DCE	cis-1,2-dichloroethene
CM	Corrective Measures
CMCR	Corrective Measures Completion Report
CMI	Corrective Measures Implementation
COC	contaminant of concern
COMBS	Contractor Owned and Base Maintained
CSM	Conceptual Site Model
DPE	dual phase extraction
DRMO	Defense Reutilization and Marketing Office
EPA	U.S. Environmental Protection Agency
ERD	enhanced reductive dechlorination
EVO	emulsified vegetable oil
FPR	free product recovery
FS	Feasibility Study
GAC	granular activated carbon
ICM	Interim Corrective Measure
ICT	Interceptor Collection Trench
IRA	Interim Removal Action
IRP	Installation Restoration Program
IZ	Industrial Zone
LTM	long-term monitoring
µg/L	micrograms per liter
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ODEQ	Oklahoma Department of Environmental Quality
OK-DRO	Oklahoma Diesel Range Organics
OK-GRO	Oklahoma Gasoline Range Organics
ORC®	Oxygen Release Compound

PCE	tetrachloroethene
PDI	Predesign Investigation
PFC	perflourinated compound
POTW	Publicly Owned Treatment Works
PVC	polyvinylchloride
RA-O	Remedial actions operations
RCRA	Resource Conservation and Recovery Act
RD/CMIP	Remedial Design/Corrective Measures Implementation Plan
RI	Remedial Investigation
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SVE	soil vapor extraction
SVOC	semivolatile organic compound
TCE	trichloroethene
TPH	total petroleum hydrocarbon
TSD	Technical Support Document
UST	underground storage tank
UU/UE	Unrestricted Use/Unrestricted Exposure
VC	Vinyl Chloride
VOC	volatile organic compound

1.0 INTRODUCTION

This document presents technical justifications for individual lines of evidence used to modify specific items in the 2010 Vance Air Force Base (AFB) Resource Conservation and Recovery Act (RCRA) Post Closure Permit (ODEQ, 2010), herein known as the Permit, through the use of a Class 2 Permit Modification, herein known as the (proposed) Permit Mod. This technical support document (TSD) will be submitted to the Oklahoma Department of Environmental Quality (ODEQ) by the Air Force (AF) as a companion document to the proposed Permit Mod. Note that concurrent with submittal of this TSD will be a revised Permit with redline and strikeout changes that indicate what has been modified. The proposed Permit Mod will also include a brief description of the “new” remedies for each site (remedies which have been implemented since the time of the last permit modification in 2010) and a revised sampling and analysis plan (SAP).

1.1 PURPOSE AND SCOPE

Vance AFB is an active U.S. Air Force Base located in Garfield County in northwestern Oklahoma, approximately five miles southwest of downtown Enid, Oklahoma (Figure 1-1). The Base occupies approximately 2,122 acres and is surrounded by privately owned agricultural properties. Construction of Vance AFB began in 1941, and the Base officially began basic flight training operations in November 1941. Vance AFB is primarily comprised of aircraft taxiways and runways, and currently is part of the Air Education Training Command. Flight training continues to be Vance AFB’s chief mission (ITSI, 2010).

A RCRA Post-Closure Permit issued to Vance AFB in 1996 by the ODEQ was revised and renewed effective September 30, 2010. This current permit expires in September 2020. The permit covers operation of treatment systems and compliance sampling at the following five areas within the Base: Corrective Measures Implementation (CMI) area; Industrial Zone (IZ) area; Site DP005; Site FT002; and Site SS026. It also covers surface water and sediment sampling at Sites SS007, LF003, and DP005. The Groundwater SAP (Vance, 2006), appended to the 2010 Permit, requires the collection of six surface water samples and six sediment samples at Sites SS007, LF003, and DP005. The locations of these areas at Vance AFB are presented on Figure 1-2. The 70 compliance monitoring wells and six surface water/sediment sampling locations, included in the permit are presented in Table 1-1 and presented on Figure 1-3.

Table 1-1 Compliance Monitoring Wells and Locations			
Overall Areas	Individual Sites	Well ID	
Industrial Zone (Sites LF003, SS007, ST008)	LF003	MW03-06	
		MW03-07	
		MW03-09	
	SS007		MW07-04
			MW07-07
			MW07-15
			MWOB-02
			MWOB-03
			MWOB-04
			MWOB-05
			MWOB-06
			MWOB-09
			MWOB-13
			MWOB-16
			MWOB-18
			MWOB-19
			MWOB-21
			MWN7-38
			MWN7-40
			MWN7-41
			MWN7-48
			MWN7-50
			MWN7-51
			MWN7-52
	MWN7-53		
	MWN7-69		
	ST008		MW08-05
			MW08-09
			MW08-12
			MW08-16
MW08-18			

Overall Areas	Individual Sites	Well ID
SS026	SS026	MW26-01
		MW26-02
		MW26-03
		MW26-04
CMI Area (Sites ST012, WP023, SS024, SS025)	ST012	MW12-09
		MW12-13
		MW12-20
		MW12-21
		MW12-30
		MW12-33
		MW12-34
		MW12-35
		MW12-37
		MW12-38
	WP023	MW23-05
		MW23-14
		MW23-21
		MW23-22
	SS024	MW24-05
	SS025	MW25-01
		MW25-02
		MW25-04
		MW25-07
		MW25-08
MW25-09		
DP005	DP005	MW05-01
		MW05-03
		MW05-04
		MW05-06
		MW05-07
		MW05-08
		MW05-09
		MW05-18
		MW05-19
		FT002
MW02-05		

The technical basis for the modification of the Vance permit is data collected through June 2017.

The proposed Permit Mod addresses below items 1 through 6. These items are addressed in a stepwise process, where each subsequent section incorporates the proposed changes recommended in the previous section. The technical justification behind each of these items is presented in this technical support document.

1. Updates the remedies for each site and incorporates the remedies implemented since the permit was last modified.
2. Discontinuation of the fall compliance monitoring event.
3. Discontinuation of surface water and sediment sampling portion of the compliance monitoring program.
4. Removal of select monitoring wells from the compliance monitoring program.
5. Removal of select analytes from the compliance monitoring program.
6. Reassignment of select monitoring wells from originally designated sites to the sites whose contamination they actually monitor.

2.0 SITE DESCRIPTIONS AND NEW REMEDY IMPLEMENTATION

The following subsections characterize the Installation Restoration Program (IRP) sites associated with the five areas/sites (CMI Area, IZ Area, Site FT002, Site DP005, and Site SS026) at Vance AFB, as well as define the past and current remedies implemented at these sites, and the current compliance monitoring program. The new remedies described below have been implemented at each site and have been documented in regulatory submittals for each individual site including Remedial Design/Corrective Measures Implementation Reports (RD/CMIP), Construction Completion Reports (CCR) and Corrective Measures Completion Reports (CMCRs) where applicable.

Remedies at these sites were implemented in two phases as interim corrective measures (ICMs) and the corrective measures (CMs). In general, the ICMs primarily dealt with addressing source area contamination and the CM dealt with the down gradient portion of the plume. The ICM and CM portions of the remedy make up the final remedy, which is presented in the sections below.

Remedial actions operations (RA-O) activities are conducted at all sites with remedies, which includes periodic sampling to allow for an assessment of progress relative to the remedial goal at each site. Course corrections or additional remedial activities are conducted at the sites on an as needed basis. Course corrections generally involve reinforcement or adaptation of the site remedy using the approved remedial approach for the site to address changing plume morphology. An example of this would be the need for a second round of emulsified vegetable oil (EVO) injections at a site or the need for additional injection wells at a site.

The following appendices are attached to this technical support document:

- The analytes currently required to be monitored under the 2010 Permit are included in Appendix A.
- Groundwater potentiometric surface maps and contaminant plume maps from 2017 Annual Groundwater Compliance Monitoring Event are included in Appendix B.
- Five year data tables for analyte detections within past five years (2013-2017) are included in Appendix C. Note these tables only show analytes which have been detected or wells with detections within this 5 year period. As noted in Appendix A, as part of Corrective Measures (CM) program, a comprehensive analyte list is included for each site. However if an individual sample (or sample location) do not have any detects of compound within specified analyte list (for example, trichloroethene (TCE) within EPA (Environmental Protection Agency) SW-846 8260 list), then non-detected analytes will not appear on these tables. Complete analytical reports (which show data for all constituents – detected and not detected) are provided as an appendix in the annual monitoring reports.
- Previous five years of data (2009 to 2013) is included in Appendix D.
- Sediment and Surface Water Analytical Tables (2009-Present) are provided as Appendix E.

2.1 CMI Area

The CMI area includes IRP Sites ST012, WP023, SS024, and SS025. The aquifer in the CMI area has three transmissive zones associated with it, the shallow zone (10-30 feet below ground surface [bgs]), intermediate zone (35-50 feet bgs), and deep zone (55-75 feet bgs). These three zones of the aquifer underlying Vance AFB will be referred to herein as the shallow, intermediate, and deep zones.

The compliance well network associated with the CMI area includes 24 monitoring wells, with 16 wells screened in the shallow zone, five wells in the intermediate zone, and 3 wells in the deep zone. None of the sites in the CMI area have surface water or sediment sampling locations associated with it. Historical contaminants of concern (COCs) at the CMI area are tetrachloroethene (PCE), TCE, cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride (VC), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethene (1,1-DCE), acetone, methyl ethyl ketone, and methylene chloride (Shaw, 2008). CMI area monitoring well locations are shown on Figure 2-1.

2.1.1 Site ST012 (Paint Stripping Equalization Tank)

Site ST012, also known as the Paint Stripping Equalization Tank, is located near Monitoring Well MW12-09 and extraction well EW12-01. The site was constructed as a concrete vault circa 1967 and operated until 1988. Water and sludge from paint stripping operations flowed into the tank and the liquid effluent was then discharged into the sanitary sewer system. This site is located near Sites WP023, SS024, and SS025 (ITSI, 2010). Historically, the COC at ST012 was methylene chloride. Presently, the primary contaminants at the site are PCE, TCE, cis-1,2-DCE and VC. Site ST012 is the only site within the CMI that has contamination in the intermediate and deep zones. ST012 and monitoring well locations are shown on Figure 2-2.

The remedy documented in the current permit at Site ST012 includes groundwater extraction from five extraction wells. Groundwater pumped from these wells was previously conveyed to the Central Groundwater Treatment Facility (CGTF) via below grade piping. The treated water was then discharged to the City of Enid Publicly-Owned Treatment Works (POTW). The ST012 groundwater extraction system was part of the CMI area groundwater extraction system, which consisted of a total of 13 shallow zone extraction wells (including the five ST012 extraction wells). Groundwater pumped from these wells was directed to the CGTF. The original CMI remedy was installed to collect and treat impacted groundwater and to provide hydraulic control to prevent further plume migration.

During 2014, the Site ST012 remedy was changed to include a more aggressive treatment using EVO injections in the shallow, intermediate, and deep zones. The change in the remedy has been documented through the following documents.

- Interim Corrective Measures Work Plan Site ST012, Vance AFB
- Interim Corrective Measure Construction Completion Report Site ST012, Vance AFB
- Remedial Design/Corrective Measures Implementation Report Site ST012, Vance AFB
- Construction Completion Report Site ST012, Vance AFB

The presence of EVO created conditions conducive to enhanced reductive dechlorination (ERD) in areas with elevated concentrations of chlorinated volatile organic compounds (CVOCs), e.g., “hot spots”. The injections were designed to reduce contaminant mass within the three zones and mass flux between the zones. The remedy also includes flow through biobarrier walls (lines of injection wells) to treat the downgradient portions of the plume. All five groundwater extraction wells (EW12-01 through EW12-05) were turned off during injections and have remained offline. Four of the extraction wells (EW12-01, EW12-02, EW12-04, and EW12-05)

were retrofitted to operate as soil vapor extraction (SVE) wells to address contaminant mass in shallow subsurface soils. The SVE system also mitigates/prevents soil vapors (methane), generated by the injections, from entering Building 192 through the subslab. The SVE system was turned off on July 27, 2015, as limited contaminant mass was being removed by the SVE system and the system was no longer needed to control methane vapors in the area.

Since the remedy was implemented at Site ST012, two additional rounds of EVO injections have been completed and four additional intermediate zone injection wells have been installed. These efforts were conducted to advance remedial progress at the site and address changing plume morphology.

Annual groundwater compliance monitoring at Site ST012 currently includes collection of samples from the monitoring wells listed in Table 2-1 below.

Well ID	Well Type	Monitoring Frequency
12-9	Shallow	Annual
12-13	Deep	Annual
12-20	Deep	Annual
12-21	Deep	Annual
12-30	Intermediate	Annual
12-33	Shallow	Annual
12-34	Intermediate	Annual
12-35	Shallow	Annual
12-37	Shallow	Annual
12-38	Intermediate	Annual
12-43	Shallow	Annual
12-45	Shallow	Annual

These wells are monitored on an annual basis, with groundwater samples analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs)

2.1.2 Site WP023 (Industrial Waste Pit)

Site WP023, also known as the Industrial Waste Pit, is located approximately 250 feet north of Site ST012. The initial COCs at WP023 were acetone, methylene chloride, toluene, and xylene. There currently is no contaminant present at Vance AFB that originated from the site waste pit. Multiple investigations (USACE, 1995 and USACE, 1998) conducted at the site have concluded that the TCE, cis-1,2-DCE and VC contamination originates from ST012. The site is hydrogeologically downgradient from ST012 and is hydraulically connected to the shallow and intermediate transmissive zones at ST012. Based on multiple investigations conducted at the site, there is no current soil or groundwater contamination present that originated from the WP023 release (USACE 1995). All investigations conducted at the site to date, have concluded that the TCE, cis-1,2-DCE and VC contamination present originates from upgradient ST012 (USACE 1994, USACE1995). The exception to this is the TCE contamination present at Monitoring Well MW23-14, which originates at the Contractor Owned and Maintained Base Supply (COMBS) Warehouse (designated as Site SS025). ST012, WP023 and monitoring well locations are shown on Figure 2-2.

This is further evidenced by the VC contamination that was detected in shallow zone Monitoring Well MW23-05. VC was not detected above maximum contaminant level (MCLs) in Monitoring Well MW23-05 during the investigations and was only detected once previously in 2006.

However, VC was detected in this well in 2016. The detection of VC in this well is the result of two factors. The first factor is the termination of groundwater extraction at Site ST012 in 2014, which had been containing the source area contamination at ST012. The groundwater extraction system in place at Sites ST012 and SS024 artificially skewed the direction of groundwater flow to the east. Upon termination of groundwater extraction, flows reverted to their natural northern direction, which is directly towards WP023. This is evident by a comparison of the potentiometric surface maps for the pre-extraction groundwater (September 1994), concurrent with groundwater extraction (April 2011) and post groundwater extraction (May 2015) conditions, which are shown on Figures 2-3, 2-4 and 2-5, respectively.

The second factor is the implementation of an ERD remedy at Site ST012 during 2013. ERD produces VC along the reductive dechlorination chain and significant concentrations of VC are being generated at ST012 as part of the ERD process. The VC being generated at ST012 is now migrating northward onto Site WP023, along the natural groundwater flow path. Monitoring Well MW23-05 is located near the former waste pit in the shallow zone. Low level VC concentrations in Monitoring Well MW23-05 are believed to be a transient condition, as VC is readily degraded both aerobically and anaerobically.

Monitoring Well MW23-14 is located downgradient of Building 192, which is believed to be the source of part of the Site SS025 plume. Monitoring Wells MW23-21 and MW23-22 are installed in the intermediate zone and monitor the downgradient edge of the intermediate TCE plume, originating at Site ST012.

Annual Groundwater Compliance Monitoring at the Site WP023 currently includes collection of samples from the monitoring wells listed in the table below.

Well ID	Well Type	Monitoring Frequency
23-5	Shallow	Annual
23-14	Shallow	Annual
23-21	Intermediate	Annual
23-22	Intermediate	Annual

These wells are monitored on an annual basis, with groundwater samples analyzed for VOCs and SVOCs.

2.1.3 Site SS024 (Jet Engine Cleaning Shop)

Site SS024 is located at Building 187. Before 1992, hazardous material was transferred from inside the building via piping and an associated manhole outside the building. Prior to 1982, a manhole outside the southeast side of the building was used for the transfer of hazardous materials generated during jet engine cleaning processes (solvents and petroleum products) from inside the building to a truck awaiting pick up. Low concentrations of VOCs detected in soils and elevated concentrations of VOCs in groundwater indicate that spills could have occurred during these transfers and could be the source of the site's contamination. The manhole was closed in the late 1980s. SS024 and monitoring well locations are shown on Figure 2-6.

The remedy documented in the current permit at Site SS024 includes groundwater extraction from five extraction wells. Groundwater pumped from these wells was conveyed to the CGTF for treatment via below grade piping. The treated water is then discharged to the City of Enid POTW. The SS024 groundwater extraction system was part of the CMI area groundwater extraction system, which consisted of a total of 13 shallow zone extraction wells (including the

five SS024 extraction wells). Groundwater pumped from these wells was directed to the CGTF. The current CMI remedy was installed to collect and treat impacted groundwater and to provide hydraulic control to prevent further plume migration.

In 2014, the Site SS024 remedy was changed to incorporate an aggressive treatment via in-situ bioremediation. The site was treated using EVO injections into the subsurface to create conditions conducive to ERD in the source area. EVO injections into the shallow zone were conducted during the period August through October 2014. EVO was injected into a gridded series of injections located over the source area. These injection wells were installed, and injected into, as part of the ICM phase. EVO was also injected into a series of biowall injection wells that were installed in the downgradient portion of the plume during the CM phase. All five extraction wells (EW24-01 through EW24-05) were turned off during the injections and remain offline. Three of the extraction wells (EW24-01, EW24-02 and EW24-05) were retrofitted to operate as SVE wells to mitigate/prevent soil vapors (methane), generated by the injections, from entering Building 187 through the slab. The change in the remedy has been documented through the following documents.

- Remedial Design/Corrective Measures Implementation Report Site SS024, Vance AFB
- Construction Completion Report Site SS024, Vance AFB

The SVE system was turned off on July 27, 2015 due to the lack of methane in the SVE influent.

Since the remedy was implemented at Site SS024, two additional rounds of EVO injections have been conducted and eight additional shallow zone injection wells have been installed. These efforts were conducted to advance remedial progress at the site and address changing plume morphology.

Annual Groundwater Compliance Monitoring at Site SS024 currently includes collection of samples from the monitoring well listed in Table 2-3 below.

Table 2-3 Site SS024 – 2010 RCRA Post Closure Permit Required Monitoring		
Well ID	Well Type	Monitoring Frequency
24-5	Shallow	Annual

The groundwater samples collected from this monitoring well are analyzed for VOCs and SVOCs.

2.1.4 Site SS025 COMBSWarehouse

Site SS025, also known as the COMBS Warehouse, is located near Site ST012 and adjacent to Hangar 170 (ITSI, 2010). The primary contaminant at the site is TCE. A drain or sump previously associated with Hangar 170 is the probable source of contamination at this site. The groundwater plume at the site, which was historically part of the TCE plume originating from Sites ST012 and SS024, is now segregated from those plumes and is considered its own source area. SS025 and monitoring well locations are shown on Figure 2-7.

The remedy documented in the current permit at Site SS025 includes three extraction wells. Groundwater pumped from these wells is conveyed to the CGTF for treatment via below grade piping. The treated water is then discharged to the City of Enid POTW. The SS025 groundwater extraction system was part of the CMI area groundwater extraction system, which consisted of a total of 13 shallow zone extraction wells (including the three SS025 extraction wells). Groundwater pumped from these wells was directed to the CGTF. The current CMI

remedy was installed to collect and treat impacted groundwater and to provide hydraulic control to prevent further plume migration.

In 2014, the SS025 remedy was changed to incorporate aggressive treatment via in-situ bioremediation. The site was treated using EVO injections to create subsurface conditions conducive to ERD in the source area. EVO injections into the shallow zone were conducted during the period of January and July 2014. The EVO was injected into a gridded series of injection wells located over the source area. These wells were installed, and injected into, as part of the ICM phase.

EVO was also injected into a series of biowall injection wells that were installed in the downgradient portion of the plume during the CM phase.

EVO was also injected into a series of biowall injection wells that were installed up gradient and downgradient of Monitoring Well MW12-45 during the CMI phase to address the areal extent of the TCE plume.

All three groundwater extraction wells (EW25-01, EW25-02 and EW25-03) were turned off during injections and remain offline. Six SVE wells were installed at the site. The SVE system mitigates/prevents soil vapors (methane) generated by the injections from entering Buildings 525 and 528 through the subslabs. The change in the remedy has been documented through the following documents.

- Remedial Design/Corrective Measures Implementation Report Site SS025, Vance AFB
- Construction Completion Report Site SS025, Vance AFB

The SVE system was taken offline on March 28, 2016, as a result of methane vapor concentrations in the system influent had decreased to levels where the system was no longer needed.

Since the remedy was implemented, two additional rounds of EVO injections have been conducted at Site SS025 to advance remedial progress and address changing plume morphology. During August 2017, a course correction was implemented that involved a series of BOS 100 injections at four areas of SS025 that had residual concentrations of TCE remaining above the MCL. These injections were conducted in an effort to shorten the remedial lifespan of SS025.

Annual groundwater compliance monitoring at the site includes collection of samples from the monitoring wells listed in the Table 2-4 below.

Table 2-4 Site SS025 – 2010 RCRA Post Closure Permit Required Monitoring		
Well ID	Well Type	Monitoring Frequency
25-1	Shallow	Annual
25-2	Shallow	Annual
25-4	Shallow	Annual
25-7	Shallow	Annual
25-8	Shallow	Annual
25-9	Shallow	Annual
25-15	Shallow	Annual

These wells are monitored on an annual basis, with groundwater samples analyzed for VOCs

and SVOCs.

2.2 Industrial Zone (IZ)

IRP Sites LF003, SS007 and ST008, are associated with the IZ and are shown on Figure 2-8. The historical COCs include arsenic, benzene, ethylbenzene, xylene, toluene, naphthalene, Oklahoma-gasoline range organics (OK-GRO), Oklahoma-diesel range organics (OK-DRO), 1,1-DCE, TCE, and VC. COCs vary from site to site. SS028 was validated as a new IRP site in 2016 when an upgradient intermediate well, MW8-18, was determined to not be associated with ST008. Site ST011 was a site previously closed under Oklahoma Corporation Rules but has been reopened because of petroleum products that have migrated to LF003. ST011 was previously moved to Table 2b in the 2010 Permit. Site ST011 will be moved to Table 2a in the Permit Modification. However, these sites are presented here as contamination originating at/from these sites directly impacts the other IZ sites. IZ area monitoring well locations are shown of Figure 2-8.

A description of each of the IRP sites is presented below.

2.2.1 Site LF003 (Tank Farm Landfill)

Site LF003, located in the northern portion of Vance AFB, was historically utilized as a landfill from 1941 to 1952. General refuse, containerized liquids, and tank sludge were disposed at the landfill using the trench-and-fill method. Free product (composed of leaded gasoline) has been detected during previous groundwater sampling efforts, including as recently as 2015. Free product was also detected during construction of the interceptor collection trench (ICT) associated with Site SS007 in 1994. LF003, ST011 and monitoring well locations included in the current groundwater compliance monitoring program are shown on Figure 2-9.

A free-product recovery (FPR) system was installed at Site LF003 in 2004. The FPR system consists of four recovery wells and a surface facility that housed recovery equipment and a free product tank. The FPR system was never fully operational due to the lack of recoverable free product. Currently, the FPR system remains inactive. A phytoremediation area consisting of 173 poplar trees was planted in 2004 to address contaminated groundwater at the site (ITSI, 2010). The phytoremediation system was removed in October 2017, as it was determined that the phytoremediation plot was no longer needed to address contamination at the site.

An investigation conducted in 2013 showed that there were no sources of contamination within the landfill and that the free product and petroleum contamination identified at the landfill originates upgradient at Site ST011. The AF reopened Site ST011 and a RCRA Facility Investigation is being conducted. There are no current plans to excavate the landfill waste material.

Annual groundwater compliance monitoring at the site includes collection of samples from the monitoring wells listed in the Table 2-5 below.

Well ID	Well Type	Monitoring Frequency
03-6	Shallow	Annual
03-7	Deep	Annual
03-9	Shallow	Semiannual

These wells are monitored on either an annual or semiannual basis, with groundwater samples analyzed for VOCs and metals.

Additionally, two sediment samples and two surface water samples are collected annually from the outfall area located immediately east of the site. These samples are also analyzed for VOCs and RCRA metals.

2.2.2 Site SS007 (Hazardous Waste Accumulation Point)

Site SS007 is located along the former northern perimeter of the base, northeast of the flight line apron and west of the Tank Farm Landfill (LF003). It consists of three discrete areas: the Defense Reutilization and Marketing Office (DRMO); the old Base Civil Engineer (BCE) storage area; and the area north of Fox Drive, commonly known as North Site SS007 (ITSI, 2010). SS007 and monitoring well locations are shown on Figure 2-10.

From October 1980 to November 1992, the DRMO operated under RCRA Interim Status. Over this duration, drummed waste containing solvents, metal treatment sludge, waste oils, and contaminated fuels were handled at the site prior to transportation and disposal. Although no spills of drummed waste were reported over this period, and hazardous wastes are no longer being stored or handled at the site, undocumented spills from historical activities are believed to be the origin of soil and groundwater contamination at Site SS007.

Electrical transformers were stored at the BCE storage area, prior to installation. The storage dates are not documented. Solvent products of unknown type were also stored at this site prior to 1980. This area is now open space. Fuel and solvent related VOCs detected in soil and groundwater, together with polychlorinated biphenyls detected in soil, indicate that spills could have occurred during materials handling at Site SS007. However, a predesign investigation conducted in 2013 confirmed that no soil exceedances above unrestricted use criteria are currently present at SS007.

The only known historical use of North Site SS007 was agricultural purposes and record searches from prior studies did not uncover any industrial or disposal activities, prior to AF use of this site. Groundwater contamination at North Site SS007 is believed to have migrated from Site SS007, prior to installation of the ICT separating the two sites (as discussed below).

The remedy documented in the current permit is groundwater extraction using an ICT and six groundwater extraction wells, which were installed in 1997 to recover contaminants from the DRMO and BCE areas at Site SS007. A second ICT and five extraction wells were installed in 2002 in the northern portion of Site SS007. In 2004, one extraction well was replaced and an additional extraction well was installed. Groundwater recovered from two ICTs and 11 extraction wells was pumped to the CGTF, located just east of Site SS026, for treatment prior to discharge to the City of Enid POTW (ITSI, 2010).

In 2014, the SS007 remedy was changed to incorporate aggressive treatment via in-situ bioremediation. The site was treated using EVO injections to create subsurface conditions conducive to ERD in the source area(s). In the northern portion of the site, EVO injections into the shallow zone were conducted during January 2014. In the southern portion of the site, EVO injections into the shallow zone were conducted during January and February 2014.

The final remedy also included the installation of a groundwater extraction/recirculation system that incorporated the components of the existing Site SS007 groundwater extraction/treatment system, additional extraction wells, groundwater injection/recirculation wells, an onsite treatment equipment enclosure (trailer) and a treated water injection/recirculation system. As part of the final remedy, eight new groundwater extraction wells and 16 new recirculation wells were added

to treatment system. The water treatment process was changed from air stripping (at the CGTF) to granular activated carbon (GAC) located in the onsite treatment trailer. Treated groundwater is also amended with lactate and reinjected into recirculation wells located on the periphery of the contaminant plume. The change in the remedy has been documented through the following documents.

- Remedial Design/Corrective Measures Implementation Report Site SS007, Vance AFB
- Construction Completion Report Site SS007, Vance AFB

Several course corrections have been implemented at Site SS007 since the remedy was installed in 2014. The first was the conversion of three of the new groundwater extraction wells to recirculation wells. This was done to further segregate contamination within the plume. The second was that several additional rounds of EVO injections were conducted in the former source area to address contaminant rebound in this area.

As part of the permit required compliance monitoring program, 12 monitoring wells installed at the site are currently sampled annually and 11 monitoring wells are sampled semiannually.

Annual groundwater compliance monitoring at the site includes collection of samples from the monitoring wells listed in Table 2-6 below.

Well ID	Well Type	Monitoring Frequency
7-4	Shallow	Annual
7-7	Deep	Annual
OB-2	Shallow	Semiannual
OB-3	Shallow	Semiannual
OB-4	Shallow	Semiannual
OB-5	Shallow	Annual
OB-6	Shallow	Annual
OB-9	Shallow	Semiannual
OB-13	Shallow	Annual
OB-16	Shallow	Annual
OB-18	Shallow	Semiannual
OB-19	Shallow	Annual
OB-21	Shallow	Semiannual
N7-38	Intermediate	Semiannual
N7-40	Shallow	Semiannual
N7-41	Shallow	Semiannual
N7-48	Intermediate	Annual
N7-50	Intermediate	Annual
N7-51	Deep	Annual
N7-52	Intermediate	Semiannual
N7-53	Deep	Semiannual
N7-69	Shallow	Semiannual

Groundwater samples are analyzed for VOCs and RCRA metals.

Additionally, two sediment samples and two surface water samples are collected annually from the creeks located in the northern portion of Site SS007. These samples also are analyzed for VOCs and RCRA metals.

2.2.3 Site ST008 (Underground Storage Tank (UST) No. 106 at Building 110)

Site ST008 consists of the former USTs at Building 110. ST008 is located near the northern boundary of Vance AFB, due south of Site SS007, west of Elam Drive, and east of the flightline (Figure 1-2). ST008 had five USTs that were removed during March 1989. The individual tanks were designated as UST No. 106, UST No. 108, UST No. 109, UST No. 112, and UST No. 113. UST No. 106 was the farthest west in the series of tanks. Only one UST, No. 106, was designated as a hazardous waste management unit. The other four tanks were petroleum product tanks only, while Tank No. 106 held a variety of solvents, contaminated fuels, and waste oils from 1970 through 1980. Each tank had a capacity of 12,000 gallons and was constructed of steel. ST008 and monitoring well locations are shown on Figure 2-11.

Residual wastes were removed and manifested for disposal; the wastes were identified as U.S. Environmental Protection Agency (EPA) Hazardous Waste Codes F001, F002, F003, F005, and D001 in 1989. However, impacted soil associated with UST No. 106 was left in-place and the area was subsequently covered with a concrete RCRA cap in 1991. Cap construction included a compacted aggregate base layer followed by a 10-inch thick layer of reinforced concrete. The cap area is approximately 100 feet by 80 feet with a 3 percent slope to a concrete curb system located along the cap/soil interface.

The soil beneath the RCRA cap was impacted above regulatory standards, but was left in place as contamination extended to and below the groundwater table. Shallow transmissive zone groundwater beneath the site is impacted above regulatory standards and was believed to be comingled with the Site SS007 contaminant groundwater plume.

The remedy documented in the current permit requires sampling of specified monitoring wells at ST008 on an annual basis and inspection and maintenance of the RCRA cap in accordance with the ST008 Closure Plan, which was accepted by the Oklahoma State Department of Health, now known as the Oklahoma DEQ, on 18 August 1992.

As part of the predesign investigation (PDI)/confirmation sampling conducted at Site ST008 in 2013, several intermediate monitoring wells were installed in the vicinity of Monitoring Well MW8-18. Data from this investigation indicated that there was contamination upgradient of this well not related to the release at ST008. An additional investigation in the upgradient source area was conducted in February and March 2016 confirming that contamination was present in this upgradient area. Subsequently, the AF has opened a new site, designated as Site SS028 to address the contamination in this area upgradient of SS028. This site is included in the currently proposed Permit Mod.

In the summer of 2016, the Site ST008 remedy was changed to dual phase extraction (DPE) within the former tank pit area. DPE is a technology that uses a high-vacuum system to remove both contaminated groundwater and soil vapor from the subsurface. The DPE system depresses the water table and water flow is directed to the extraction well(s). DPE extracts contaminants from above and below the water table. The DPE system install at ST008 consisted of nine 1.5-inch DPE wells, a vacuum pump, and conveyance piping which carry water from ST008 to the CGTF where the extracted water is treated and discharged to the city of Enid POTW. Soil vapor is vented directly to the atmosphere. The remedy was implemented and put into operation in March 2017.

Annual Groundwater Compliance Monitoring at the site includes collection of samples from the monitoring wells listed in the Table 2-7 below.

Well ID	Well Type	Monitoring Frequency
8-5	Shallow	Annual
8-9	Shallow	Annual
8-12	Shallow	Annual
8-16	Shallow	Annual
8-18	Intermediate	Annual

Collected groundwater samples are analyzed for VOCs and RCRA metals. The change in the remedy has been documented through the following documents.

- Remedial Design/Corrective Measures Implementation Report Site ST008, Vance AFB
- Construction Completion Report Site ST008, Vance AFB

2.2.4 Site SS028 (Solvent Spill Site)

Site SS028 is undergoing an RFI. Locations of current SS028 monitoring wells are shown on Figure 2-12.

2.2.5 Site ST011 (Aqua/Avgas Storage and Distribution System)

Site ST011 is undergoing an RFI. ST011, LF003 and monitoring well locations are shown on Figure 2-9.

2.3 Other IRP Sites

2.3.1 Site FT002 (Fire Training Area)

Site FT002 was used for fire training exercises between approximately 1953 and 2000, when the use of the site was discontinued after a new fire training facility was constructed to the west. Fire training exercises typically consisted of igniting flammable liquids such as fuel, oils, and/or solvents which had been dumped into a shallow depression in the ground surface. The Site was upgraded after 1970 with the construction of a berm and aircraft fuselage mock-up serviced by underground fuel supply lines. The pit was drained through lines leading to an underground oil/water separator. The Site was upgraded a second time in 1983 to include one pit with a full-scale aircraft fuselage mock-up, a second pit with a jet engine mock-up, and a fuel distribution head used to simulate automobile fires. Both of the pits were bermed and filled with gravel to help control drainage from firefighting activities. There were no containment or drainage controls around the fuel distribution head. Fuel for the pits was supplied through underground lines, and following training exercises, the pits were drained through underground lines into an oil/water separator and holding tank. FT002 (the fire training area) is located near the south-central boundary of the base and covers approximately 2 acres. FT002 and monitoring well locations are shown on Figure 2-13.

The Permit requires institutional controls and groundwater monitoring at FT002. The two monitoring wells associated with the site are Monitoring Wells MW02-04 and MW02-05.

In 2013, a PDI/confirmation sampling was conducted at Site FT002 focusing on soils to determine the nature and extent of residual soil contamination. The investigation concluded that there was a small area of soils between 12 and 16 feet below ground surface that exceeded ODEQ's standard for OK-GRO.

In 2014, a remedy was implemented to aggressively treat the remaining residual soil contamination that has COC concentrations above criteria using SVE. The SVE system consisting of four SVE wells was installed to treat soils in the vicinity of the former fire training pit. The system was placed online during August 2014 and taken offline in September 2014. The change in the remedy has been documented through the following documents.

- Remedial Design/Corrective Measures Implementation Report Site FT002, Vance AFB
- Construction Completion Report Site FT002, Vance AFB

There was also a small area on the site which had low level chlorinated volatile organic compounds that exceeded their relative standards. This area of impacted groundwater was treated using EVO injections to create subsurface conditions conducive to ERD in the area around Monitoring Well MW02-04. EVO injections into the shallow zone were conducted during May 2014.

Annual groundwater compliance monitoring at the site includes collection of samples from the monitoring wells listed in the Table 2-8 below.

Table 2-8 Site FT002 – 2010 RCRA Post Closure Permit Required Monitoring		
Well ID	Well Type	Monitoring Frequency
02-04	Shallow	Annual
02-05	Shallow	Annual

Groundwater samples are analyzed for VOCs, SVOCs, RCRA metals, pesticides, OK-GRO and OK-DRO.

Site FT002 is currently being investigated for perflourinated compounds (PFCs) by the AF.

2.3.2 Site DP005 (Tank Sludge Disposal Area)

Site DP005 is located between the Flight Line Drainage Creek and the southern boundary of the base, southwest of FT002. DP005 and monitoring well locations are shown on Figure 2-14.

A search of Vance AFB records indicates that Site DP005 resulted from a one-time disposal of approximately 1,000 gallons of fuel tank sludge in a shallow pit (or pits) on top of the south bank of FD Creek (ESE, 1984). Evidence from subsequent investigations at DP005 confirmed the findings that soil and groundwater in the area were contaminated with solvents and fuel related compounds, and that two or more disposal locations may have existed at the site.

In May 2003, Vance AFB implemented an Interim Removal Action (IRA) at Site DP005 to remediate shallow groundwater and protect surface water and sediment in FD Creek. During installation of the ICT, contaminated soil and miscellaneous metallic debris (crushed 55 gallon drums and 5-gallon buckets) were encountered in the shallow subsurface. This debris, along with the surrounding soil, was removed and placed in two roll-off containers. Waste characterization samples were collected from the two roll-off containers. The results indicated that the material was hazardous. The material was subsequently transported to an approved RCRA facility for stabilization and disposal.

Based on the observations made during construction activities in May 2003 and results of the 2004 geophysical surveys and test pit excavations, an IRA was performed to excavate contaminated soils and debris previously encountered during installation of the ICT. The impacted soils were then excavated and disposed of at an approved RCRA landfill. The

excavation was backfilled with clean fill. Removal of the source material was performed to enhance cleanup of groundwater contamination by minimizing the leaching of contaminants into groundwater, thereby reducing the operational time of the groundwater extraction and treatment system and the total costs of cleanup (Shaw, 2007).

The remedy documented in the current permit requires the operation of the groundwater extraction system coupled with long-term monitoring of groundwater and sediments at Site DP005.

In 2014, the Site DP005 remedy was modified to include a more aggressive treatment using injections of EVO to create subsurface conditions conducive to the ERD process. EVO injections into the shallow zone were conducted between the periods of January through April 2014. At the time of the injections, the groundwater extraction system (EW05-01 through EW05-03 and the ICT sump) was taken off line. EW05-02 and the ICT sump were subsequently placed back online. EW05-01 and EW05-03 will remain offline indefinitely, due to the presence of EVO. In addition, the existing groundwater extraction and treatment system was modified to include a new equipment enclosure (trailer) and a groundwater injection/recirculation system. Treated groundwater is amended with lactate and reinjected into four sets of reinjection wells, located within and upgradient of the plume, to aid in the distribution of a carbon source throughout the plume. An SVE system consisting of four SVE wells was also installed to treat soils adjacent to the groundwater interceptor trench. The system was installed and placed online during November 2014. The change in the remedy has been documented through the following documents.

- Interim Corrective Measures Work Plan Site DP005, Vance AFB
- Interim Corrective Measure Construction Completion Report Site DP005, Vance AFB
- Remedial Design/Corrective Measures Implementation Report Site DP005, Vance AFB
- Construction Completion Report Site DP005, Vance AFB

The skid mounted SVE unit was subsequently removed from DP005 during February 2015 due to limited mass removal rates.

Annual groundwater compliance monitoring at Site DP005 includes collection of samples from the monitoring wells listed in the Table 2-9 below.

Well ID	Well Type	Monitoring Frequency
5-1	Shallow	Annual
5-3	Shallow	Annual
5-4	Shallow	Annual
5-6	Shallow	Annual
5-7	Shallow	Annual
5-8	Shallow	Annual
5-9	Deep	Annual
5-18	Intermediate	Annual
5-19	Shallow	Annual

Collected groundwater samples are analyzed for VOCs, SVOCs, RCRA Metals, OK-GRO and OK-DRO.

Additionally, two sediment samples and two surface water samples are collected annually at Site DP005. Sample location SW05-13/SD05-13 is located on the north eastern corner of DP005 and is representative of potential plume discharge to surface water and sediment at the site. Sample location SW05-14/SD05-14 is located approximately 3600 feet east. These samples also are analyzed for VOCs, SVOCs, RCRA Metals, OK-GRO and OK-DRO.

2.3.3 Site SS026 (Jet Fuel Storage Area)

Site SS026, the Jet Fuel Storage Area, is located in the northern portion of Vance AFB, near IZ Sites LF003, SS007, and ST008. Aboveground storage tanks (ASTs) containing jet fuel for Vance AFB operations are located approximately 100 feet west of a concrete-paved area used to store recreational vehicles. According to historical records, contamination at the site resulted from activities in the 1970s and early 1980s. Residual AST fluids, sludge, and/or rainwater, which may have contained JP-4 fuel contamination, were discharged periodically from the diked area surrounding the ASTs onto the ground in the area where the recreational vehicle facility was later constructed. A Remedial Investigation (RI)/Feasibility Study (FS) was performed at the site to support the IRP at Vance AFB. Following the RI/FS, an IRA, which included the removal of 43 tons of soil from the site, was performed in 2007. A remedial action immediately followed the IRA, which included the planting of a phytoremediation area consisting of 60 hybrid poplar trees for passive groundwater treatment and the placement of Oxygen Release Compound (ORC®) filter socks in five monitoring wells to facilitate the aerobic biodegradation process (ITSI, 2010). SS026 and monitoring well locations are shown on Figure 2-15.

The remedy documented in the current permit requires the continued operation and maintenance of the final remedy, which includes annual groundwater compliance sampling and maintenance of a phytoremediation system.

This remedy was changed in 2014 to aggressive treatment of residual areas of VOCs, SVOCs and OK-GRO contamination using biosparge technology to enhance biological activity and reduce contaminant mass in the aquifer. The phytoremediation plot was no longer required once the remedy was changed and it was removed in October 2017.

The biosparge system consists of six biosparge wells skid-mounted biosparge unit (compressor), which is located in the CGTF. The system operated for approximately two years at which time two additional biosparge wells were installed to accelerate remediation of the remaining area of the site that exhibited residual contamination above unrestricted use/unrestricted exposure (UU/UE) standards. The two new wells were connected to the biosparge system and placed into operation in April 2016 and concurrently; three biosparge wells were taken off line, as these wells were located in areas where contaminant concentrations in groundwater samples had decreased to levels below regulatory standards. The biosparge system operated as designed from the time of startup (June 2014) through September 2016, when the system was turned off based on analytical results of groundwater samples collected from the site, e.g., contaminant concentrations below regulatory standards. In June of 2017 contaminant concentrations in Monitoring Well MW24-4 rebound and the biosparge system was reactivated the system ran from September 2017 through January 2018 when samples collected from this monitoring well again fell below regulatory standards.

Annual groundwater compliance monitoring at the site includes collection of samples from the monitoring wells listed in the Table 2-10 below.

Well ID	Well Type	Monitoring Frequency
26-1	Shallow	Annual
26-2	Intermediate	Annual
26-3	Shallow	Annual
26-4	Shallow	Annual

Groundwater samples are analyzed for VOCs, SVOCs and OK-GRO.

3.0 PROPOSED CHANGES TO THE FALL COMPLIANCE MONITORING PROGRAM

The fall sampling event, as outlined in the 2010 Vance AFB RCRA Post Closure Permit, consists of the sampling of 13 groundwater monitoring wells associated with Sites LF003 and SS007 and listed below in Table 3-1.

Well ID	Well Type	Monitoring Frequency
MW3-9	Shallow	Semiannual
OB-2	Shallow	Semiannual
OB-3	Shallow	Semiannual
OB-4	Shallow	Semiannual
OB-9	Shallow	Semiannual
OB-18	Shallow	Semiannual
OB-21	Shallow	Semiannual
N7-38	Intermediate	Semiannual
N7-40	Shallow	Semiannual
N7-41	Shallow	Semiannual
N7-52	Intermediate	Semiannual
N7-53	Deep	Semiannual
N7-69	Shallow	Semiannual

Monitoring wells MW3-9, MWOB-2, MWOB-3 are shallow monitoring wells that are used to monitor Site LF003.

Monitoring Wells MWOB-4, MWOB-9, MWOB-18, MWOB-21, and MWN7-40, MWN7-41 monitor the shallow zone at Site SS007, while Monitoring Wells MWN7-38, and MWN7-52 monitor the intermediate zone and MWN7-53 monitors the deep zone.

Groundwater

An analysis of the groundwater data of all of the monitoring wells in the fall compliance sampling program indicates that of the thirteen monitoring wells sampled four (MWOB-09, MWN7-41, MWN7-69 and MWN7-53) have never had a VOC exceedance in the past ten years. An additional four of these monitoring wells (MWN7-40, OB-03, OB-18 and OB-21) have not exceeded criteria for VOCs in the past three years. The remaining wells all exhibit stable to decreasing VOC trends with low VOC concentrations. The exception is Monitoring Well MW03-09, which is impacted by higher levels of petroleum hydrocarbons, but exhibits stable to decreasing trends. Groundwater monitoring results for the monitoring wells included in the fall compliance monitoring program for the past five years (2013 to 2017) are presented in Appendix C. The previous five years of monitoring data for these monitoring wells are included in Appendix D.

An analysis of historical data for the monitoring wells included in the semiannual sampling program shows that there is little variation in COC concentrations between spring and fall compliance monitoring events. This indicates that seasonal variation in contaminant concentrations is not a concern. Also, plume migration does not appear to be a concern as maximum contaminant concentrations within the North Site SS007 plume have decreased from 3,800 micrograms/liter ($\mu\text{g/L}$) in 1999 to less than 200 $\mu\text{g/L}$ currently. Additionally, in January 2015, new remedies consisting of source area injections and an expanded groundwater extraction and treated water injection/recirculation system were implemented at this site. This new remedy includes a robust groundwater extraction system that captures the plume through a

series of 16 groundwater extraction wells. The aerial extent of the TCE plume at this site has decreased approximately 90 percent since the new remedies were installed.

Summary

Based on the data presented above the fall groundwater compliance sampling plan is no longer warranted and the Permittee recommends deleting the requirement from the Permit.

4.0 ELIMINATION OF SEDIMENT AND SURFACE WATER SAMPLING AT SITES LF003, SS007 AND DP005 FROM THE COMPLIANCE MONITORING PROGRAM

Surface water and sediment samples are currently collected from three sites at Vance AFB on an annual basis, as part of the groundwater compliance monitoring program. These samples are collected at Sites LF003, SS007 and DP005 during the spring compliance monitoring event. Samples collected at Site DP005 are analyzed for VOCs, SVOCs, RCRA metals, OK-GRO and OK-DRO. Samples collected from Sites LF003 and SS007 are analyzed for VOCs and RCRA metals.

Samples were being collected on a semiannual basis until 2014, when a review of the Permit determined that there was no requirement to sample these locations on a semiannual basis. In addition, surface water and sediment samples collected at Sites LF003 and SS007 were analyzed for SVOCs until 2014, when it was discovered that this was not a required analytical suite at these sites.

Sampling locations for Sites LF003, SS007 and DP005 are shown on Figures 4-1 and 4-2, respectively. Analytical results dating back to 2009 are presented in Appendix E. The following sections summarize surface water and sediment sampling at each site and presents recommendations relative to the continuation of sampling at each site.

4.1 SITE LF003

Surface Water

Per the Permit, surface water is sampled from two Site LF003 locations (SW03-11 and SW03-12) on an annual basis. Collected samples are analyzed for VOCs and RCRA metals. An analysis of the data indicates that no compounds exceeded their relative standards in any of the samples collected. Based on this data, it is recommended that surface water sampling at LF003 be discontinued.

Sediment

Sediment is sampled from two Site LF003 locations (SD03-11 and SD03-12) on an annual basis. Collected samples are analyzed for VOCs and RCRA metals. An analysis of the data indicates that no compounds exceeded their relative standards in any of the samples collected. Based on this data, it is recommended that sediment sampling at LF003 be discontinued.

4.2 SITE SS007

Surface Water

Surface water is sampled from two Site SS007 locations (SW07-09 and SW07-10) on a semiannual basis, with the exception of 2012 where only annual samples were collected. Collected samples are analyzed for VOCs and RCRA metals. An analysis of the data indicates that no compounds exceeded their relative standards in any of the samples collected. Based on this data, it is recommended that surface water sampling at the SS007 site be discontinued.

Sediment

Sediment is sampled from two Site SS007 locations (SD07-11 and SD07-12) on an annual basis, with the exception of 2012, where only annual samples were collected. Collected samples are analyzed for VOCs and RCRA metals. An analysis of the data indicates that no

compounds exceeded their relative standards in any of the samples collected. Based on this data, it is recommended that surface water sampling at the SS007 site be discontinued.

4.3 SITE DP005

Surface Water

Surface water is sampled from two Site DP005 locations (SW05-13 and SW05-14) on an annual basis. Sample location SW05-13 is located on the northeastern corner of DP005. Sample location SW05-14 is located approximately 3,600 feet east of the site, where the drainage ditch that runs from DP005 (immediately south of Sites FT002, WP001 and LF004) approximately 3600 feet to a discharge point at the Base boundary discharges to a stream. Collected samples are analyzed for VOCs, SVOCs, metals, OK-GRO and OK DRO.

Since 2009 there has been only one exceedance in surface water samples collected from the SW05-13 location. In a sample collected during May 2013, chlorobenzene exceeded the 100 µg/L standard with a concentration of 112 micrograms per liter (µg/L).

At sample location SW05-14 two exceedances were noted since 2009. The first was a chlorobenzene exceedance where the sample collected during May 2013 had a concentration of 111 µg/L. The second was during May 2014 where the surface sample collected at location SW05-14 had a concentration of bis(2-ethylhexyl)phthalate of 106 µg/L.

Bis(2-ethylhexyl)phthalate is a plasticizer that can be introduced into the sample as a field or laboratory contaminant. This contaminant has been noted sporadically in other samples collected at the Base. Based on an analysis of this data, the lack of contamination in surface water samples, and that the Site DP005 contaminant plume is not discharging to surface water, it is recommended that surface water sampling be discontinued at DP005. Surface water data tables are included in Appendix E.

Sediment

Sediment is sampled from two Site DP005 locations (SD05-13 and SD05-14) on an annual basis. Sample location SD05-13 is located on the northeastern corner of DP005. Sample location SD05-14 is located approximately 3,600 feet east of the site, where the drainage ditch that runs from Site DP005 (immediately south of Sites FT002, WP001 and LF004) to a discharge point at the Base boundary discharges to a stream. Due to the long distance from DP005, and the fact that the ditch runs past several other IRP sites, collects storm water drainage from the runway, roadways and adjacent parking lots, e.g., analytical results from this location are more indicative of what is present at this Base boundary sampling location rather than what contamination originated at DP005.

Collected samples are analyzed for VOCs, SVOCs, metals, OK-GRO and OK DRO. Analytical results of sampling conducted at location SD05-13 indicate there have been no contaminants present in the samples that exceed standards since October 2009.

Sample location SD05-14 is located at the Base boundary. Samples collected from this location have consistently exceeded standards for the SVOCs benzo(a)anthracene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene and OK-DRO. It is unlikely that Site DP005 is the source of the sediment contamination, as these contaminants were only detected above standards once (October 2009) at DP005 sample location SD05-13. Sediment samples should continue to be collected from this sample location, but should not be associated with DP005 but rather part of the Base's storm water permit as the ditch also collects surface runoff from runways, roadways parking lots, etc. Sediment data tables are included in Appendix E.

5.0 PROPOSED CHANGES TO THE COMPLIANCE MONITORING PROGRAM – GROUNDWATER

The Vance AFB compliance monitoring program was last modified during the 2010 RCRA Permit Renewal process. New remedies have been implemented resulting in changes to plume morphology that necessitate corresponding changes to the compliance monitoring program. Figure 5-1 shows the aerial extent of plumes for five areas/sites (CMI Area, IZ Area, Site FT002, Site DP005, and Site SS026) covered under this Permit in 2010 and Figure 5-2 shows the aerial extent of the plumes through March 2017. These two figures were previously presented in a meeting with ODEQ on 22 August 2017. In general, the plumes have decreased an average of 90 percent since the permit was last renewed, with the majority of the reduction occurring after implementation of the new remedies at the sites.

The section below provides the basis for the change to permit sections IV.B.1., IV.B.3. and IVC.3.

As a result of the shrinking aerial extent of the plumes, there are monitoring wells that no longer serve their original purpose, as they are too far away from the plumes. These wells have never been impacted, or have not been impacted above MCLs and Regional Screening Level (RSLs), for a period greater than three years. The three year period is outlined in Section IV Part C.3 and IV D.3 of the current Permit and is used as criteria for eliminating both monitoring wells and analytes from the groundwater compliance monitoring program.

A second impact resulting from the shrinking plumes is that there is now physical separation laterally and/or vertically between the plumes of adjacent sites that previously overlapped. As a result, it is necessary to realign monitoring wells in the Permit to the site that they monitor. This will simplify the overall monitoring program and allow individual sites to progress towards closure, as the monitoring wells used to monitor conditions within their plumes are assigned to them in the Permit.

A change recommended in this Permit Mod is to focus the compliance program and resources on defined contaminants of concern at each site. This will be done by modifying the SAP to include only COCs for each site, as well compounds which have exceeded MCLs/RSLs within the last three years. This will significantly reduce the complexity of the annual compliance monitoring program and corresponding annual report and allow for a better understanding of what is occurring at each site.

Random exceedances of contaminants will also be examined during this process to determine if the exceedance is actually the result of a release at the site or if the contaminant has been introduced or is a result of the sampling process. If these contaminants have only been detected once in the past five years, and not the current year's sampling event, the analyte will be considered random and will be proposed for elimination from the analyte list. Random exceedances predominantly occur for the metals lead, arsenic and selenium and for the SVOC bis(2-Ethylhexyl)Phthalate. None of these compounds, with exception of lead at Sites LF003 and DP005, are considered to be introduced by the release at these sites, as the metals arsenic and selenium are largely considered background metals, while bis(2-Ethylhexyl)Phthalate is a plasticizer and can be introduced during the sampling collection and handling process.

The following sections will address and provide rationales for the removal of individual monitoring wells from the compliance monitoring program, the realignment of monitoring wells and elimination of analytes from the sampling program. Five-year data tables for analyte detections within the past 5 years for all sites are included in Appendix C. Monitoring wells that had no detections of analytes listed in the Permit will not show up in the tables. The previous five years (2009 to 2013) of data is included in Appendix D.

5.1 DELETION OF MONITORING WELLS FROM THE COMPLIANCE MONITORING PROGRAM

For monitoring wells to be considered for removal from the basewide sampling program they must meet the three criteria outlined below.

1. At least three consecutive monitoring events with no analytes above their regulatory criteria (MCL/RSL). Monitoring events must be separated by one year period.
2. Monitoring wells in critical locations such as a well monitoring downgradient edge of plume will not be eliminated from program.
3. Monitoring wells that will be part of Long-term Monitoring (LTM) program, site closure process will not be eliminated from program.

5.1.1 CMI Area

The CMI area includes IRP Sites ST012, WP023, SS024, and SS025 and is shown on Figures 5-1 and 5-2. The aquifer in the CMI area has three transmissive zones associated with it; the shallow zone (10-30 feet bgs), intermediate zone (35-50 feet bgs), and deep zone (55-75 feet bgs).

The compliance well network associated with the CMI area currently includes 24 monitoring wells, with 16 wells screened in the shallow zone, 5 wells in the intermediate zone, and 3 wells in the deep zone. No monitoring wells currently assigned to Sites WP023 and SS024 are being proposed for elimination from the compliance monitoring program. Five-year data tables for analyte detections within the past 5 years for all sites are included in Appendix C.

Site ST012

Two deep monitoring wells are being proposed for elimination from the Vance AFB groundwater compliance monitoring program. Site ST012 Monitoring Well MW12-20 is located side gradient of the source in the deep transmissive zone. This monitoring well has never had any exceedances and is not integral to monitoring the release to the ST012 deep zone. Therefore, it is recommended that it be deleted from the compliance monitoring program. In addition, Monitoring Well MW12-21 has historically not been impacted. It is recommended that it be deleted from the program as well. Site ST012 monitoring wells are shown on Figure 5-3.

Site SS024

No monitoring wells currently assigned to Site SS024 are being proposed for elimination from the compliance monitoring program. Site SS024 monitoring well are shown on Figure 5-4.

Site SS025

Three Site SS025 monitoring wells, (MW25-08, MW25-09 and MW25-15) are being proposed for elimination from the program, as they meet all of the above outlined criteria. The proposed wells have not exceeded MCLs/RSLs for a period exceeding three annual sampling events. In addition, these monitoring wells, as shown on Figure 2-7, are located at the northern extent of the CMI area closest to SS025. The proposed monitoring wells are not critically located with regards to monitoring current plume morphology within the CMI. Therefore, these wells provide no useful data with regards to monitoring the releases at any of the CMI area sites. None of

these wells will be used for LTM purposes. Site SS025 monitoring wells are shown on Figure 5-5.

Site WP023

No monitoring wells currently assigned to Site WP023 are being proposed for elimination from the compliance monitoring program.

5.1.2 IZ Area Including Site SS026

IRP Sites LF003, SS007, ST008, SS028, and ST011 are associated with the IZ area and are shown on Figure 2-8. The compliance well network in the IZ is comprised of 31 monitoring wells located within three IRP sites (LF003, SS007, and ST008). Twenty-two wells are screened in the shallow zone, five wells are screened in the intermediate zone, and four wells are screened in the deep zone. SS026 is located immediately east of LF003 and downgradient of ST011. SS028 is located immediately upgradient of ST008 and is being added to the Permit in this modification. Monitoring wells being proposed for elimination from the compliance monitoring program from the IZ Area are included in the following sections. The current compliance monitoring program at SS026 will not change. ST011 and SS028 are undergoing investigations and thus are not currently in the groundwater compliance monitoring program. Five-year data tables for analyte detections within the past 5 years for all sites are included in Appendix C.

Site LF003

The current compliance monitoring program at Site LF003 consists of the monitoring of two shallow zone and one deep zone monitoring wells. Locations of these monitoring wells are shown on Figure 2-9. Currently, two of the three monitoring wells (MW03-06 and MW03-07) meet the criteria for removal from the compliance monitoring program.

Monitoring Well MW03-06 is located upgradient of Site LF003 and has not had any VOC or metals exceedances (MCLs/RSLs) for over a period exceeding five years. This monitoring well does not provide any useful data relative to any potential release from LF003.

Monitoring Well MW03-07 is used to monitor the deep zone at Site LF003. Data collected from the inception of this well indicates that the deep zone within the aquifer was never impacted by waste in the LF003 landfill or from any other sites within the IZ and thus should be removed from the compliance monitoring program.

Site SS007

Site SS007 is located along the former northern perimeter of the base, northeast of the flight line apron and west of the Tank Farm Landfill (LF003). It consists of three discrete areas; the DRMO, the old BCE storage area, and the area north of Fox Drive (commonly known as North Site SS007) (ITSI, 2010).

There are currently 24 monitoring wells installed at Site SS007 that are used as sampling points for the groundwater compliance monitoring program. The monitoring wells address the three transmissive zones within the aquifer beneath the site. Sixteen wells are used to monitor the shallow zone; four wells are used monitor the intermediate zone and four wells are used to monitor the deep zone. Monitoring well locations are shown on Figure 2-10.

Currently five of the 16 monitoring wells in the shallow zone (OB-03, OB-09, OB-18, MWN7-40 and MWN7-69) meet the criteria for removal from the compliance monitoring program and are being proposed for removal.

Monitoring Well OB-03 is located approximately 750 feet side gradient of the Site SS007 source area. This well has not exceeded MCLs/RSLs in excess of ten years and is highly unlikely to be impacted by contamination originating at the SS007 source area or from the Site LF003, ST011 or SS026 plumes. This is evidenced by the fact that contaminants would have already reached the well due to the age of the releases at the three sites and the relative proximity of these sites to Monitoring Well OB-03.

Monitoring Well OB-09 is another well located side gradient to the Site SS007 plume. This well has not exceeded MCLs/RSLs in excess of ten years and is highly unlikely to be impacted by contamination originating at the SS007 source area. This is evidenced by the fact that this area has largely been remediated and the distal end of the SS007 plume has significantly decreased in concentration and contracted to the west, since the new remedy was implemented in 2015. Given that groundwater flow paths in this area are well established and vary little, this well is no longer needed to monitor the lateral extent of the plume.

Monitoring Well OB-18 is located immediately adjacent to the northern ICT, on the western plume boundary. This well has not exceeded MCLs/RSLs for VOCs or metals since May of 2010, when TCE concentrations (5.10 µg/L) slightly exceeded the MCL of 5 µg/L. This well is located upgradient of the northern ICT and based on plume morphology is no longer needed to monitor the plume.

Monitoring Wells MWN7-40 and MWN7-69 are located downgradient of the toe of the Site SS007 plume at SS007. MWN7-40 has not exceeded MCLs/RSLs for VOCs or metals since April 2009 when TCE was detected at a concentration of 18.1 µg/L. MWN7-69 has not exceeded MCLs/RSLs for VOCs or metals since October 2009, with the exception of lead in June 2017, when TCE concentrations (16.5 µg/L) slightly exceeded the MCL of 5 µg/L. It appears the elevated reading result is likely due to turbidity in the sample, which had a turbidity of 53.1 NTUs. Lead is not present upgradient of this well and it is highly unlikely that the origin of lead in the sample is the SS007 release. Based on changing plume morphology, including the significant reduction in plume size and concentration since the original compliance network was instituted, these wells are no longer the best options to monitor the downgradient edge of the plume. Therefore, as these wells meet all of the criteria they should be removed from the program.

The deep zone at the Site SS007 has not been impacted by the release. There are three deep monitoring wells located at SS007 that monitor the deep zone. Monitoring Well MW07-07 is located near the source area of the SS007 plume. Selenium was not detected in soils in the source area nor in shallow zone groundwater at the site. Given this information, it appears that selenium observed at MW07-07 is naturally occurring and not an artifact of the release. Because there were never any impacts from the SS007 release observed in the deep aquifer, it is recommended that all three deep monitoring wells (MW07-07, MWN7-51 and MW7N-53) be removed from the groundwater compliance monitoring program.

Site ST008

Site ST008 consists of the former UST's at Building 110. ST008 is located near the northern boundary of Vance AFB, due south of Site SS007, west of Elam Drive, and east of the flightline (Figure 1-2). ST008 had five USTs that were removed during March 1989. The individual tanks were designated as UST No. 106, UST No. 108, UST No. 109, UST No. 112, and UST No. 113. UST No. 106 was the farthest west in the series of tanks. Only one UST, No. 106, was designated as a hazardous waste management unit. The current compliance monitoring program at ST008 consists of monitoring four shallow zone wells and one intermediate zone well at the site. Locations of these monitoring wells are shown on Figure 2-11. Currently two of

the four monitoring wells (MW08-12 and MW08-16) meet the criteria for removal from the compliance monitoring program and are being proposed for removal.

Monitoring Well MW08-16 is located approximately 500 feet west of the release from the No. 106 UST, which is the origin of the contamination at Site ST008. Due to the position of this well relative to the source of contamination originating at ST008 (sidegradient), contamination would never impact this well. Monitoring Well MW08-16 has not exceeded MCLs or relative RSLs for VOCs or metals since May of 2013, when TCE concentrations (5.62 µg/L) slightly exceeded the MCL of 5 µg/L. It is highly likely that the contamination observed in this well did not originate from the ST008 release.

Monitoring Well MW08-12 is located approximately 250 feet west/northwest of the release from the No. 106 UST, which is the origin of the contamination at Site ST008. This well is in a sidegradient location, with a slight down gradient component. This well has not exceeded MCLs/RSLs in excess of ten years. It is highly unlikely, given the changing plume morphology and the fact that the source of the ST008 contamination is currently being remediated, that this well will ever be impacted with contamination originating from the ST008 release.

Neither of the two monitoring wells proposed for elimination from the compliance monitoring program will be used as long-term monitoring wells for the purpose of obtaining unrestricted site closure.

Site SS026

No monitoring wells currently assigned to Site SS026 are being proposed for elimination from the compliance monitoring program

5.1.3 Site DP005

Site DP005 is located between the Flight Line Drainage Creek and the southern boundary of the base, southwest of Site FT002. A search of Vance AFB records indicates that DP005 resulted from a one-time disposal of approximately 1,000 gallons of fuel tank sludge in a shallow pit (or pits) on top of the south bank of FD Creek (ESE, 1984). Nine monitoring wells comprise the DP005 compliance well network, with seven of these wells screened in the shallow zone, one in the intermediate zone, and one in the deep zone. In addition, two surface water and sediment sampling locations are included at DP005. Groundwater, surface water, and sediment samples were analyzed for VOCs, SVOCs, metals, and total petroleum hydrocarbon (TPH).

Currently the only monitoring well that meets the criteria for elimination from the sampling program is deep zone Monitoring Well MW05-09. Contamination at DP005 does not extend to the deep zone as no contaminants, with the exception of lead (May 2015) and bis(2-Ethylhexyl)Phthalate (May 2013) have exceeded MCLs/RSLs. These contaminants are considered to be random, as they have only been detected above standards in over ten years of sampling. As a result, this well should be removed from the groundwater compliance monitoring program. Monitoring well locations are shown on Figure 2-14. Five year data tables for analyte detections within the past 5 years for all sites are included in Appendix C.

5.1.4 Site FT002

No monitoring wells currently assigned to Site FT002 are being proposed for elimination from the compliance monitoring program.

5.1.4 Summary

The following tables (Tables 5-1, 5-2a, 5-2b, 5-2c, and 5-3) summarize the wells remaining in the compliance monitoring program after the proposed deletions in the CMI area, IZ and DP005 sites. Monitoring wells proposed for elimination from the groundwater compliance monitoring program are identified in red text with a strikethrough.

CMI AREA

Table 5-1 CMI Area Wells Proposed for Deletion		
Well ID	Well Type	Monitoring Frequency
12-9	Shallow	Annual
12-13	Deep	Annual
12-20	Deep	Annual
12-24	Deep	Annual
12-30	Intermediate	Annual
12-33	Shallow	Annual
12-34	Intermediate	Annual
12-35	Shallow	Annual
12-37	Shallow	Annual
12-38	Intermediate	Annual
12-43	Shallow	Annual
12-45	Shallow	Annual
23-5	Shallow	Annual
23-14	Shallow	Annual
23-21	Intermediate	Annual
23-22	Intermediate	Annual
24-5	Shallow	Annual
25-1	Shallow	Annual
25-2	Shallow	Annual
25-4	Shallow	Annual
25-7	Shallow	Annual
25-8	Shallow	Annual
25-9	Shallow	Annual
25-15	Shallow	Annual

IZ Area

Table 5-2a Site LF003 – IZ Area Wells Proposed for Deletion		
Well ID	Well Type	Monitoring Frequency
3-6	Shallow	Annual
3-7	Deep	Annual
3-9	Shallow	Semiannual

Table 5-2b		
Site SS007 – IZ Area Wells Proposed for Deletion		
Well ID	Well Type	Monitoring Frequency
7-4	Shallow	Annual
7-7	Deep	Annual
7-15	Shallow	Annual
OB-2	Shallow	Semiannual
OB-3	Shallow	Semiannual
OB-4	Shallow	Semiannual
OB-5	Shallow	Annual
OB-6	Shallow	Annual
OB-9	Shallow	Semiannual
OB-13	Shallow	Annual
OB-16	Shallow	Annual
OB-18	Shallow	Semiannual
OB-19	Shallow	Annual
OB-21	Shallow	Semiannual
N7-38	Intermediate	Semiannual
N7-40	Shallow	Semiannual
N7-41	Shallow	Semiannual
N7-48	Intermediate	Annual
N7-50	Intermediate	Annual
N7-51	Deep	Annual
N7-52	Intermediate	Semiannual
N7-53	Deep	Semiannual
N7-69	Shallow	Semiannual

Table 5-2c		
Site ST008 – IZ Area Wells Proposed for Deletion		
Well ID	Well Type	Monitoring Frequency
8-5	Shallow	Annual
8-9	Shallow	Annual
8-12	Shallow	Annual
8-16	Shallow	Annual
8-18	Intermediate	Annual

Site DP005

Table 5-3		
Site DP005 Wells Proposed for Deletion		
Well ID	Well Type	Monitoring Frequency
5-1	Shallow	Annual
5-3	Shallow	Annual
5-4	Shallow	Annual
5-6	Shallow	Annual
5-7	Shallow	Annual
5-8	Shallow	Annual
5-9	Deep	Annual
5-18	Intermediate	Annual
5-19	Shallow	Annual

5.2 PROPOSED REMOVAL OF ANALYTES

The goal of the groundwater compliance monitoring program, as outlined in the Permit, is to monitor groundwater contamination from known releases. All of the sites included in the Permit have undergone extensive investigative activities and subsequent groundwater compliance monitoring activities. Currently groundwater compliance monitoring activities conducted at the sites covered in the Permit includes an extensive list of analytes for each site. The majority of the analytes currently being monitored per the 2010 Permit SAP have never been detected. Table 5-4 presented below shows the number of analytes detected at each site relative to the number of analytes analyzed for at each site included in the groundwater compliance monitoring program.

Site	Total Number of Analytes	Total Number of Analytes Detected in the Past 3 years above MCLs/RSLs
CMI		
Site ST012	97	6
WP023	97	2
Site SS024	97	0
Site SS025	97	3
IZ		
LF003	45	5
SS007	45	8
ST008	45	4
Site SS026	105	2
Site DP005	124	15
FT002	135	4

Vance AFB proposes to modify the analyte list for each site to refocus the monitoring efforts and resources on monitoring remedial progress relative to achieving MCLs/RSLs for contaminants released at the site. Reducing the analyte list on the remaining wells in the compliance program (not including wells proposed for removal in Section 4-1) will also simplify the annual Groundwater Compliance Monitoring Report by solely focusing on the contaminants of concern at each site. Contaminants of concern for each site were outlined in the Remedial Design/Corrective Measures Implementation documents, which were submitted to and approved by ODEQ. The analyte lists will be modified on a well-by-well basis to account for special variability, as well as propose reassigning monitoring wells to the sites whose contamination they actually monitor.

The analyte lists will be modified using the following criteria.

1. Any COCs detected above their relative MCL/RSL, during the past three years, would be included in each sites/monitoring wells analyte list.
2. Any non-COC detected above its MCL/RSL, during past three years, would be added to the site/monitoring well analyte list.
3. Sites where ERD has been implemented, which include Sites ST012, SS024, SS025, SS007, DP005 and FT002, analyte list would also include TCE, cis-1,2-DCE and VC at all wells regardless of whether there have been detections above MCLs within last three years.

The following sections present a site by site breakdown of the proposed analyte list at each location based on the implementation of the above criteria. A complete list of current analytes is included in the SAP that is appended to the 2010 RCRA Post Closure Permit. This SAP has been modified to include the changes proposed in this technical support document. Five-year data tables for analyte detections at all sites within the past 5 years are included in Appendix C to support recommendations made in the following sections.

5.2.1 CMI Area Monitoring Well Analytes

The remedy for all sites within the CMI area includes ERD, as a result, all of the monitoring wells remaining in the groundwater compliance program in this area will include TCE, cis-1,2-DCE and VC regardless of whether they exceed MCLS or not.

Proposed Site ST012 Monitoring Well Analytes

PCE and naphthalene are present in the deep zone at the source area and thus will be retained as parameters for Monitoring Well MW12-13. PCE will also be retained for Monitoring Well MW12-09, which is screened in the shallow zone and also located in the source area.

Bis(2-Ethylhexyl)Phthalate was detected at Monitoring Well MW12-35 in the last two compliance monitoring events. This contaminant is not related to the release at Sites ST012 or SS024, but is most likely being introduced during the sampling process. Bis(2-Ethylhexyl)Phthalate is a plasticizer that is a component of polyethylene tubing and polyvinylchloride (PVC). It is believed that the EVO present in this monitoring well is causing this compound to leach from the sampling apparatus and contaminate the sample. This analyte will be retained for this monitoring well until it can be verified that the contaminant is being introduced during the sampling process.

The permit also requires Monitoring Well MW12-33 be sampled for 1,4-Dioxane and thus this parameter will be retained for this well.

Table 5-5 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site ST012.

Well ID	VOCs	SVOCs
12-9	PCE, TCE, Cis- 1,2 DCE and VC	None
12-13	PCE, TCE, Cis-1,2 DCE and VC	Naphthalene
12-30	TCE, Cis-1,2 DCE,VC and 1,1 DCE	None
12-33	1,1-DCE,TCE, Cis-1,2 DCE and VC	1,4-Dioxane
12-34	TCE, Cis-1,2 DCE and VC	None
12-35	1,1-DCE,TCE, Cis-1,2 DCE and VC	1,4-Dioxane, bis(2-Ethylhexyl)Phthalate
12-37	1,1-DCE,TCE, Cis-1,2 DCE and VC	1,4-Dioxane
12-38	TCE, Cis-1,2 DCE and VC	None
12-43	TCE, Cis-1,2 DCE, VC, and trans 1,2-DCE	None
12-45	TCE, Cis-1,2 DCE,VC, trans 1,2-DCE	None

Proposed Site WP023 Monitoring Well Analytes

The monitoring wells with the Site WP023 designation in the permit are all in locations that have ERD as the main remedy and thus have TCE, cis-1,2-DCE and VC as analytes. Bis(2-Ethylhexyl)Phthalate was detected once in the past three years at Monitoring Well MW23-14. This analyte will be retained for this monitoring well until it can be verified that the contaminant is being introduced during the sampling process.

Table 5-6 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site WP023.

Table 5-6 Site WP023 Proposed Compliance Monitoring		
Well ID	VOCs	SVOCs
23-5	TCE, Cis-1,2 DCE and VC	None
23-14	TCE, Cis-1,2 DCE and VC	bis(2-Ethylhexyl)Phthalate
23-21	TCE, Cis-1,2 DCE and VC	None
23-22	TCE, Cis-1,2 DCE and VC	None

Proposed Site SS024 Monitoring Well Analytes

Monitoring Well MW24-05 has not had any detections of contaminants above their MCL/RSLs in a period exceeding 10 years, but was retained in the compliance monitoring program as it is located downgradient monitoring well for Site SS025. This monitoring well will be monitored for the analytes TCE, cis-1,2-DCE and VC.

Table 5-7 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site SS024.

Table 5-7 Site SS024 Proposed Compliance Monitoring		
Well ID	VOCs	SVOCs
24-5	TCE, Cis-1,2 DCE and VC	None

Proposed Site SS025 Monitoring Well Analytes

The proposed analytes for wells designated as Site SS025 monitoring wells in the current permit consist of TCE, cis-1,2-DCE and VC at Monitoring Wells MW25-1, MW25-2 and MW25-4. The analyte carbon tetrachloride was added to MW25-4, as it was detected once in the past three years at concentrations exceeding the MCL of 5 µg/L. The only analyte being proposed for Monitoring Well MW25-7 is the SVOC 1,4-Dioxane, as the permit mandates that this well be sampled for this analyte.

Table 5-8 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site SS025.

Well ID	VOCs	SVOCs
25-1	TCE, Cis-1,2 DCE, VC	None
25-2	TCE, Cis-1,2 DCE, VC	None
25-4	TCE, Cis-1,2 DCE, VC and Carbon tetrachloride	None
25-7	None	1,4-Dioxane

5.2.2 IZ Area Monitoring Well Analytes

Remedies for sites within the IZ area have varying COCs with Site LF003 being primarily a petroleum release site, Site SS007 being a chlorinated VOC site and Site ST008 being a mixed waste site. SS007 and ST008 will include TCE, cis-1,2-DCE, and VC regardless of whether they exceed MCLS or not as reductive dechlorination appears to be actively occurring at ST008 and ERD is part of the remedy at SS007. LF003 will primarily consist of petroleum based compounds.

Proposed Site LF003 Monitoring Well Analytes

The contamination at Site LF003 originates at Site ST011 and is petroleum in nature. Both benzene and ethylbenzene exceed MCLs at this site, along with lead and arsenic. The lead contamination is likely the result of the release at ST011. The arsenic contamination is most likely naturally occurring or the result of pesticide use in this area. Concentrations of both lead and arsenic contamination are likely elevated due to the reducing conditions present in the aquifer caused by the petroleum release. Lead and arsenic will be retained as analytes in addition to benzene and ethylbenzene.

Table 5-9 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site LF003.

Well ID	VOCs	Metals
3-9	Benzene, Ethylbenzene	Arsenic and Lead

Proposed Site SS007 Monitoring Well Analytes

Monitoring wells indicated as OB, MW7 and MW7N are designated as Site SS007 wells in the current Permit. Monitoring Wells MW7-15 and OB-2 are used to monitor the petroleum release from Site ST011. Monitoring Well MW7-15 monitors benzene, ethylbenzene, toluene, m&p-xylene, o-xylene as proposed analytes, along with lead and arsenic as all of these compounds exceed their MCL/RSL. Monitoring Well OB-2 is located downgradient of the ST011 plume and historically has low level benzene contamination it, with one sample exceeding the 5 µg/L MCL by 0.45 µg/L within the past three years. No other compounds exceeded MCLs or RSLs in this well.

The remaining wells designated as Site SS007 wells within the current Permit are impacted primarily by TCE. SS007 has an ERD component to its remedy and thus TCE, cis-1,2-DCE, and VC will be included as analytes for all wells, with the exception of Monitoring Wells MW7-15 and OB-02. In addition 1,1 DCE and arsenic will be added to the analyte list for Monitoring Well MW7-4, as these analytes were detected above MCLs once in the past three. Arsenic was detected slightly above the MCL of 10 µg/L and is likely caused by the reducing conditions generated by EVO injections in the vicinity of this monitoring well.

Arsenic was also retained as an analyte for Monitoring Well OB-21, which had detections of arsenic slightly above standards for the past three years. It is highly unlikely that these compounds are related to the release at Site SS007 and are more likely the result of the previous agricultural use of the property and ongoing grounds maintenance activities as this area is considered a Bird Aircraft Strike Hazard (BASH) area at Vance AFB.

Table 5-10 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site SS007.

Well ID	VOCs	Metals
7-4	TCE, Cis-1,2 DCE, VC	Arsenic and Lead
7-15	Benzene, Ethylbenzene, Toluene, m&p-Xylene, o-Xylene	Arsenic and Lead
OB-2	Benzene	None
OB-4	TCE, Cis-1,2 DCE, VC	None
OB-5	TCE, Cis-1,2 DCE, VC	None
OB-6	TCE, Cis-1,2 DCE, VC	None
OB-13	TCE, Cis-1,2 DCE, VC	None
OB-16	TCE, Cis-1,2 DCE, VC	None
OB-19	TCE, Cis-1,2 DCE, VC	None
OB-21	TCE, Cis-1,2 DCE, VC	Arsenic
N7-41	TCE, Cis-1,2 DCE, VC	None
N7-48	TCE, Cis-1,2 DCE, VC	None
N7-50	TCE, Cis-1,2 DCE, VC	None
N7-52	TCE, Cis-1,2 DCE, VC	None

Proposed Site ST008 Monitoring Well Analytes

The release at Site ST008 was from a mixed waste tank, which contained both solvents and petroleum products. Based on the Remedial Design/Corrective Measures Implementation Plan it was agreed that benzene, TCE, VC, and naphthalene be monitored at the site. The analyte cis-1,2-DCE has been added to the list, as TCE in the presence of a carbon source reduces (by reductive dechlorinated) to this daughter product. PCE was added as an analyte to intermediate zone Monitoring Well MW8-18, as PCE has regularly been detected above standards in samples collected from this well. Monitoring Well MW8-18 will be realigned to Site SS028 in this proposed Permit Mod.

Table 5-11 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site ST008.

Well ID	VOCs	Metals
8-5	Benzene, TCE, Cis-1,2 DCE, VC, Naphthalene	Arsenic
8-9	Benzene, TCE, Cis-1,2 DCE, VC, 1,1,2-TCA, 1,1,2,2-PCA, Naphthalene	None
8-18	PCE, Benzene, TCE, Cis-1,2 DCE, VC, Naphthalene	None

5.2.3 Proposed Site SS026 Monitoring Well Analytes

No VOC contamination has been detected above MCLs/RSLs within the past five years with the only remaining contamination at Site SS026 being TPH (OK-GRO) and naphthalene contamination detected in Monitoring Well MW26-04. Based on this data, naphthalene and OK-GRO will be carried forward as analytes to monitor the remaining contamination at SS026.

Table 5-12 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site SS026.

Well ID	SVOCs	TPH
26-1	Naphthalene	OK-GRO
26-2	Naphthalene	OK-GRO
26-3	Naphthalene	OK-GRO
26-4	Naphthalene	OK-GRO

5.2.4 Proposed Site DP005 Monitoring Well Analytes

Table 5-13 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site DP005.

Well ID	VOCs	SVOCs	Metals	TPH
5-1	Benzene, TCE, Cis-1,2-DCE, VC	Bis(2-Ethylhexyl) Phthalate	None	OK-GRO
5-3	TCE, Cis-1,2 DCE, VC, 1,1,1-TCA	None	None	None
5-4	Benzene, TCE, Cis-1,2 DCE, VC, 1,1,1 TCE, 1,1,2- TCA, 1,1- DCA, 1,1- DCE, Chloroform, Methylene Chloride, Toluene, Trans 1,2 DCE, PCE	Naphthalene	Arsenic	OK-DRO and OK-GRO
5-6	TCE, Cis-1,2 DCE, VC	None	Arsenic	OK-DRO
5-7	TCE, Cis-1,2 DCE, VC	None	Arsenic	OK-DRO
5-8	TCE, Cis-1,2 DCE, VC	None	None	OK-GRO
5-18	TCE, Cis-1,2 DCE, VC	None	None	None
5-19	Benzene, TCE, Cis-1,2 DCE, VC	bis(2-Ethylhexyl) Phthalate, Naphthalene	None	OK-DRO and OK-GRO

5.2.5 Proposed Site FT002 Monitoring Well Analytes

Contamination is only present in one of the two monitoring wells (MW02-4) at Site FT002. The main COC in this well is TCE and its daughter products cis-1,2-DCE and VC. Selenium and OK-DRO are also present. The selenium appears to be naturally occurring and its concentration hovers around the MCL of 50 µg/L, while the DRO contamination appears to be an artifact of the EVO injections conducted in the vicinity of this well. Both selenium and OK-DRO will be retained as analytes.

Table 5-14 lists the wells and analytes proposed for annual groundwater compliance monitoring at Site FT002.

Well ID	VOCs	SVOCs	TPH	Metals	Pesticides
2-4	TCE, Cis-1,2 DCE, VC Benzene	None	OK-DRO	Selenium	None
2-5	TCE, Cis-1,2 DCE, VC Benzene	None	None	None	None

5.3 CONCEPTUAL SITE MODEL (CSM) BASED REALIGNMENT OF MONITORING WELLS IN THE RCRA PERMIT

Changing plume morphology has allowed a shift from a groundwater management unit concept to a site based management concept of the groundwater plumes at Vance AFB. Plumes have significantly decreased in size since 2010 when the Permit was last revised and specifically since the new remedies were implemented. There is now physical separation either laterally or vertically, between the plumes that originate at each site. This is specifically applicable to the CMI and IZ areas that had previously been managed as groundwater management units even though they were called out specifically as individual sites in the Permit.

The change to a site based concept of groundwater management necessitates a realignment of monitoring wells within the Permit. Monitoring wells that are included in the Permit were installed during the RFIs conducted at the various Sites. In general, the majority of the monitoring wells installed during the RFIs were abandoned. The proposed revisions to the monitoring well networks and sites are based on the conceptual site models

The monitoring wells in the groundwater compliance program of the current Permit were assigned to the Sites based on the original designation assigned during the RFIs conducted at the base. The installed monitoring wells were frequently located beyond the investigated site's final delineated boundaries, and as a result many of these wells do not monitor the release from the site to which they are assigned in the permit. Due to the sequencing of the RFI's, many of these monitoring wells actually monitor releases from other nearby sites that had not undergone RFI's at the time.

As these sites progress toward closure, it is necessary to realign the monitoring wells to the sites whose contamination they monitor in order to facilitate the closure process. Monitoring well designations will not change but the monitoring wells will be reassigned to the site that is being monitored.

The following sections outline the rationale behind the changes. Figure 5-1 and Figure 5-2 show the plume morphology in 2010 and 2017, respectively, to illustrate how the plume has changed in size and shape over this time period. Groundwater potentiometric surface water maps are included in Appendix B. The proposed monitoring well reassignments were presented in draft format to ODEQ in an August 22, 2017 meeting.

5.3.1 CMI AREA MONITORING WELL REALIGNMENT

Site ST012

Site ST012, also known as the Paint Stripping Equalization Tank, is located near Monitoring Well MW12-09 and Extraction Well EW12-01. Contamination at this site primarily consists of the chlorinated VOCs; PCE, TCE, cis-1,2-DCE, and VC. Contamination occurs in all three transmissive zones (shallow, intermediate and deep) within the aquifer. As a result, ST012 is the source of all contamination in the intermediate and deep zones in the CMI area, as no other

release has penetrated into the intermediate or deep zones. The current groundwater compliance program consists of 12 groundwater monitoring wells installed in the various transmissive zones at the sites. Many of these monitoring wells, specifically in the shallow zone, monitor contamination at Sites SS024 and SS025. In addition, many monitoring wells installed as part of the RFIs at Site WP023 and SS025 within the shallow and intermediate zones monitor contamination originating from Site ST012.

Monitoring Wells MW25-1, MW25-2 and MW25-4 are located along the flightline, north of Site ST012. Contamination in these wells is most likely the result of localized impacts along the flightline from historic operations. ODEQ concurred with the assessment, but indicated that ST012 was a more appropriate site to assign the wells, as opposed to Site SS025, as the monitoring is somewhat downgradient of this site even though it is a significant distance. Table 5-15 below presents the rationale for the realignment.

Table 5-15 Site ST012 Rationale for Monitoring Well Reassignment		
Well ID	Well Type	Rationale for Reassignment
12-9	Shallow	
12-13	Deep	
12-30	Intermediate	
12-33	Shallow	This well monitored the downgradient edge of the Site SS024 plume. This well is located 400 feet downgradient of the Site ST012 shallow plume. The Site ST012 and SS024 shallow plumes are not comingled. This well is proposed to be assigned to Site SS024.
12-34	Intermediate	
12-35	Shallow	This well monitors the source area near the Site SS024 release. The well is proposed to be reassigned to Site SS024.
12-37	Shallow	This well monitored the side gradient edge of the Site SS024 plume. This well is located 600 feet downgradient of the Site ST012 shallow plume. The ST012 and SS024 shallow plumes are not comingled. This well is proposed to be assigned to Site SS024
12-38	Intermediate	
12-43	Shallow	This well monitors the upgradient edge of the Site SS025 “hotspot” and is located over 100 feet away from Site ST012. This well is proposed to be assigned to Site SS025.
12-45	Shallow	This well monitors the upgradient edge of the Site SS025 “hotspot” and is located over 100 feet away from Site ST012. This well is proposed to be assigned to Site SS025.
23-05	Shallow	The well is immediately downgradient of the source at Site ST012 and is proposed to be reassigned to ST012. The 1995 RFI concluded that the contamination was coming from Site ST012 which is located approximately 100 feet directly upgradient. Recent (2016) contaminant concentration increases in this well are attributable to EVO injections conducted upgradient of the monitoring well that have moved TCE impacted water around in the subsurface.
23-21	Intermediate	Recommend reassigning this well to monitor the side/downgradient edge of the Site ST012 intermediate plume. The well is upgradient of Site WP023 and no intermediate zone contamination was found at Site WP023. The 1995 RFI concluded that the contamination was coming from Site ST012 which is located approximately 100 feet directly upgradient. Recent (2016 and 2017) contaminant concentration increases in this well are attributable to EVO injections conducted upgradient of the monitoring well that have moved TCE impacted water around in the subsurface.
23-22	Intermediate	Recommend reassigning this well to monitor the side/downgradient edge of the Site ST012 intermediate plume. The well is upgradient of Site WP023 and no intermediate zone contamination was found at Site WP023. The 1995 RFI concluded that the contamination was coming from Site ST012 which is located approximately 100 feet directly upgradient. Recent (2016 and 2017) contaminant concentration increases in this well are attributable to EVO injections conducted upgradient of the monitoring well that have moved TCE impacted water around in the subsurface.

25-1	Shallow	Well reassigned to Site ST012 per direction of ODEQ on August 2016 conference call. Contamination in this well most likely the result of localized releases along the flightline.
25-2	Shallow	Well reassigned to Site ST012 per direction of ODEQ on August 2016 conference call. Contamination in this well most likely the result of localized releases along the flightline.
25-4	Shallow	Well reassigned to Site ST012 per direction of ODEQ. Contamination in this well most likely the result of localized releases along the flightline.

Figure 5-3 shows monitoring wells that are proposed to be assigned to Site ST012.

Site WP023

Site WP023, also known as the Industrial Waste Pit, is located approximately 250 feet north of Site ST012. The initial COCs at WP023 were acetone, methylene chloride, toluene, and xylene. There currently has been no contaminant present at Vance AFB that originated from the WP023 waste pit in excess of 10 years. WP023 is hydrogeologically downgradient from ST012 and the shallow and intermediate zones of the two sites are hydraulic connected. As concluded in multiple investigations conducted at WP023, the source of chlorinated VOC contamination detected there originates at ST012. The exception to this is the TCE contamination at Monitoring Well MW23-14, which originates at the COMBS Warehouse (Site SS025). As a result of the new site based approach, WP023 should be considered for closure and the monitoring wells reassigned. Table 5-16 below presents the rationale for the reassignment.

Table 5-16 Site WP023 Rationale for Monitoring Well Reassignment		
Well Type	Well Type	Rationale for Reassignment
23-5	Shallow	Propose reassigning to Site ST012 as the well is immediately downgradient of the source at Site ST012.
23-14	Shallow	Propose reassigning to Site SS025 as the well is immediately downgradient of the source at Site SS025. Well is approximately 900 feet away from Site WP023.
23-21	Intermediate	Recommend reassigning this well to monitor the side/downgradient edge of the Site ST012 intermediate plume. The well is upgradient of Site WP023 and no intermediate zone contamination was found at Site WP023. The 1995RFI concluded that the contamination was coming from Site ST012 which is located approximately 100 feet directly upgradient. Recent (2016 and 2017)contaminant concentration increases in this well are attributable to EVO injection conducted upgradient of the monitoring well that have moved TCE impacted water around in the subsurface.
23-22	Intermediate	Recommend reassigning this well to monitor the side/downgradient edge of the Site ST012 intermediate plume. The well is upgradient of Site WP023 and no intermediate zone contamination was found at Site WP023. The 1995 RFI concluded that the contamination was coming from Site ST012 which is located approximately 100 feet directly upgradient.

Site SS024

Site SS024 is located at Building 187. Before 1992, hazardous material was transferred from inside the building via piping and an associated manhole outside Building 187. Prior to 1982,

a manhole outside the southeast side of Building 187 was used for the transfer of hazardous materials generated during jet engine cleaning processes (solvents and petroleum products) from inside the building to a truck awaiting pick up.

Currently no wells are listed in the Permit that have a Site SS024 designation to monitor the release from the site. Contaminants released from this site only impact the shallow zone within the aquifer and are currently monitored by Site ST012 Monitoring Wells MW12-33, MW12-35 and MW12-37. Monitoring Well MW24-5 is located downgradient of Site SS025 and monitors the downgradient edge of the plume associated with SS025. The proposed well reassignments for Site SS024 are shown below in Table 5-17.

Well Type	Well Type	Rationale for Reassignment
24-5	Shallow	Well is located downgradient of Site SS025 “hotspot” and over 2,000 feet downgradient of Site SS024. Propose reassigning this well to Site SS025.
12-33	Shallow	This well monitors the downgradient edge of the Site SS024 plume. There is physical separation from the Site ST012 Shallow plume. Propose reassigning this well to Site SS024.
12-35	Shallow	This well monitors the source area near the Site SS024 release. Propose reassigning this well to Site SS024.
12-37	Shallow	This well monitors the side gradient edge of the Site SS024 plume. There is physical separation from the Site ST012 Shallow plume. Propose reassigning this well to Site SS024.

The monitoring wells proposed to be assigned to Site SS024 are shown on Figure 5-4.

Site SS025

Site SS025, also known as the Contractor Operated and Maintained Base Supply Warehouse, is located downgradient of Site ST012 and adjacent to Hangar 170 (ITSI, 2010). The primary COC at the site is TCE. A drain or sump previously associated with Hangar 170 is the probable source of contamination at this site, although some of the contamination may have originated from Sites ST012 and SS024. The ST012 and SS024 contaminant plumes are currently spatially segregated from the remaining plumes at SS025.

The only monitoring well designated as a Site SS025 well in the Permit that actually monitors SS025 contamination is Monitoring Well MW25-7, which is monitored for 1,4-Dioxane per Permit requirements. It is proposed that Monitoring Wells MW12-43, MW12-45, MW23-14 and MW24-5 be reassigned to SS025 in the Permit because the monitoring wells monitor the plumes currently at this site. As previously mentioned, Monitoring Wells MW25-1, MW25-2 and MW25-4 are being proposed to be reassigned to Site ST012. The proposed well reassignments for SS025 are shown below in Table 5-18.

Table 5-18 Site SS025 Rationale for Monitoring Well Reassignment		
Well Type	Well Type	Rationale for Reassignment
25-4	Shallow	Well reassigned to Site ST012 per direction of ODEQ. Contamination in this well most likely the result of localized releases along the flightline.
25-2	Shallow	Well reassigned to Site ST012 per direction of ODEQ. Contamination in this well most likely the result of localized releases along the flightline.
25-4	Shallow	Well reassigned to Site ST012 per direction of ODEQ. Contamination in this well most likely the result of localized releases along the flightline.
12-43	Shallow	This well monitors the upgradient edge of the Site SS025 “hotspot” and is located over 100 feet away from Site ST012. Propose reassigning this well to Site SS025.
23-14	Shallow	Propose reassigning to Site SS025 as the well is immediately downgradient of a suspected source at Site SS025. Well is approximately 900 feet away from Site WP023.
12-45	Shallow	This well monitors the upgradient edge of the Site SS025 “hotspot” and is located over 100 feet away from Site ST012. Propose reassigning this well to Site SS025.
24-5	Shallow	Well is located downgradient of Site SS025 “hotspot” and over 2,000 feet downgradient of Site SS024. Propose reassigning this well to Site SS025.
25-7	Shallow	

The monitoring wells that are proposed to be assigned to Site SS025 are shown on Figure 5-5.

Industrial Zone Area

Site LF003

Site SS007 has two monitoring wells that monitor a petroleum-related release that is associated with Sites LF003 and ST011. It is proposed that these two monitoring wells be reassigned to LF003 in the Permit. The proposed well reassignments for LF003 are shown below in Table 5-19.

Table 5-19 Site LF003 Rationale for Monitoring Well Reassignment		
Well ID	Well Type	Rationale for Reassignment
3-9	Shallow	
OB-2	Shallow	Monitors petroleum contamination originating at site ST011 migrating under LF003. Not associated with Site SS007.
7-15	Shallow	Monitors petroleum contamination originating at site ST011 migrating under LF003. Not associated with Site SS007.

The monitoring wells that are proposed to be assigned to Site LF003 are shown on Figure 5-6.

Site SS007

Site SS007 has two monitoring wells that monitor a petroleum related release that is associated with Sites LF003 and ST011. It is proposed that these two monitoring wells be reassigned to LF003 in the Permit. The proposed well reassignments for SS007 are shown below in Table 5-20.

Table 5-20 Site SS007 Rationale for Monitoring Well Reassignment		
Well ID	Well Type	Rationale for Reassignment
7-4	Shallow	
OB-2	Shallow	Monitors petroleum contamination originating at site ST011 migrating under LF003. Not associated with Site SS007.
OB-4	Shallow	
OB-5	Shallow	
OB-6	Shallow	
OB-13	Shallow	
OB-16	Shallow	
OB-19	Shallow	
OB-21	Shallow	
7-15	Shallow	Monitors petroleum contamination originating at site ST011 migrating under LF003. Not associated with Site SS007.
N7-38	Intermediate	
N7-41	Shallow	
N7-48	Intermediate	
N7-50	Intermediate	
N7-52	Intermediate	

The monitoring wells that are proposed to be assigned to Site SS007 are shown on Figure 5-7.

Site ST008

Site ST008 consists of a mixed waste release in the shallow zone in the vicinity of former waste Tank No. 106. The proposed well reassignments for ST008 are shown below in Table 5-21.

Table 5-21 Site ST008 Rationale for Monitoring Well Reassignment		
Well ID	Well Type	Rationale for Reassignment
8-5	Shallow	
8-9	Shallow	

The monitoring wells that are proposed to be assigned to Site SS008 are shown on Figure 5-8.

Monitoring well MW8-18 is located upgradient of Site ST008 and monitors the intermediate zone in what is now Site SS028. This well does not monitor any of the contamination associated with Site ST008 and therefore will no longer be assigned to ST008. However this well will continue to be monitored as part of the Vance Compliance Monitoring Program and will be assigned to a site upon completion of the SS028 RFI.

6.0 REVISED GROUNDWATER COMPLIANCE MONITORING PROGRAM

The revised groundwater compliance program including all of the recommendations in this technical support document is summarized on a site by site basis below. The changes to the groundwater compliance monitoring program include:

- Elimination of fall compliance monitoring sampling event.
- Elimination of groundwater monitoring wells from compliance monitoring program no longer needed to monitor current extent of groundwater contamination at sites.
- Elimination of analytes that are not COCs or have not been detected in monitoring wells within past three years.
- CSM-based realignment/reassignment of monitoring wells to sites which they monitor.

WP023

There are no monitoring wells assigned to Site WP023, as all COCs at the site have not been detected in excess of ten years. Contamination currently present at this site originates at Site ST012.

Monitoring Well MW8-18

Monitoring Well MW8-18 is located upgradient of Site ST008 and monitors the intermediate zone in what is now Site SS028. This well does not monitor any of the contamination associated with Site ST008 and therefore will no longer be assigned to ST008. However this well will continue to be monitored as part of the Vance Compliance Monitoring Program and will be assigned to a site upon completion of the SS028 RFI. This well will be sampled annually for benzene, PCE, TCE, Cis-1,2 DCE, VC and naphthalene.

Tables 5-23 through 5-31 list the revised groundwater monitoring for each site.

Well ID	Well Type	Frequency	Analytes
12-9	Shallow	Annual	PCE, TCE, Cis-1,2 DCE and VC
12-13	Deep	Annual	PCE, TCE, Cis-1,2 DCE, VC, and Naphthalene
12-30	Intermediate	Annual	TCE, Cis-1,2 DCE, VC and 1,1 DCE
12-34	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
12-38	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
23-05	Shallow	Annual	TCE, Cis-1,2 DCE and VC
23-21	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
23-22	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
25-1	Shallow	Annual	TCE, Cis-1,2 DCE and VC
25-2	Shallow	Annual	TCE, Cis-1,2 DCE and VC
25-4	Shallow	Annual	TCE, Cis-1,2 DCE, VC and Carbon tetrachloride

Table 6-2			
Site SS024 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
12-33	Shallow	Annual	TCE, Cis-1,2 DCE, VC, 1,4 Dioxane, and 1,1-DCE
12-35	Shallow	Annual	TCE, Cis-1,2 DCE, VC and bis(2-Ethylhexyl)Phthalate
12-37	Shallow	Annual	TCE, Cis-1,2 DCE and VC

Table 6-3			
Site SS025 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
12-43	Shallow	Annual	TCE, Cis-1,2 DCE, VC, and Trans-1,2-DCE
23-14	Shallow	Annual	TCE, Cis-1,2 DCE, VC and bis(2-Ethylhexyl)Phthalate
12-45	Shallow	Annual	TCE, Cis-1,2 DCE, Trans 1,2-DCE and VC
24-5	Shallow	Annual	TCE, Cis-1,2 DCE, VC, and Trans-1,2-DCE
25-7	Shallow	Annual	1,4 Dioxane

Table 6-4			
Site SS007 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
7-4	Shallow	Annual	TCE, Cis-1,2 DCE, VC, Arsenic and Lead
OB-4	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-5	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-6	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-13	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-16	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-19	Shallow	Annual	TCE, Cis-1,2 DCE and VC
OB-21	Shallow	Annual	TCE, Cis-1,2 DCE, VC and Arsenic
N7-38	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
N7-41	Shallow	Annual	TCE, Cis-1,2 DCE and VC
N7-48	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
N7-50	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
N7-52	Intermediate	Annual	TCE, Cis-1,2 DCE and VC

Table 6-5 Site LF003 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
3-9	Shallow	Annual	Benzene, Ethylbenzene, Arsenic and Lead
OB-2	Shallow	Annual	Benzene
7-15	Shallow	Annual	Benzene, Ethylbenzene, Toluene, m&p-Xylene, o-Xylene, Arsenic and Lead

Table 6-6 Site ST008 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
8-5	Shallow	Annual	Benzene, TCE, Cis-1,2 DCE, VC, Naphthalene, and Arsenic
8-9	Shallow	Annual	Benzene, TCE, Cis-1,2 DCE, VC, Naphthalene, 1,1,2-TCD, and 1,1,2,2-PCA

Table 6-7 Site DP005 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
5-1	Shallow	Annual	Benzene TCE, Cis-1,2 DCE, VC, OK-GRO, and bis(2-Ethylhexyl) Phthalate
5-3	Shallow	Annual	TCE, Cis-1,2 DCE, and VC
5-4	Shallow	Annual	Benzene, PCE, TCE, Cis-1,2 DCE, VC, 1,1,1 TCE, 1,1,2- TCA, 1,1- DCA, 1,1-DCE, Chloroform, Methylene Chloride, Toluene, trans-1,2-DCE, Naphthalene, Arsenic, OK-DRO, and OK-GRO
5-6	Shallow	Annual	TCE, Cis-1,2 DCE, VC, OK-DRO, and Arsenic
5-7	Shallow	Annual	TCE, Cis-1,2 DCE, VC, OK-DRO, and Arsenic
5-8	Shallow	Annual	TCE, Cis-1,2 DCE, VC and OK-GRO
5-18	Intermediate	Annual	TCE, Cis-1,2 DCE and VC
5-19	Shallow	Annual	Benzene, TCE, Cis-1,2 DCE, VC, bis(2-Ethylhexyl) Phthalate, OK-DRO and OK-GRO

Table 6-8 Site FT002 Revised Groundwater Monitoring			
Well ID	Well Type	Frequency	Analytes
2-4	Shallow	Annual	TCE, Cis-1,2 DCE, VC, OK-DRO and Selenium
2-5	Shallow	Annual	TCE, Cis-1,2 DCE, and VC

Well ID	Well Type	Frequency	Analytes
26-1	Shallow	Annual	Naphthalene and OK-GRO
26-2	Intermediate	Annual	Naphthalene and OK-GRO
26-3	Shallow	Annual	Naphthalene and OK-GRO
26-4	Shallow	Annual	Naphthalene and OK-GRO

7.0 FUTURE MODIFICATIONS TO THE COMPLIANCE MONITORING PROGRAM

To simplify the process of modifying the groundwater compliance monitoring with regards to the addition or removal of monitoring wells, or analytes from the program, a series of criteria will be set up that must be met for either monitoring wells or analytes being removed from the program. These are the same criteria used in sections 4.1 and 4.2 to modify the monitoring well network and list of analytes in this Permit Mod. This monitoring program modification procedure will be added to the current proposed Permit Mod.

Monitoring Wells

For monitoring wells to be considered for removal from basewide sampling program they must meet three criteria outlined below.

1. At least three monitoring events with no analytes above their regulatory criteria (MCL/RSL). Monitoring events must be separated by one year period.
2. Monitoring wells in critical locations such as well monitoring downgradient edge of plume will not be eliminated from program.
3. Monitoring wells that will be part of LTM program, as part of the site closure process, will not be eliminated from program.

Analytes

The analyte lists will be modified using the following criteria.

1. Any COCs detected above their relative MCL/RSL, during past three years, would be included in each sites/monitoring wells analyte list.
2. Any non COC detected above its MCL/RSL, during past three years, would be included in each sites/monitoring wells analyte list.
3. Sites where reductive dechlorination has been implemented, which include Sites ST012, SS024, SS025, SS007, DP005 and FT002, analyte list would include TCE, cis-1,2-DCE and VC at all wells regardless of whether there have been detections above MCLs within last three years.

If a monitoring well or analyte meets the outlined criteria, a recommendation will be made in the Annual Groundwater Monitoring Report to drop or add a monitoring well or analyte. The recommendation will include data and rationale supporting the recommendation. Upon concurrence, by ODEQ, that the recommendation is acceptable, a letter will be sent to ODEQ that includes the updated groundwater compliance monitoring well list for the next year's groundwater compliance sampling. A section has been added to the SAP to incorporate the groundwater compliance monitoring program modification process into the permit.

8.0 REFERENCES

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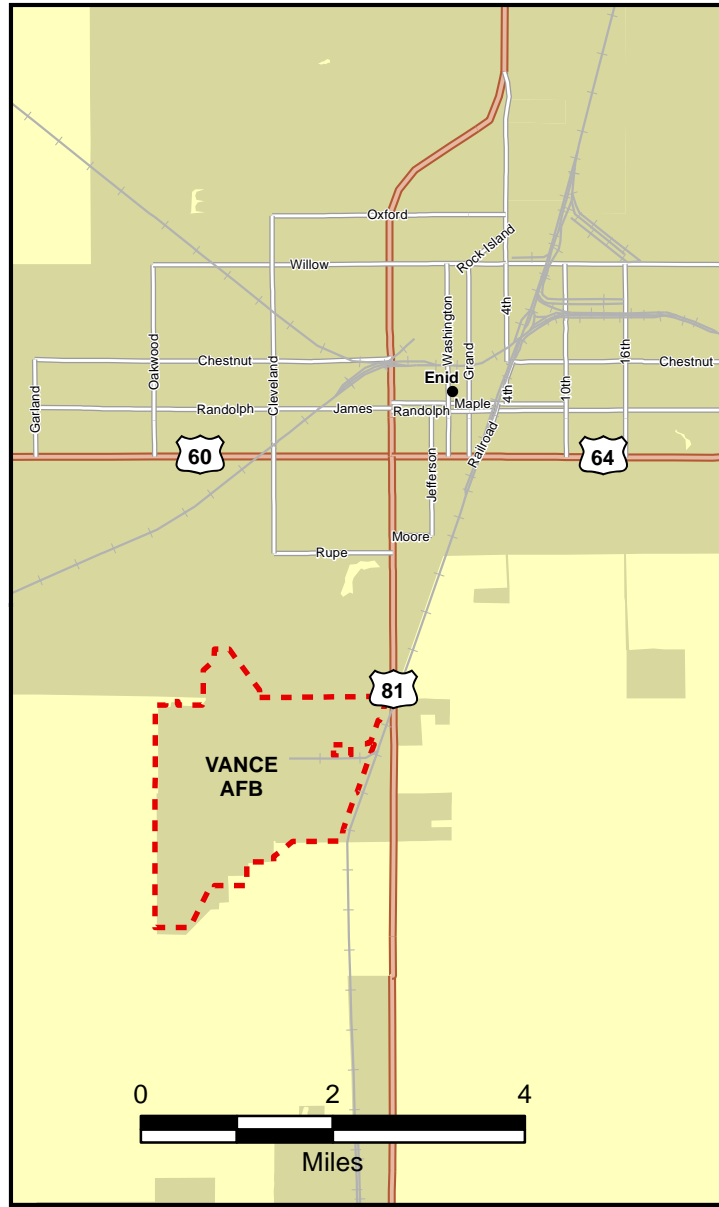
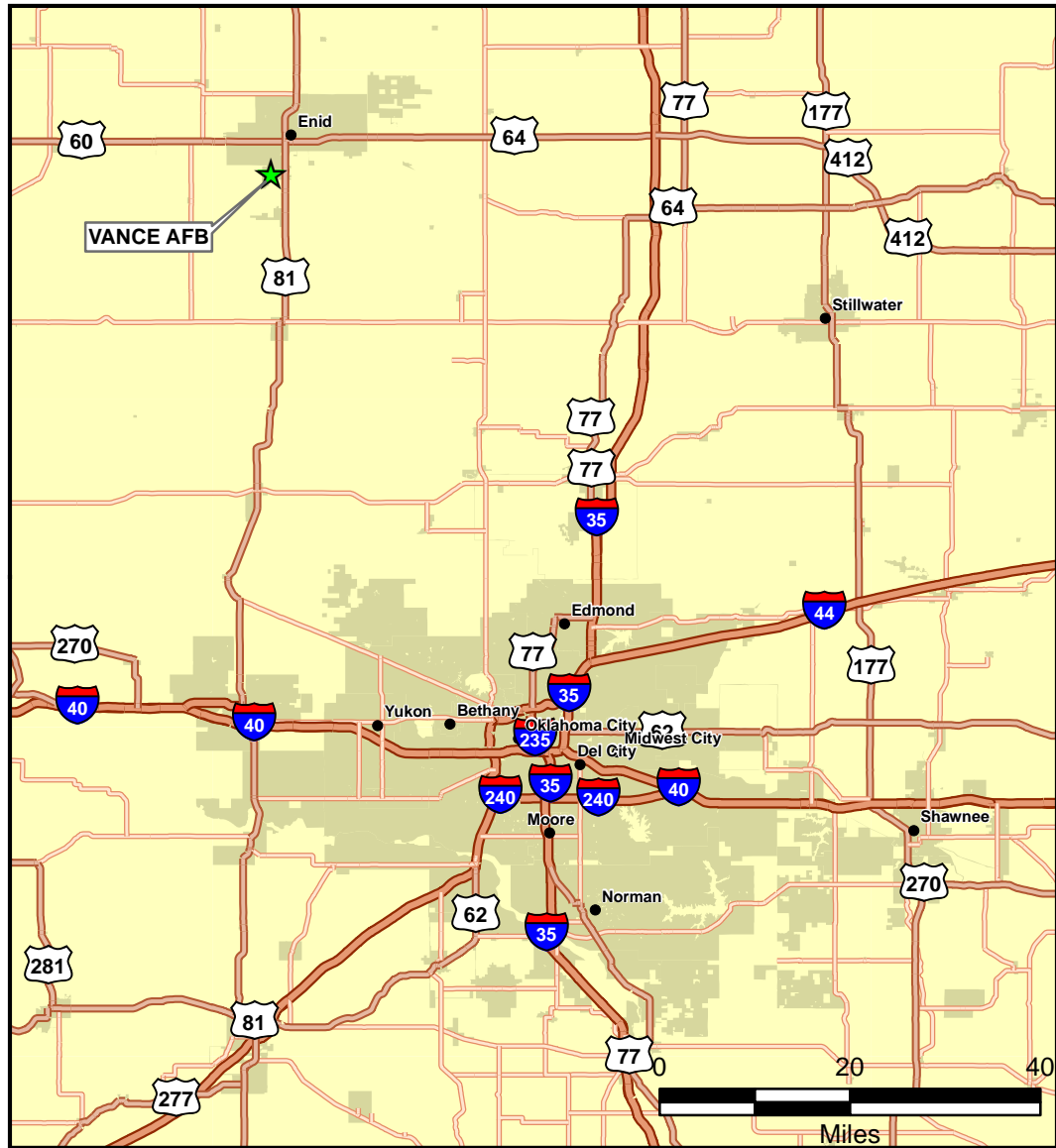
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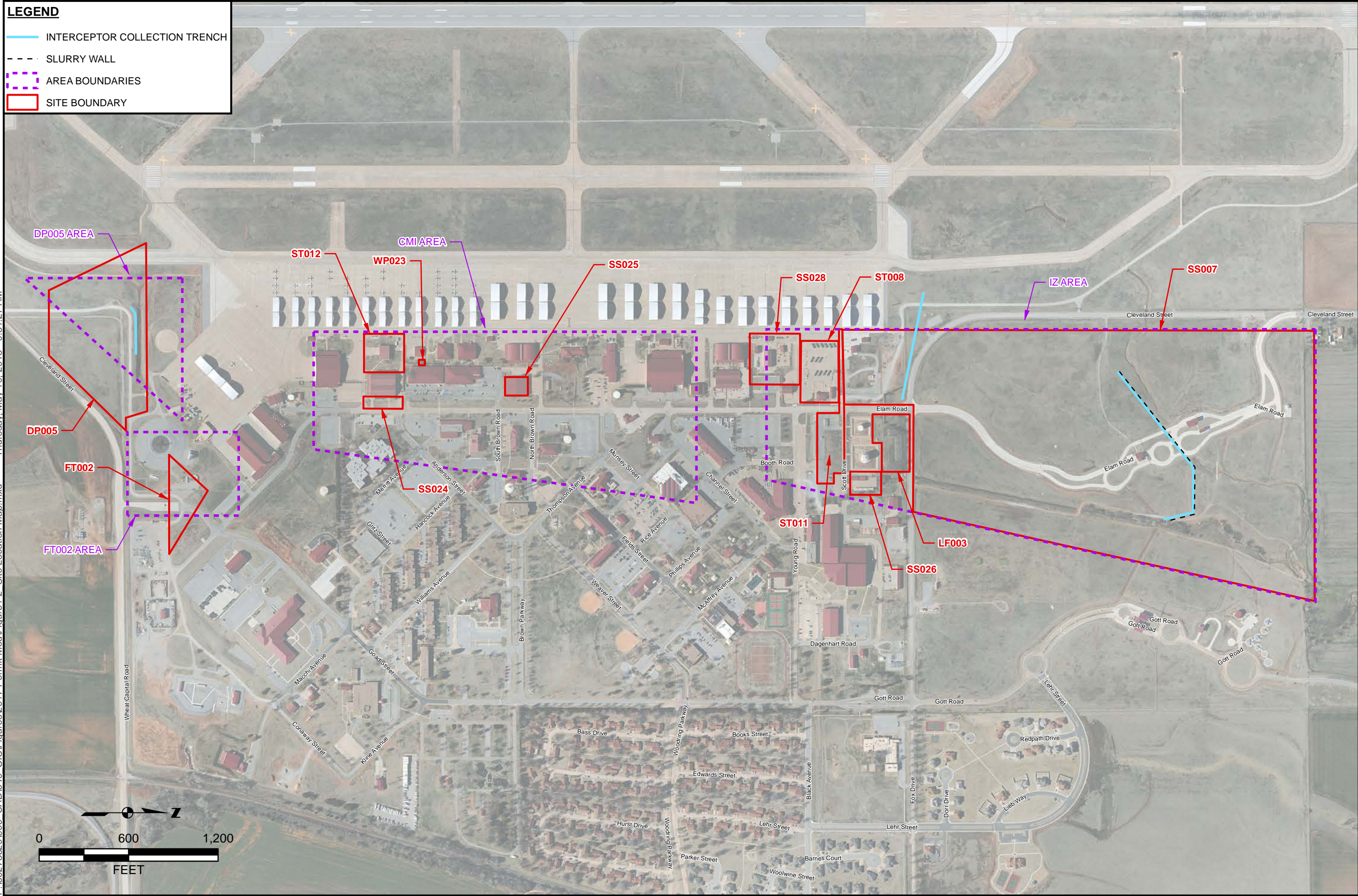
Figures



P:\60273629\000 CAD\040 GIS\Figures\2017 Permit Mod\Figure 1-2 Site Location Map.mxd Thursday, May 10, 2018 - 9:31:27 AM

LEGEND

- INTERCEPTOR COLLECTION TRENCH
- - - SLURRY WALL
- ▭ AREA BOUNDARIES
- ▭ SITE BOUNDARY

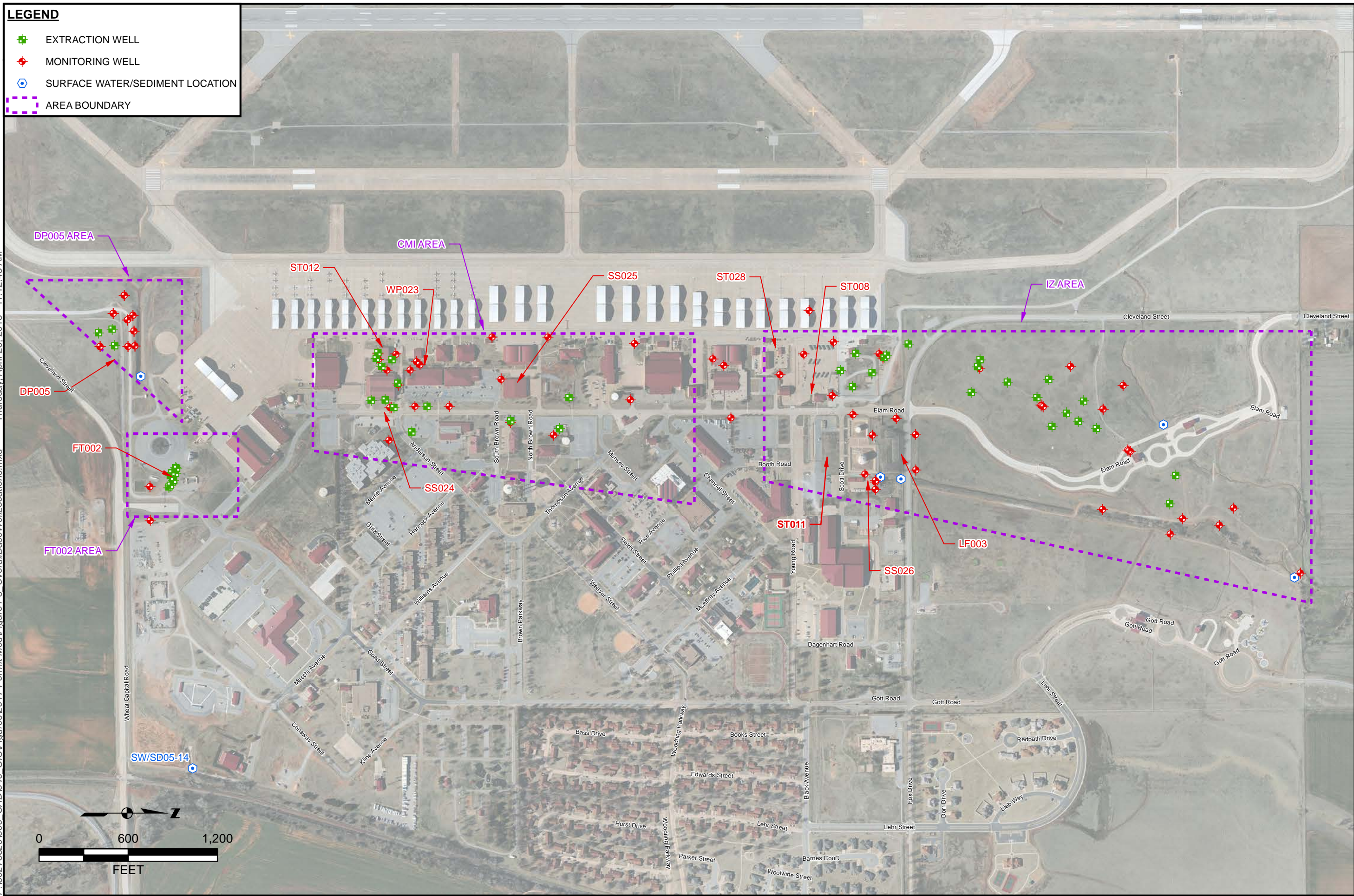


VANCE AIR FORCE BASE SITE LOCATION MAP
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

P:\60273629\000 CAD\040 GIS\Figures\2017 Permit Mod\Figure 1-3 OverallBaseWellLocations.mxd Thursday, April 26, 2018 - 11:12:43 AM

LEGEND

- + EXTRACTION WELL
- + MONITORING WELL
- + SURFACE WATER/SEDIMENT LOCATION
- AREA BOUNDARY



VANCE AFB
VANCE AIR FORCE BASE, OKLAHOMA
Project No.: 60273629 Date: 2017/12

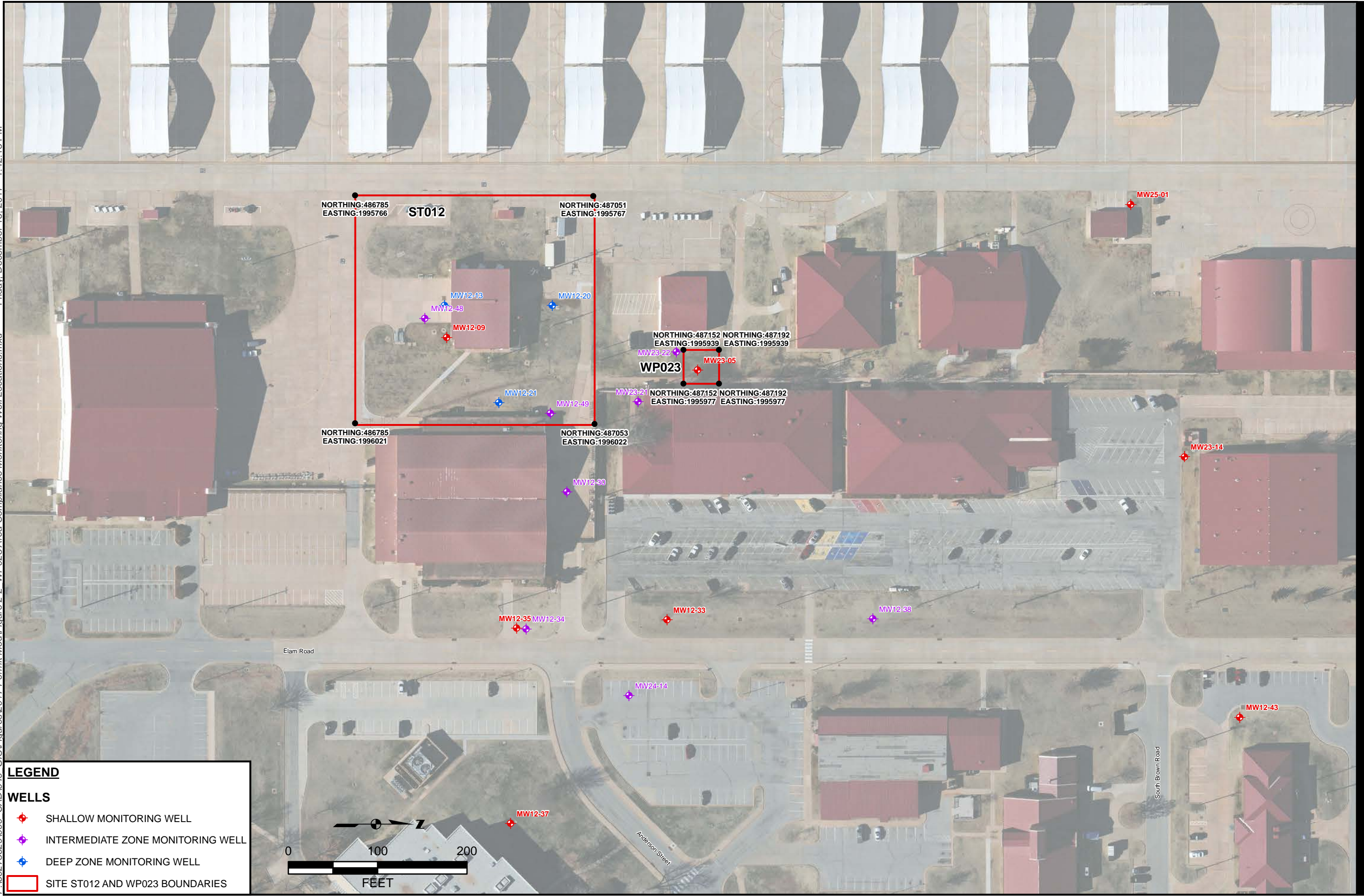
**COMPLIANCE MONITORING WELLS, EXTRACTION WELLS,
AND SURFACE WATER AND SEDIMENT LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION**

P:\60273629\1000 CAD\1040 GIS\Figures\2017 Permit Mod\Figure2-1_CMIWellLocations.mxd Thursday, April 26, 2018 - 11:13:15 AM

LEGEND

- + EXTRACTION WELL
- ♦ SHALLOW ZONE MONITORING WELL
- ♦ INTERMEDIATE ZONE MONITORING WELL
- ♦ DEEP ZONE MONITORING WELL
- CMI AREA BOUNDARY

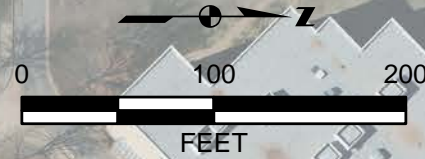




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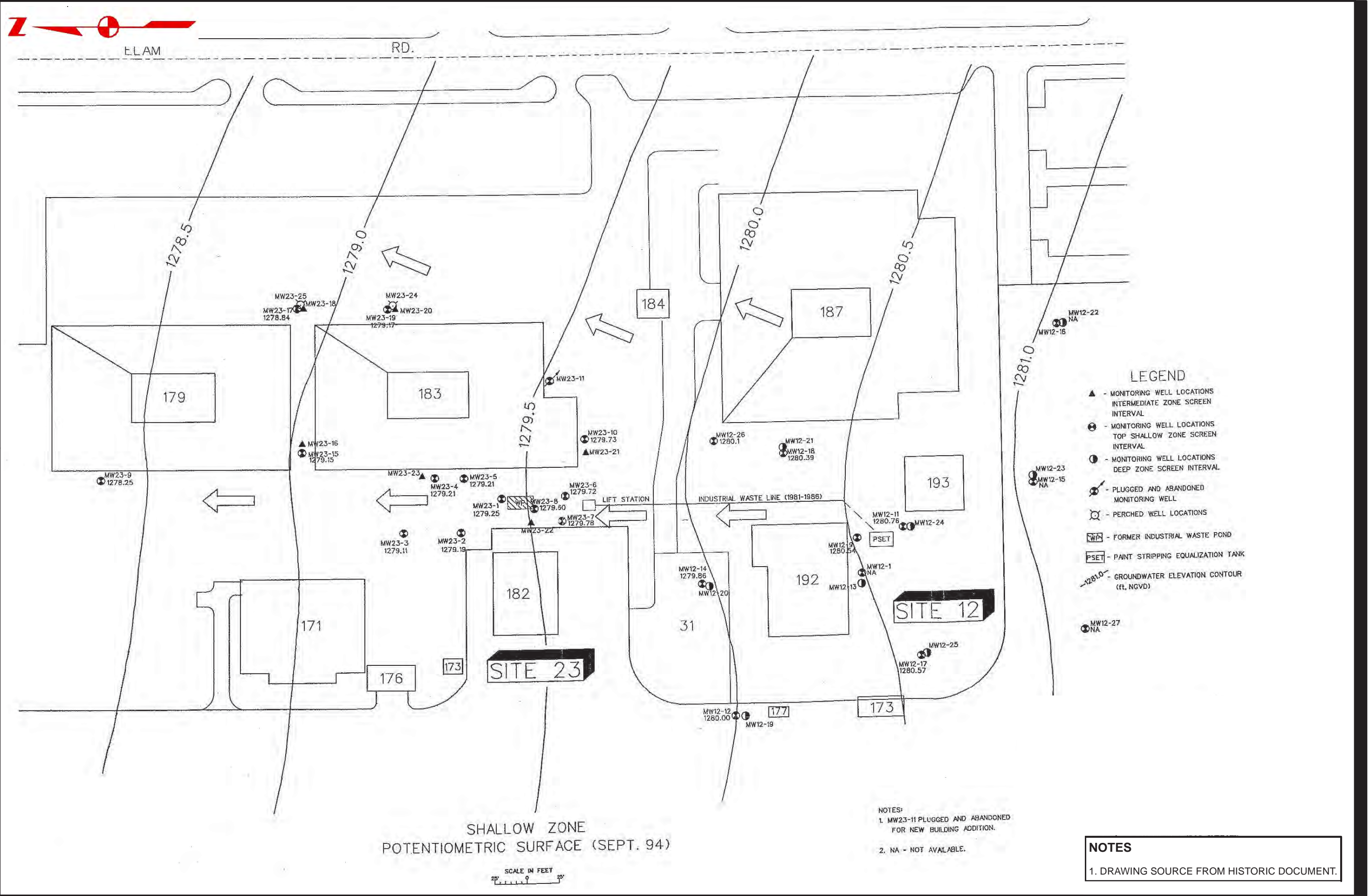
WELLS

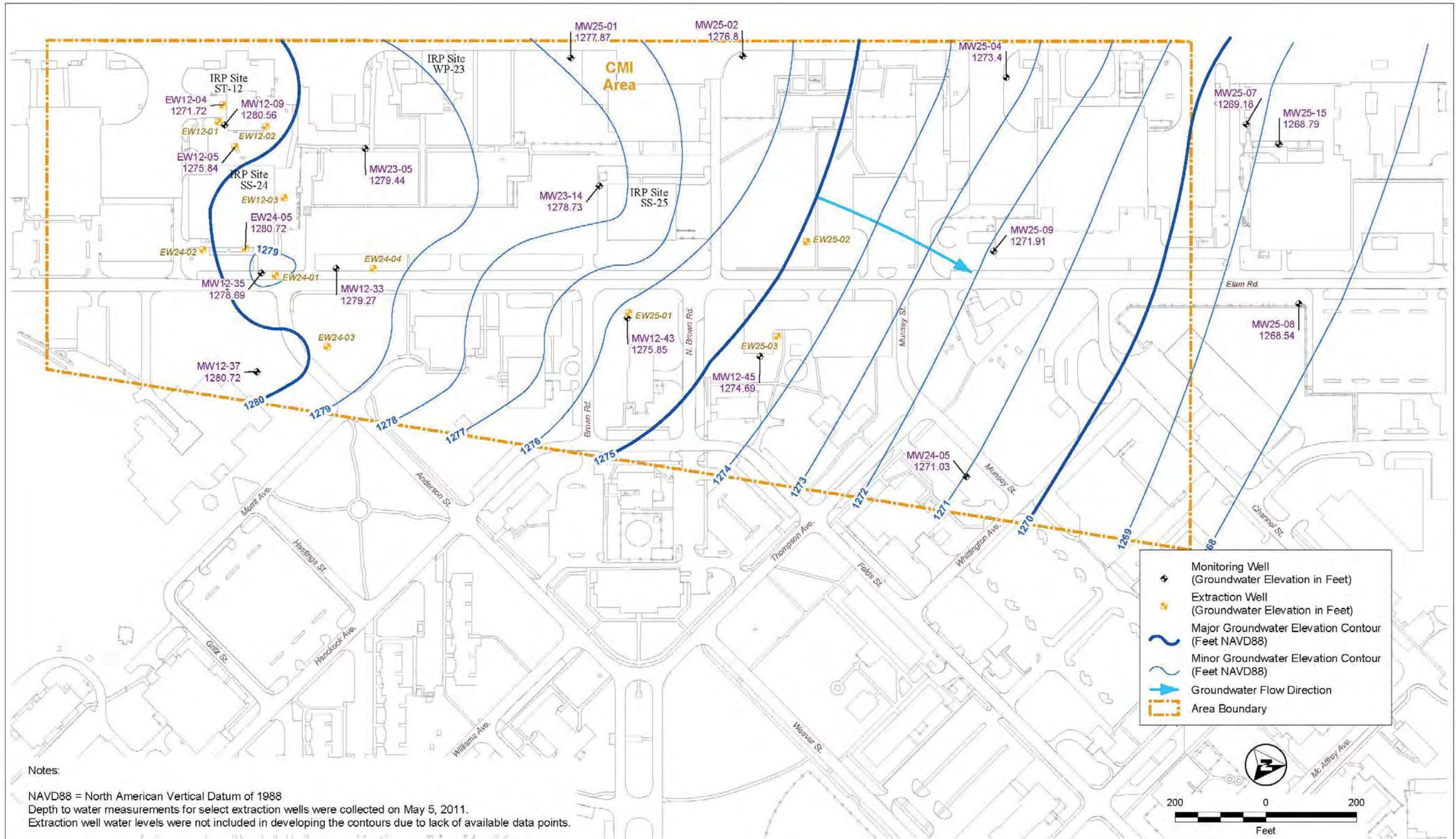
- ◆ SHALLOW MONITORING WELL
- ◆ INTERMEDIATE ZONE MONITORING WELL
- ◆ DEEP ZONE MONITORING WELL
- SITE ST012 AND WP023 BOUNDARIES



ST012 AND WP023 AREA MONITORING WELL LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

P:\60273629\000_CAD\040_GIS\Figures\WP023\Blank MXD.mxd Wednesday, September 27, 2017 - 1:52:14 PM

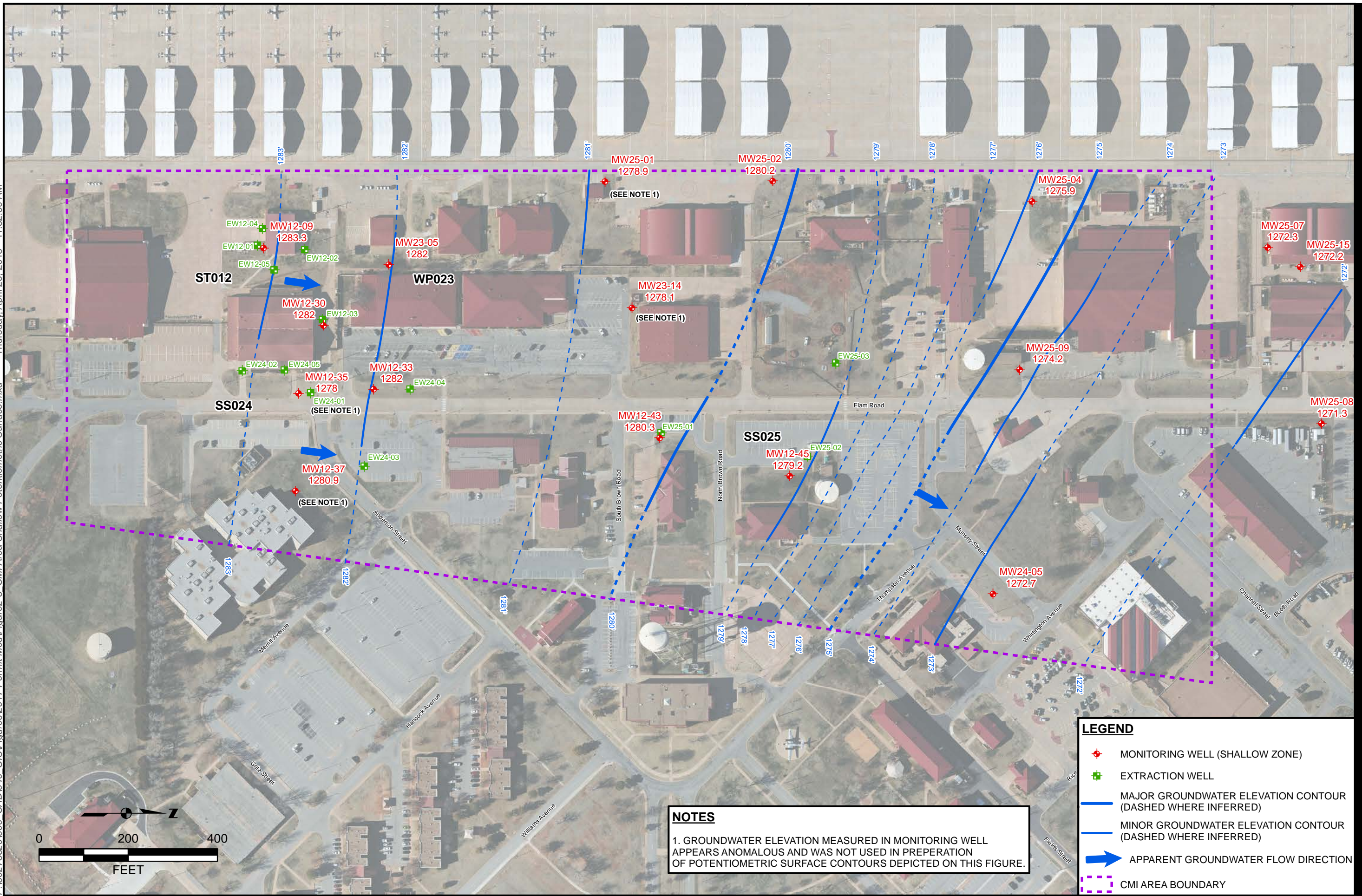




Notes:

NAVD88 = North American Vertical Datum of 1988
 Depth to water measurements for select extraction wells were collected on May 5, 2011.
 Extraction well water levels were not included in developing the contours due to lack of available data points.

NOTES
 1. DRAWING SOURCE FROM HISTORIC DOCUMENT.








NOTES
 1. GROUNDWATER ELEVATION MEASURED IN MONITORING WELL APPEARS ANOMALOUS AND WAS NOT USED IN PREPARATION OF POTENTIOMETRIC SURFACE CONTOURS DEPICTED ON THIS FIGURE.

LEGEND

- ◆ MONITORING WELL (SHALLOW ZONE)
- ◆ EXTRACTION WELL
- MAJOR GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- - - MINOR GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- - - CMI AREA BOUNDARY

<ita>P:\60273629\000_CAD\040_GIS\Figures\2017_Permit_Mod\Figure 2-6_SS024_Site Map & Monitoring Well Locations.mxd</ita> Friday, December 15, 2017 - 3:35:47 PM

LEGEND






-  SHALLOW ZONE MONITORING WELL
-  INTERMEDIATE ZONE MONITORING WELL
-  DEEP ZONE MONITORING WELL
-  APPARENT GROUNDWATER FLOW DIRECTION
-  SITE SS024 BOUNDARY



VANCE AFB
SS024 AREA SITE MAP AND MONITORING WELL LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

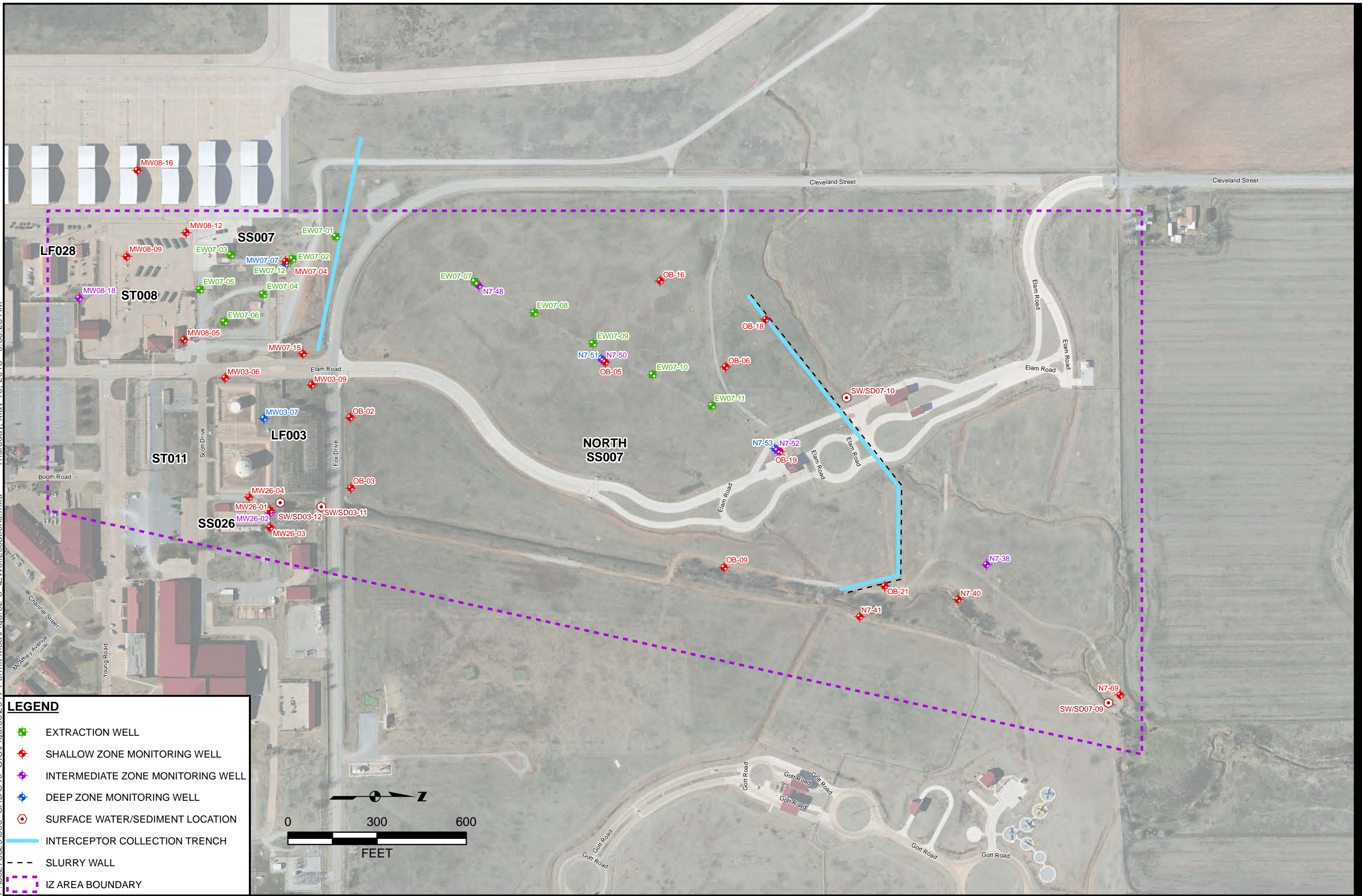
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LEGEND

-  SHALLOW ZONE MONITORING WELL
-  INTERMEDIATE ZONE MONITORING WELL
-  DEEP ZONE MONITORING WELL
-  APPARENT GROUNDWATER FLOW DIRECTION
-  SITE BOUNDARY SS025



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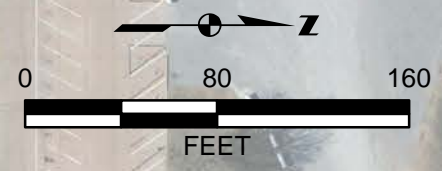
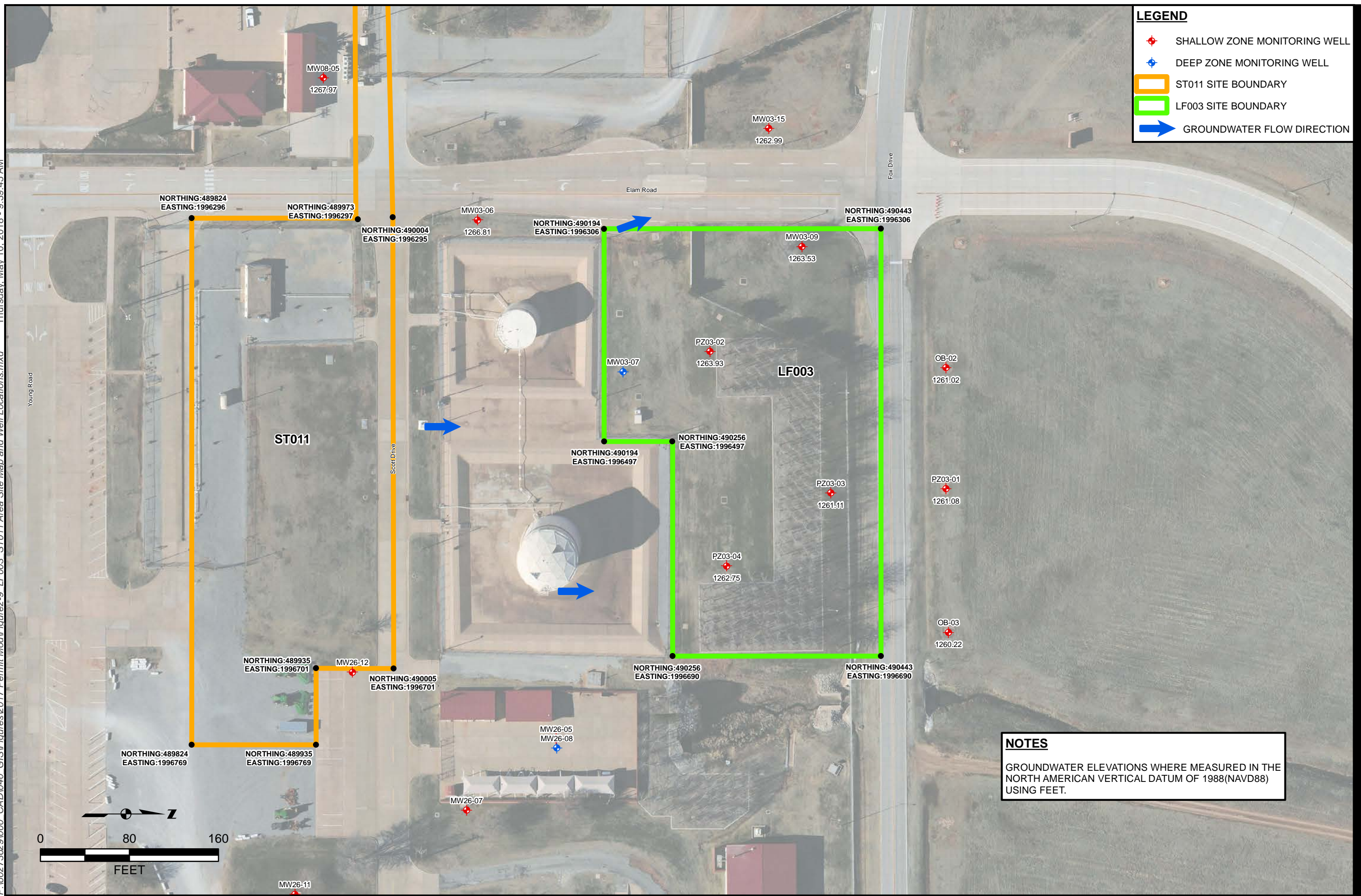
LEGEND

- + EXTRACTION WELL
- ♦ SHALLOW ZONE MONITORING WELL
- + INTERMEDIATE ZONE MONITORING WELL
- + DEEP ZONE MONITORING WELL
- SURFACE WATER/SEDIMENT LOCATION
- INTERCEPTOR COLLECTION TRENCH
- SLURRY WALL
- IZ AREA BOUNDARY

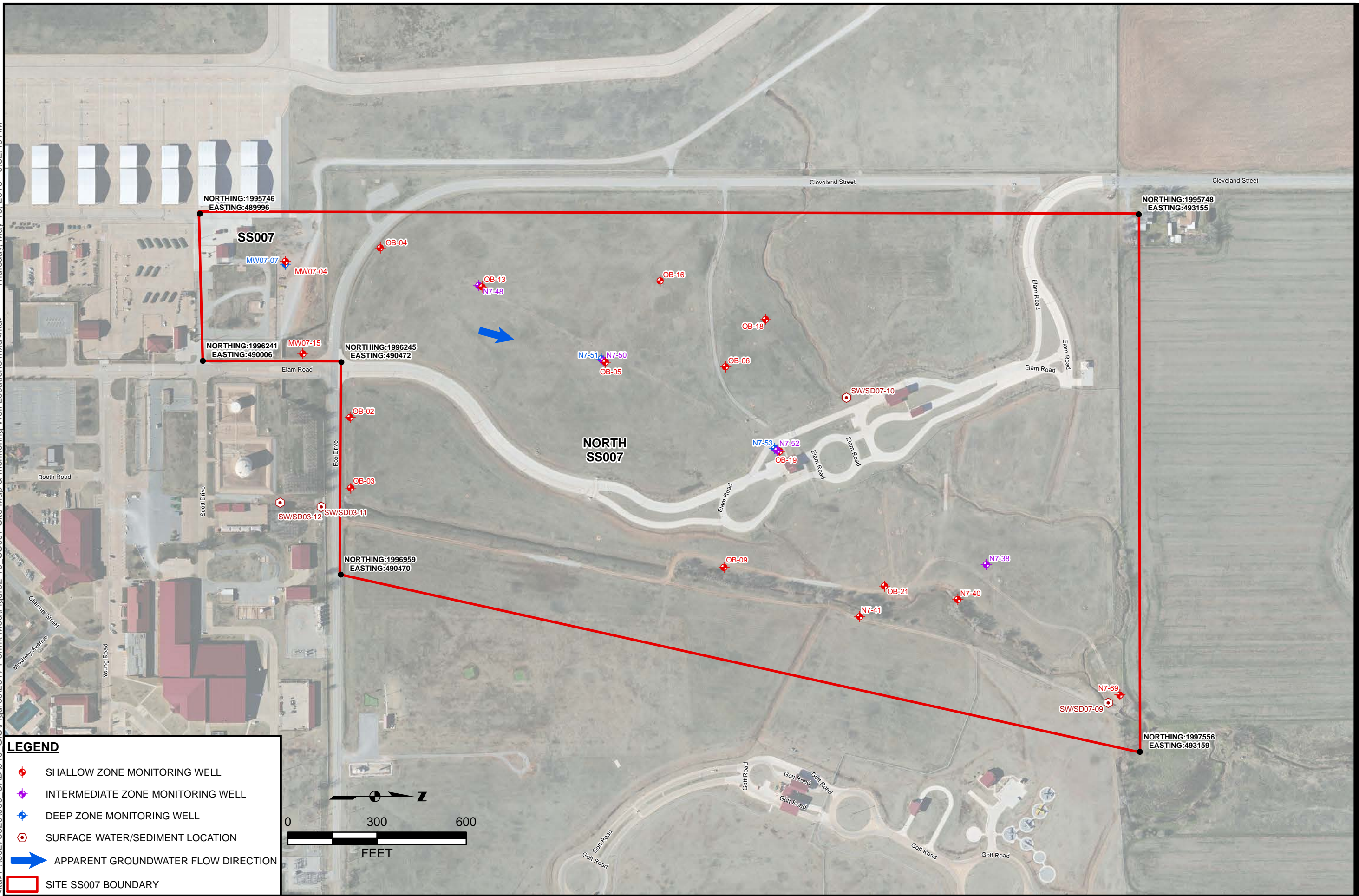


VANCE AFB
IZ AREA WELL AND SW/SD LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

VANCE AFB
 VANCE AIR FORCE BASE, OKLAHOMA
 Project No.: 60273629 Date: 2017/12

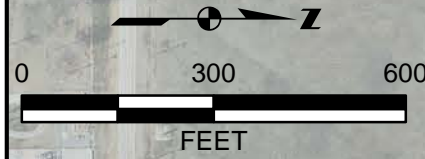


Thursday, May 10, 2018 - 9:52:43 AM
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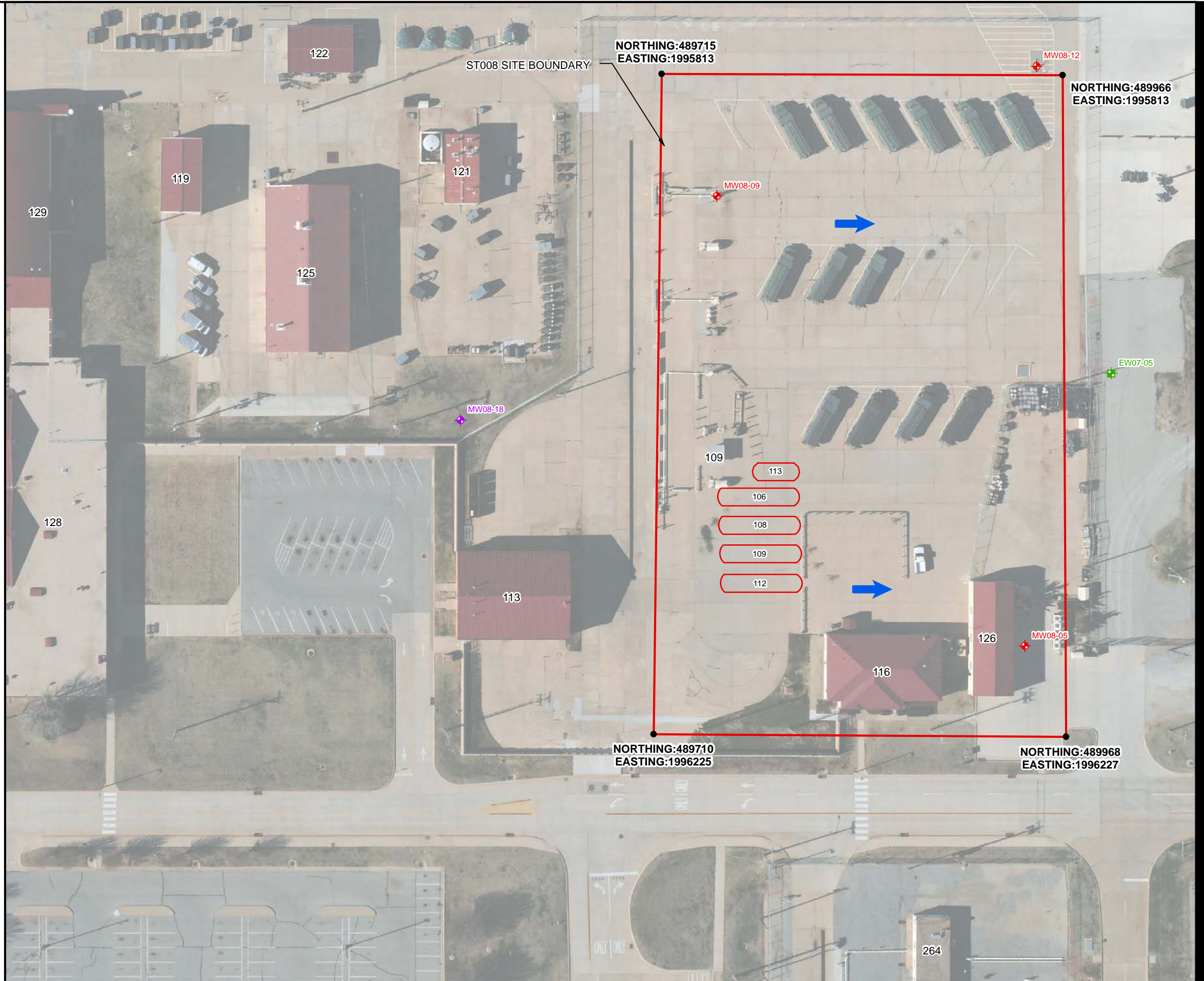
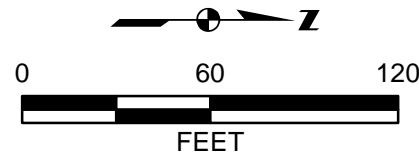
LEGEND

- ◆ SHALLOW ZONE MONITORING WELL
- ◆ INTERMEDIATE ZONE MONITORING WELL
- ◆ DEEP ZONE MONITORING WELL
- ◆ SURFACE WATER/SEDIMENT LOCATION
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- ▭ SITE SS007 BOUNDARY



LEGEND

-  EXTRACTION WELL
-  SHALLOW ZONE MONITORING WELL
-  INTERMEDIATE ZONE MONITORING WELL
-  GROUNDWATER FLOW DIRECTION
-  NORTHING AND EASTING COORDINATES
-  APPROXIMATE AREA OF FORMER UNDERGROUND STORAGE TANKS
-  SITE ST008 BOUNDARY



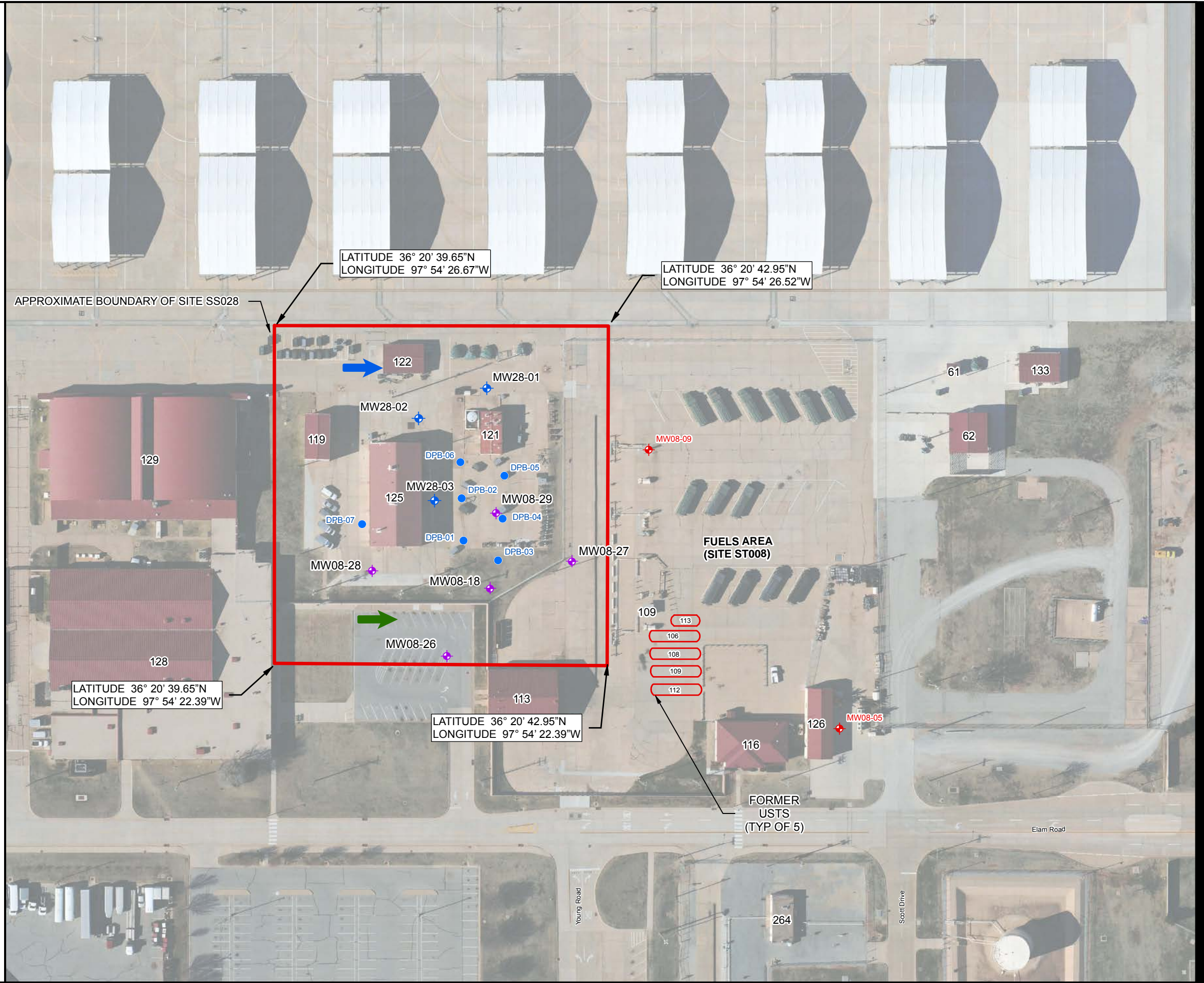
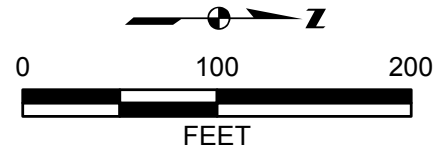
P:\60273629\000_CAD\040_GIS\Figures\2017_Permit.Mod\Figure 2-12_Site SS028_Site Map.mxd Friday, December 15, 2017 - 2:39:21 PM

LEGEND

- ◆ EXISTING SHALLOW ZONE MONITORING WELL
- ◆ EXISTING INTERMEDIATE ZONE MONITORING WELL
- ◆ NEW INTERMEDIATE ZONE MONITORING WELL (FEB 2016)
- NEW SHALLOW ZONE DIRECT PUSH SOIL BORINGS (20 FT. DEPTH) WITH TEMPORARY WELL COMPLETIONS (MAR 2016)
- APPROXIMATE BOUNDARY OF SITE SS028
- APPROXIMATE AREA OF FORMER UNDERGROUND STORAGE TANKS
- ➔ APPARENT GROUNDWATER FLOW DIRECTION (SHALLOW ZONE)
- ➔ APPARENT GROUND WATER FLOW DIRECTION (INTERMEDIATE ZONE)

NOTES




1. APPARENT GROUNDWATER FLOW DIRECTION BASED ON MAY 2015 DATA.

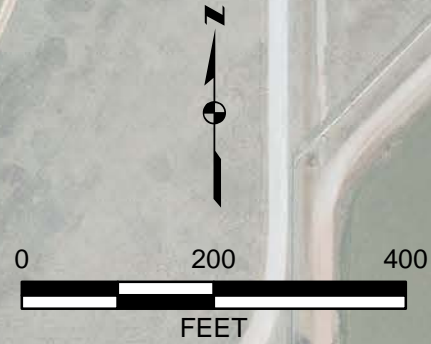


SS028 AREA SITE MAP AND MONITORING WELL LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

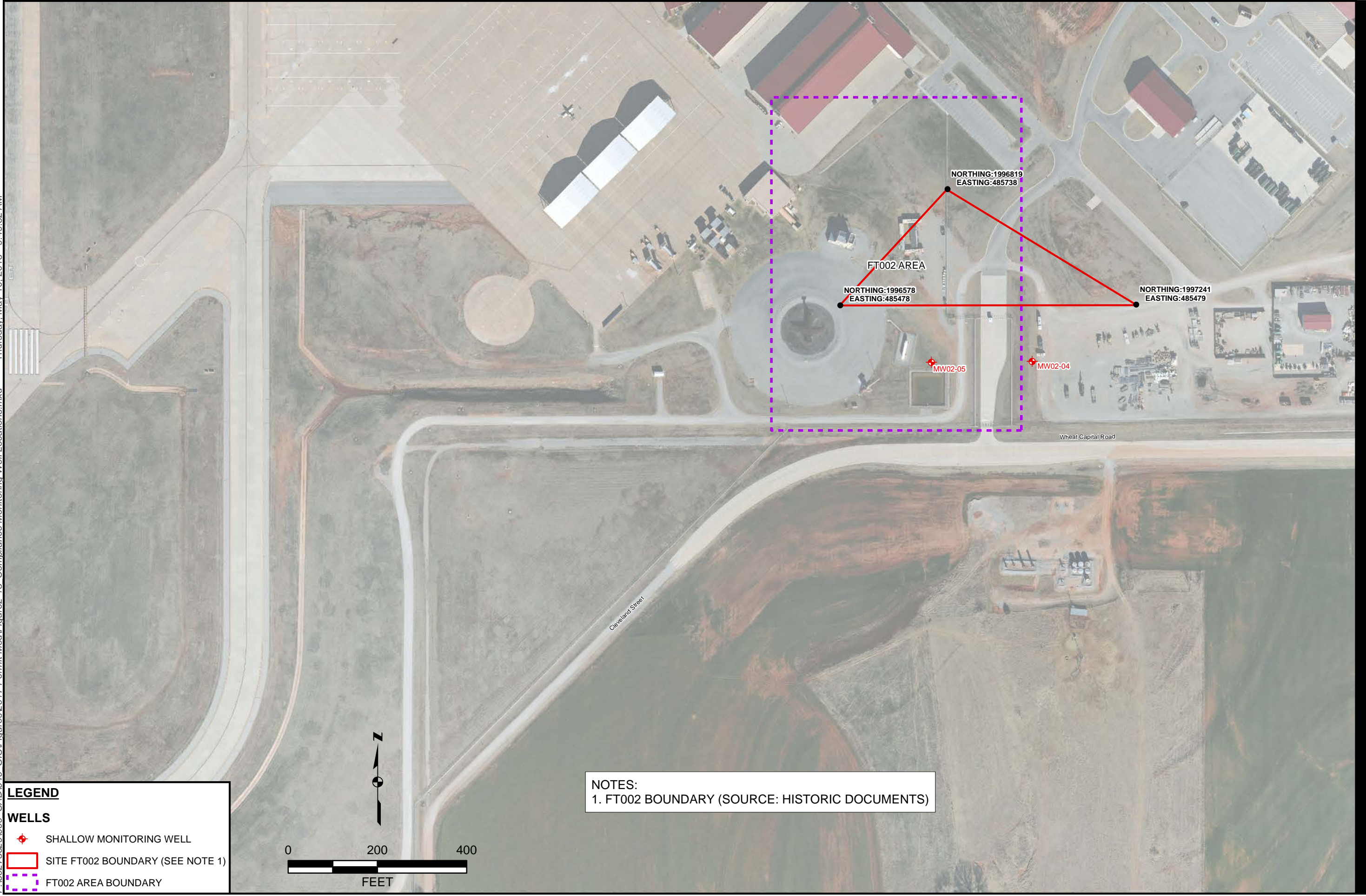
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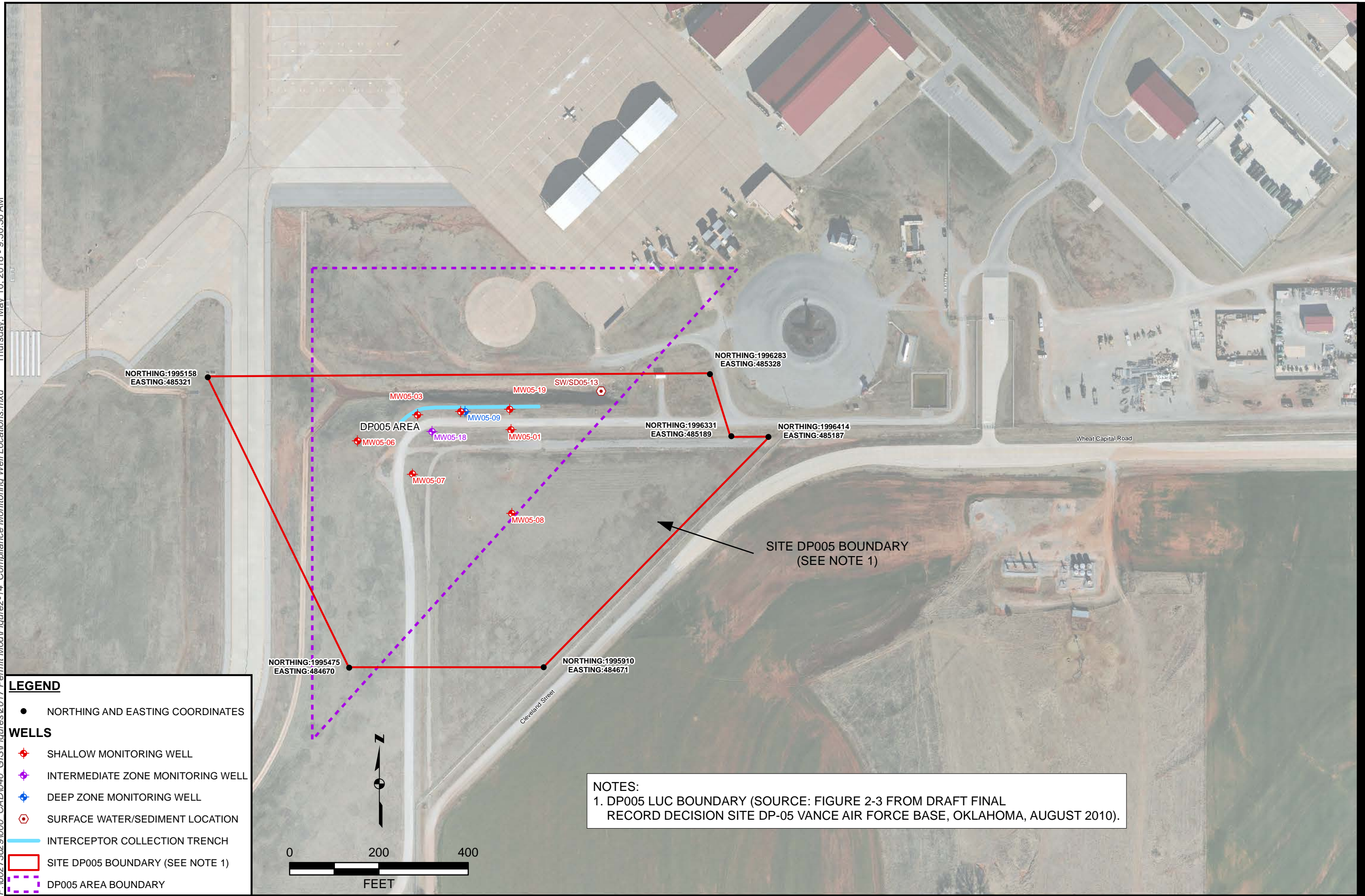
WELLS

-  SHALLOW MONITORING WELL
-  SITE FT002 BOUNDARY (SEE NOTE 1)
-  FT002 AREA BOUNDARY



NOTES:
1. FT002 BOUNDARY (SOURCE: HISTORIC DOCUMENTS)



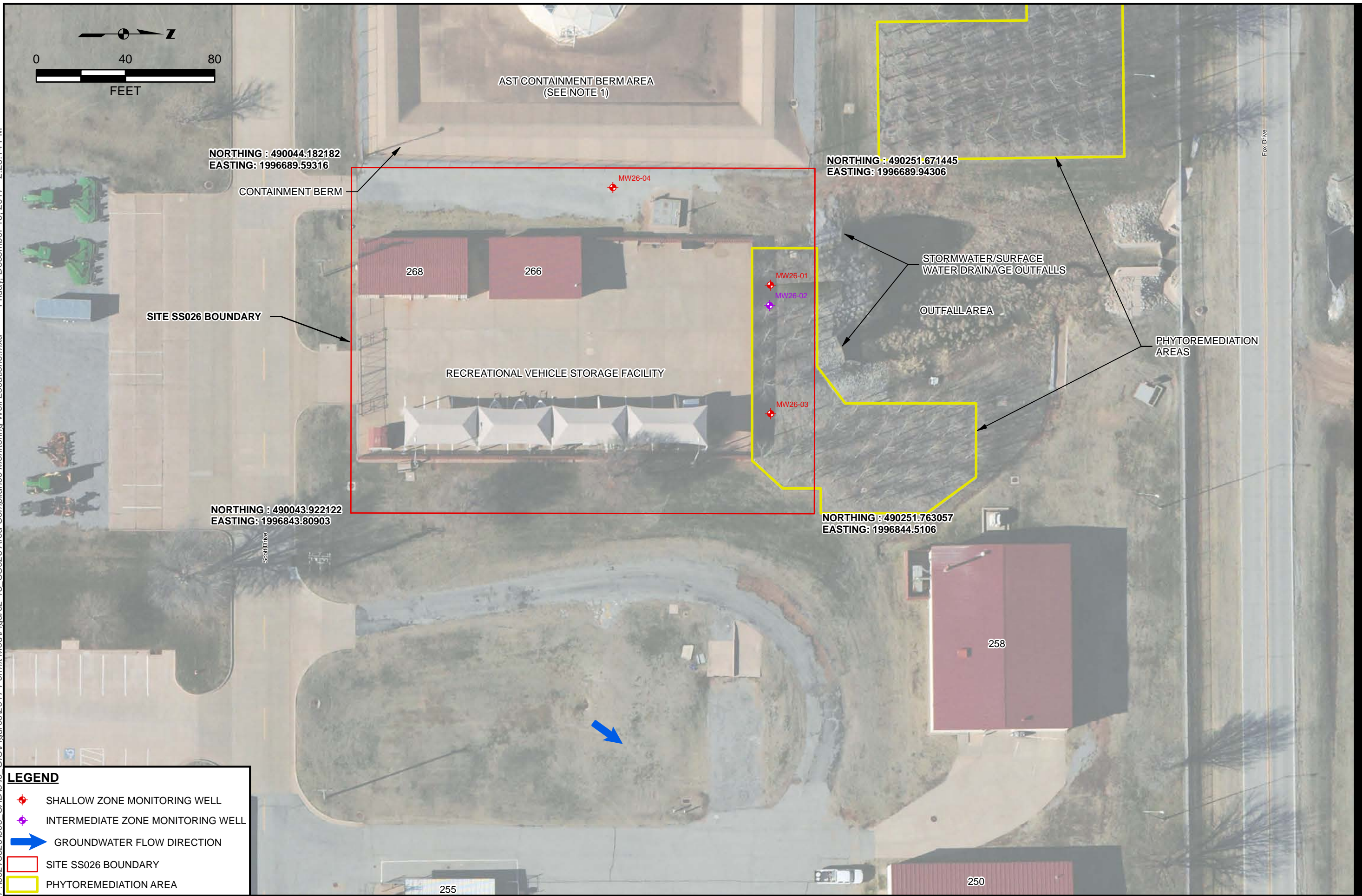


LEGEND

- NORTHING AND EASTING COORDINATES
- WELLS**
- ◆ SHALLOW MONITORING WELL
- ◆ INTERMEDIATE ZONE MONITORING WELL
- ◆ DEEP ZONE MONITORING WELL
- SURFACE WATER/SEDIMENT LOCATION
- INTERCEPTOR COLLECTION TRENCH
- SITE DP005 BOUNDARY (SEE NOTE 1)
- - - DP005 AREA BOUNDARY

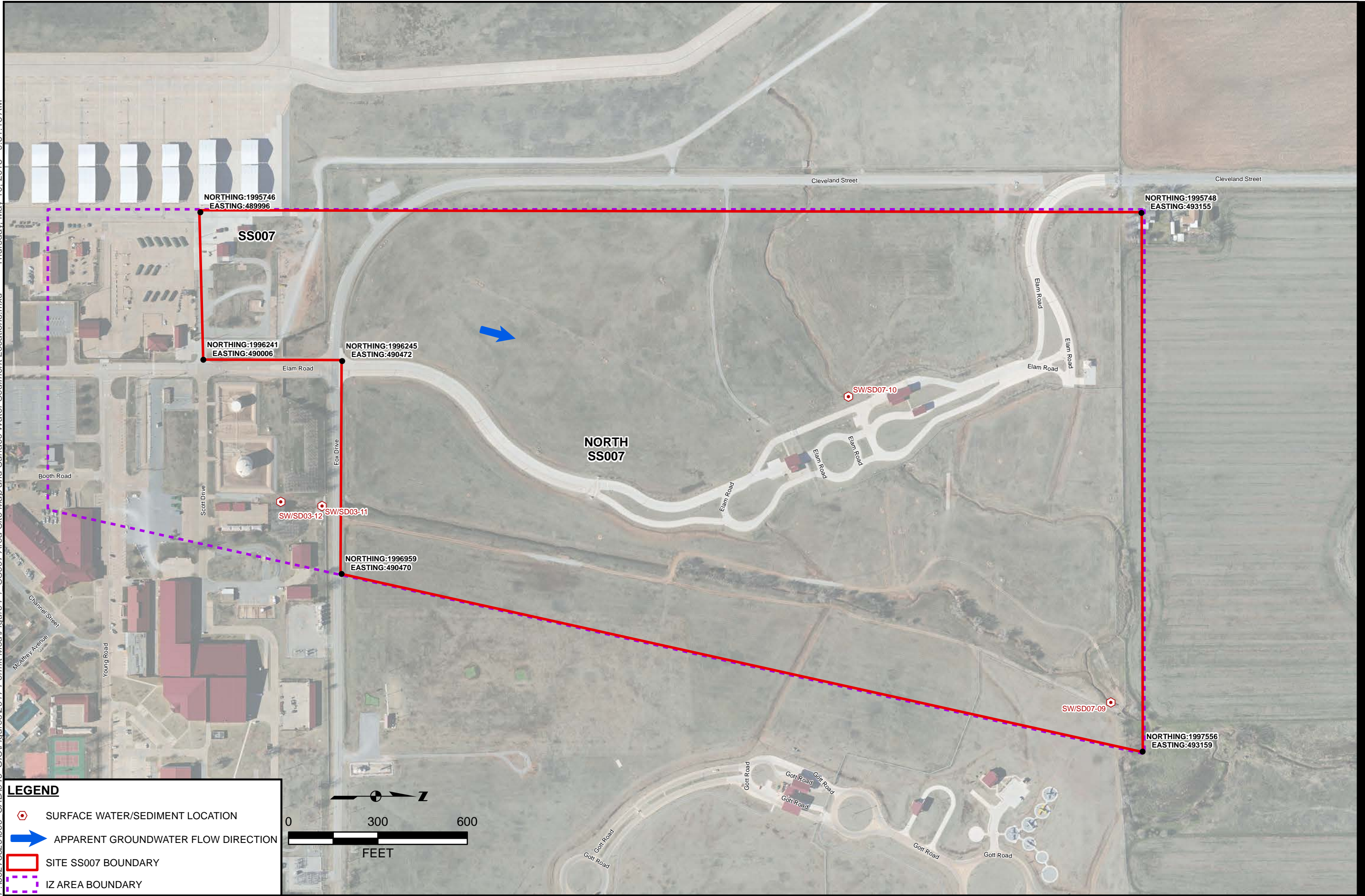
NOTES:
 1. DP005 LUC BOUNDARY (SOURCE: FIGURE 2-3 FROM DRAFT FINAL RECORD DECISION SITE DP-05 VANCE AIR FORCE BASE, OKLAHOMA, AUGUST 2010).

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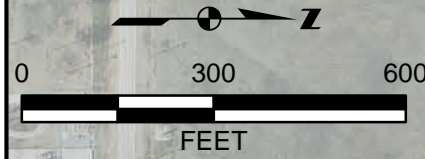
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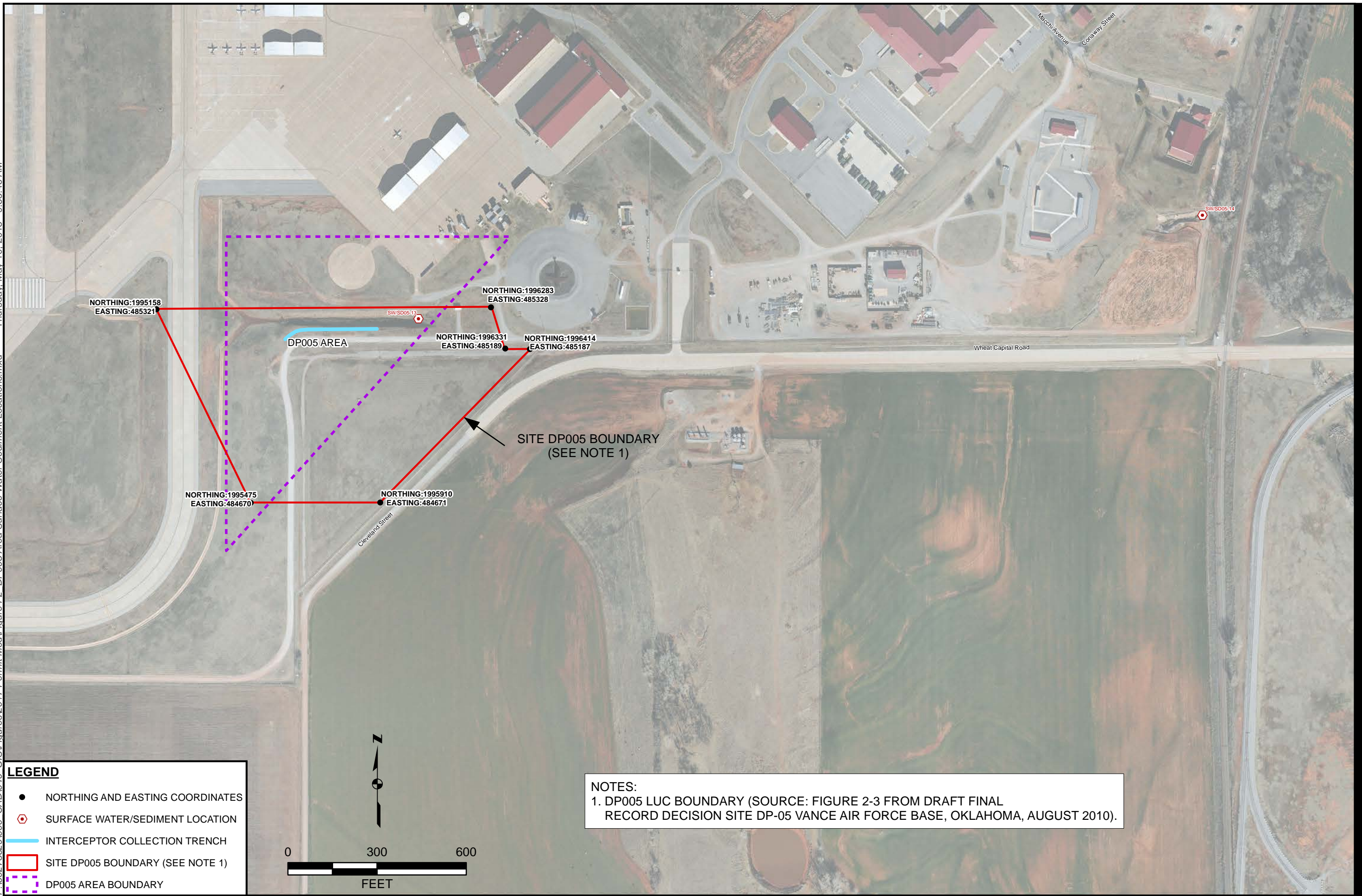
- ◆ SHALLOW ZONE MONITORING WELL
- ◆ INTERMEDIATE ZONE MONITORING WELL
- ➔ GROUNDWATER FLOW DIRECTION
- SITE SS026 BOUNDARY
- PHYTOREMEDIATION AREA



LEGEND

- SURFACE WATER/SEDIMENT LOCATION
- APPARENT GROUNDWATER FLOW DIRECTION
- SITE SS007 BOUNDARY
- IZ AREA BOUNDARY





LEGEND

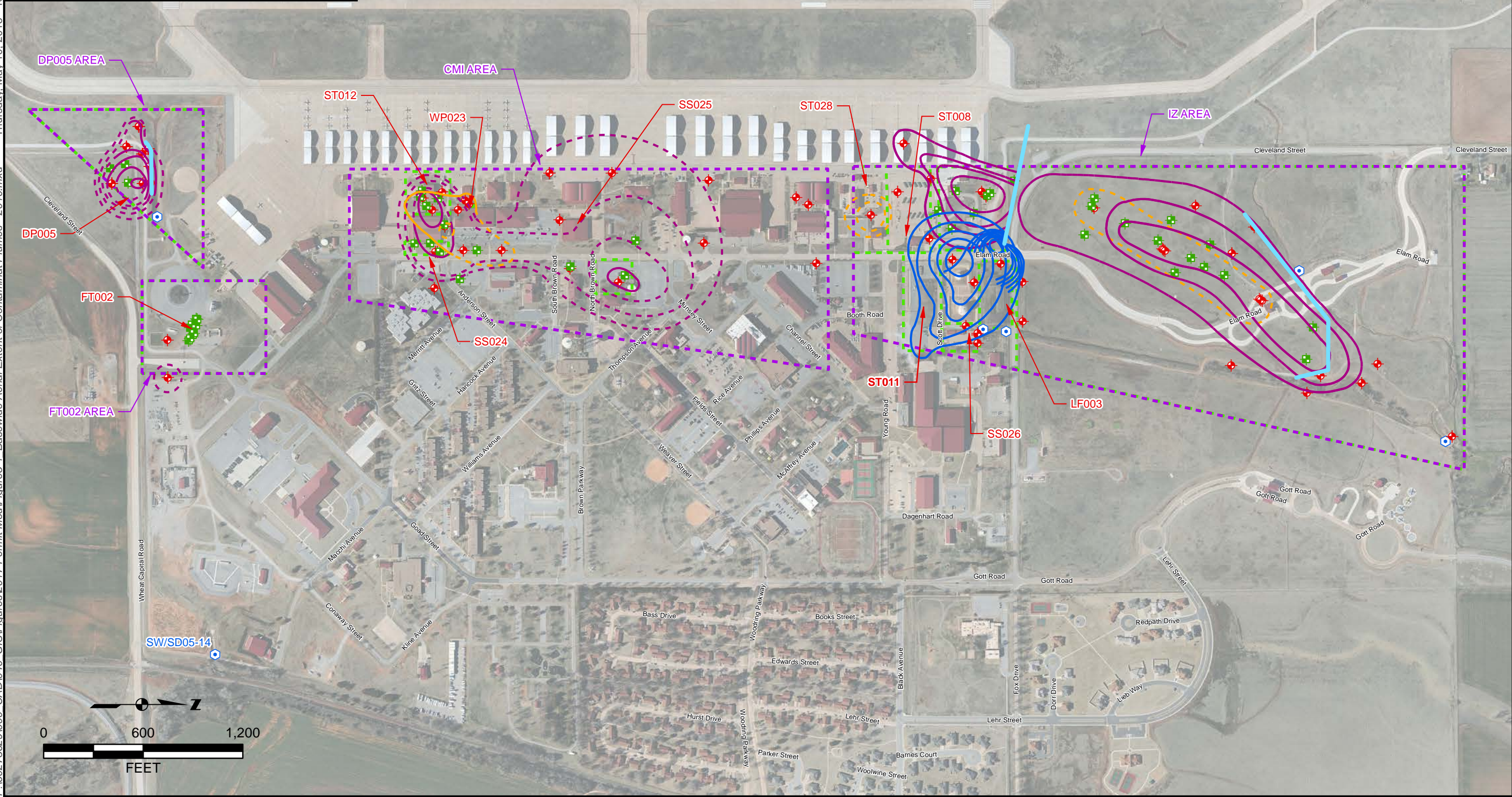
- NORTHING AND EASTING COORDINATES
- ⊕ SURFACE WATER/SEDIMENT LOCATION
- INTERCEPTOR COLLECTION TRENCH
- ▭ SITE DP005 BOUNDARY (SEE NOTE 1)
- - - DP005 AREA BOUNDARY

NOTES:
 1. DP005 LUC BOUNDARY (SOURCE: FIGURE 2-3 FROM DRAFT FINAL RECORD DECISION SITE DP-05 VANCE AIR FORCE BASE, OKLAHOMA, AUGUST 2010).

P:\60273629\000 CAD\040 GIS\Figures\2017 Permit Mod\Figure5-1 Basewide Aerial Extent of Contaminant Plumes - 2010.mxd Thursday, May 10, 2018 - 10:00:14 AM

LEGEND

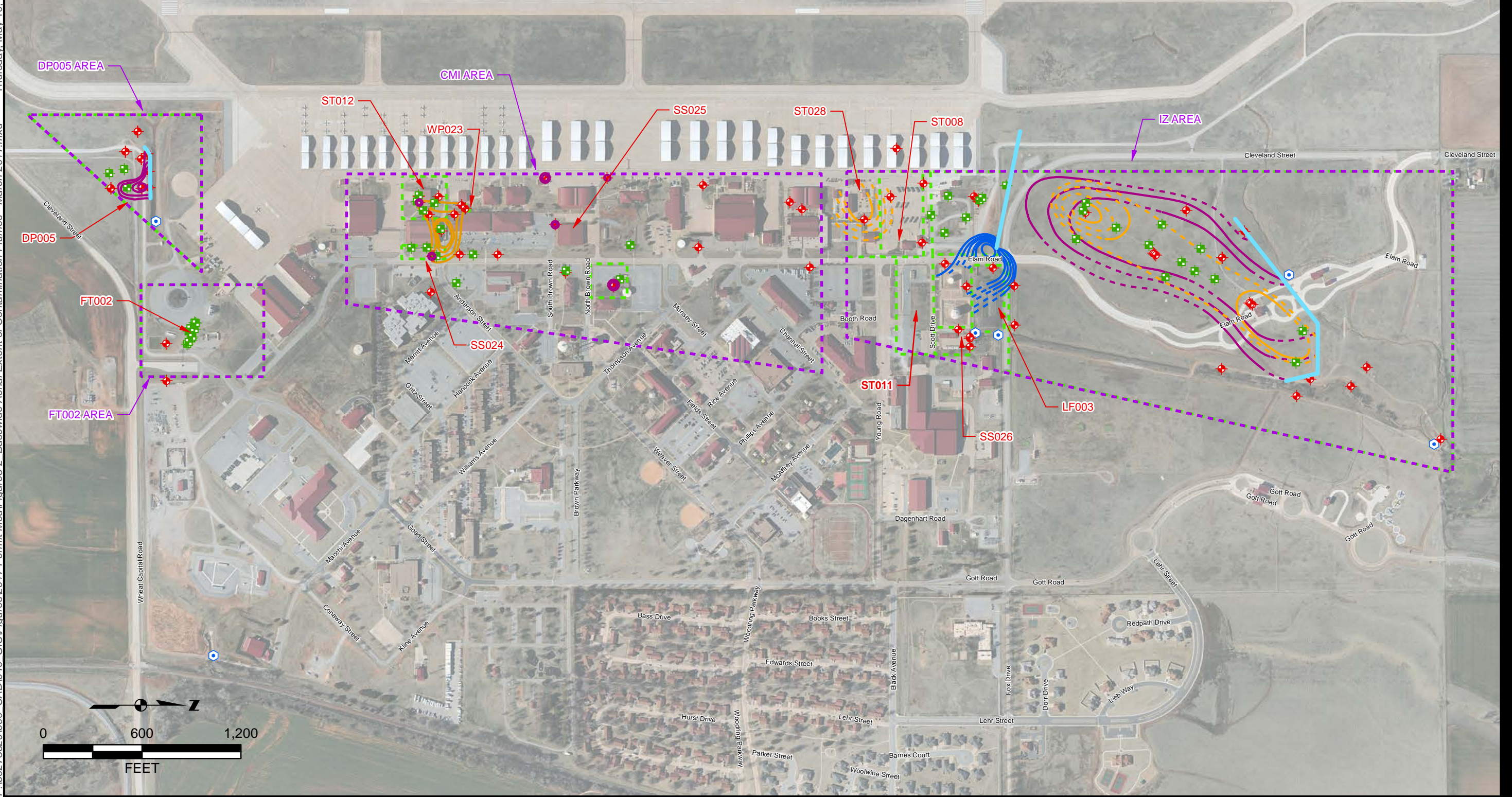
- + EXTRACTION WELL
- + MONITORING WELL
- SHALLOW ZONE BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERMEDIATE ZONE TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SHALLOW ZONE TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH

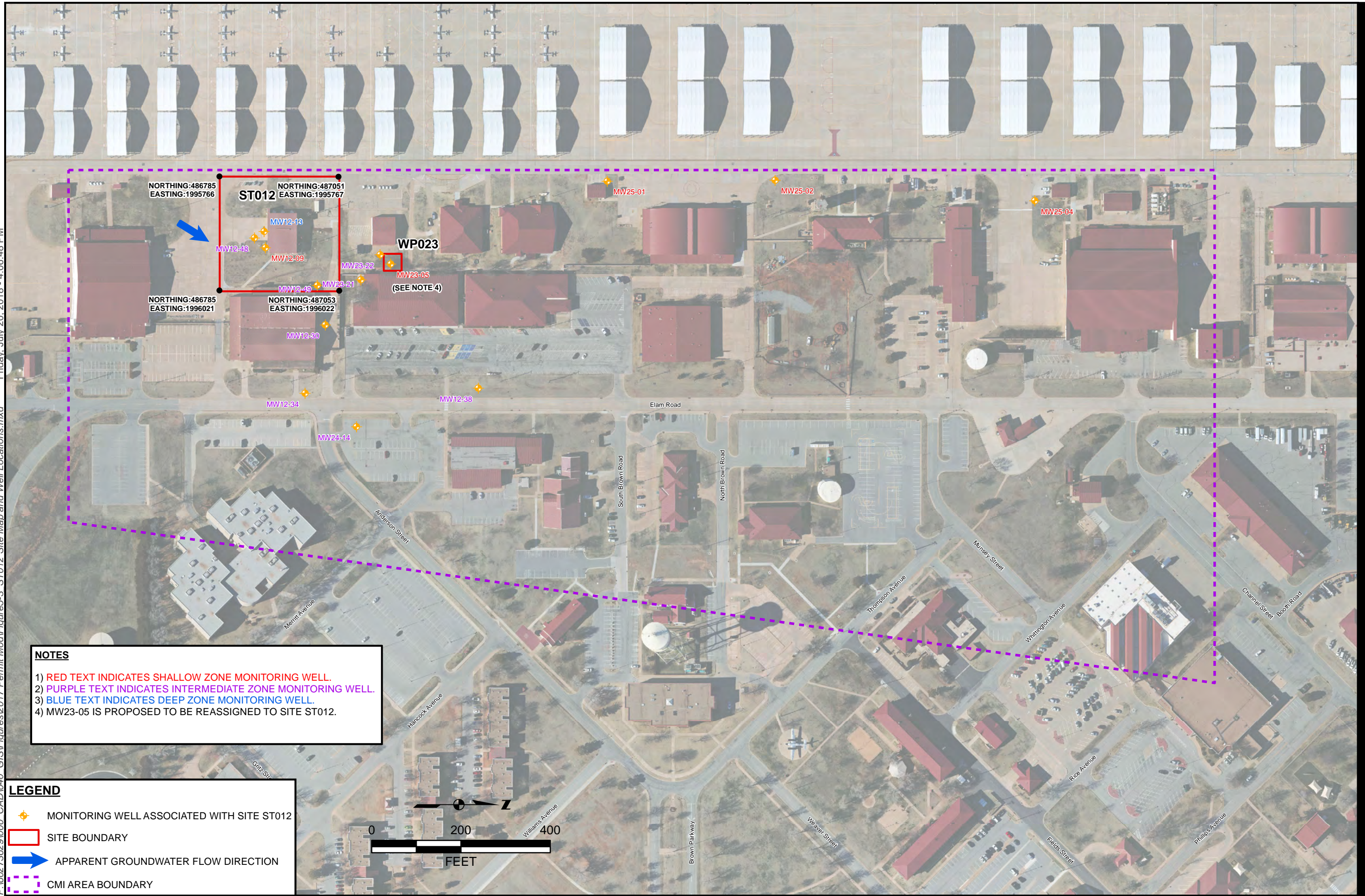


P:\60273629\000_CAD\040_GIS\Figures\2017_Permit_Mod\Figure5-2_BaseWide Aerial Extent of Contamination Plumes - March 2017.mxd Thursday, May 10, 2018 - 10:01:09 AM

LEGEND

- + EXTRACTION WELL
- + MONITORING WELL
- SHALLOW ZONE BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERMEDIATE ZONE TCE CONCENTRATION CONTOUR
- SHALLOW ZONE TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH





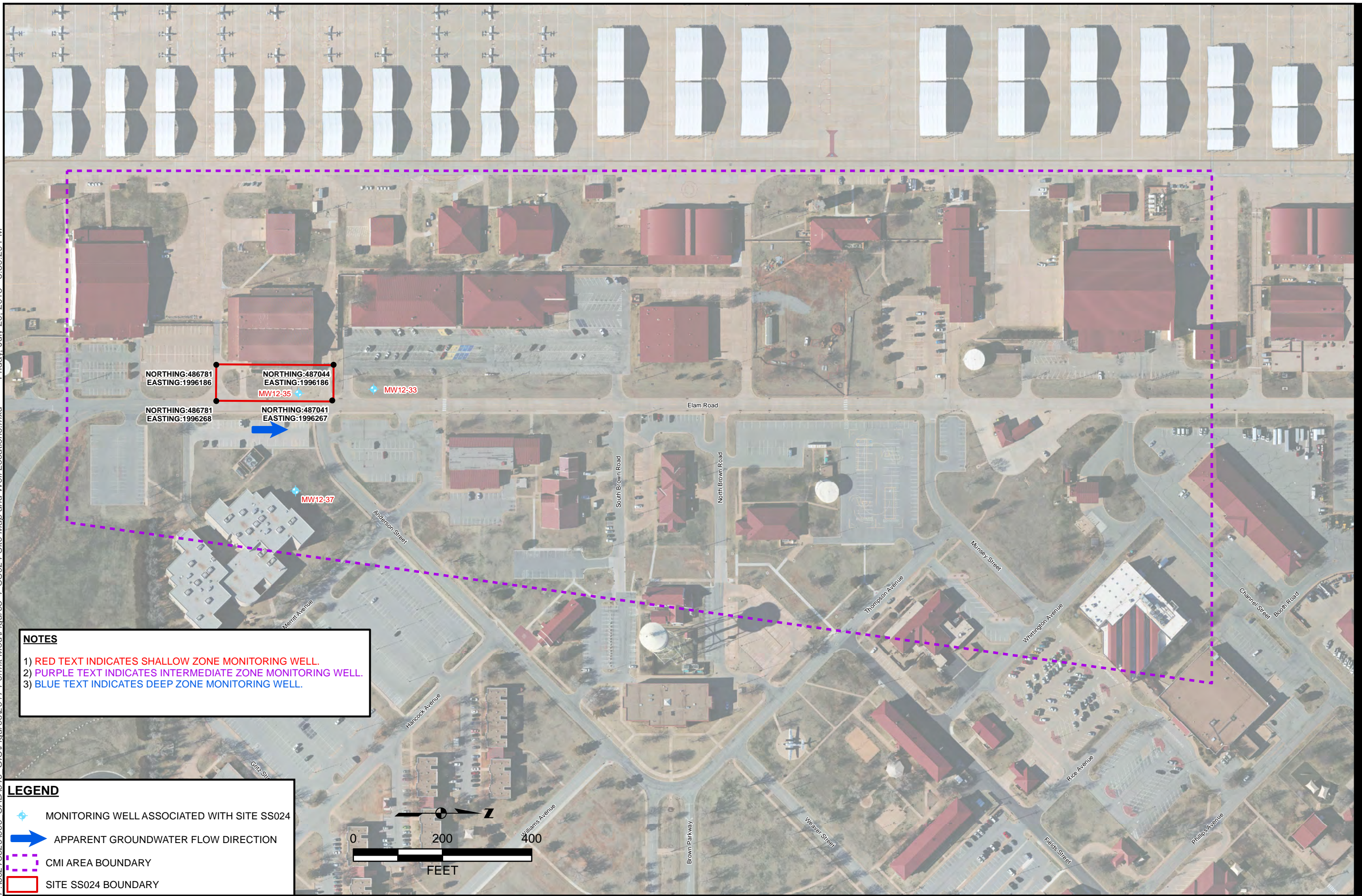
NOTES

- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.
- 4) MW23-05 IS PROPOSED TO BE REASSIGNED TO SITE ST012.

LEGEND

- MONITORING WELL ASSOCIATED WITH SITE ST012
- SITE BOUNDARY
- APPARENT GROUNDWATER FLOW DIRECTION
- CMI AREA BOUNDARY

ST012 AREA SITE MAP AND MONITORING WELL LOCATIONS
TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

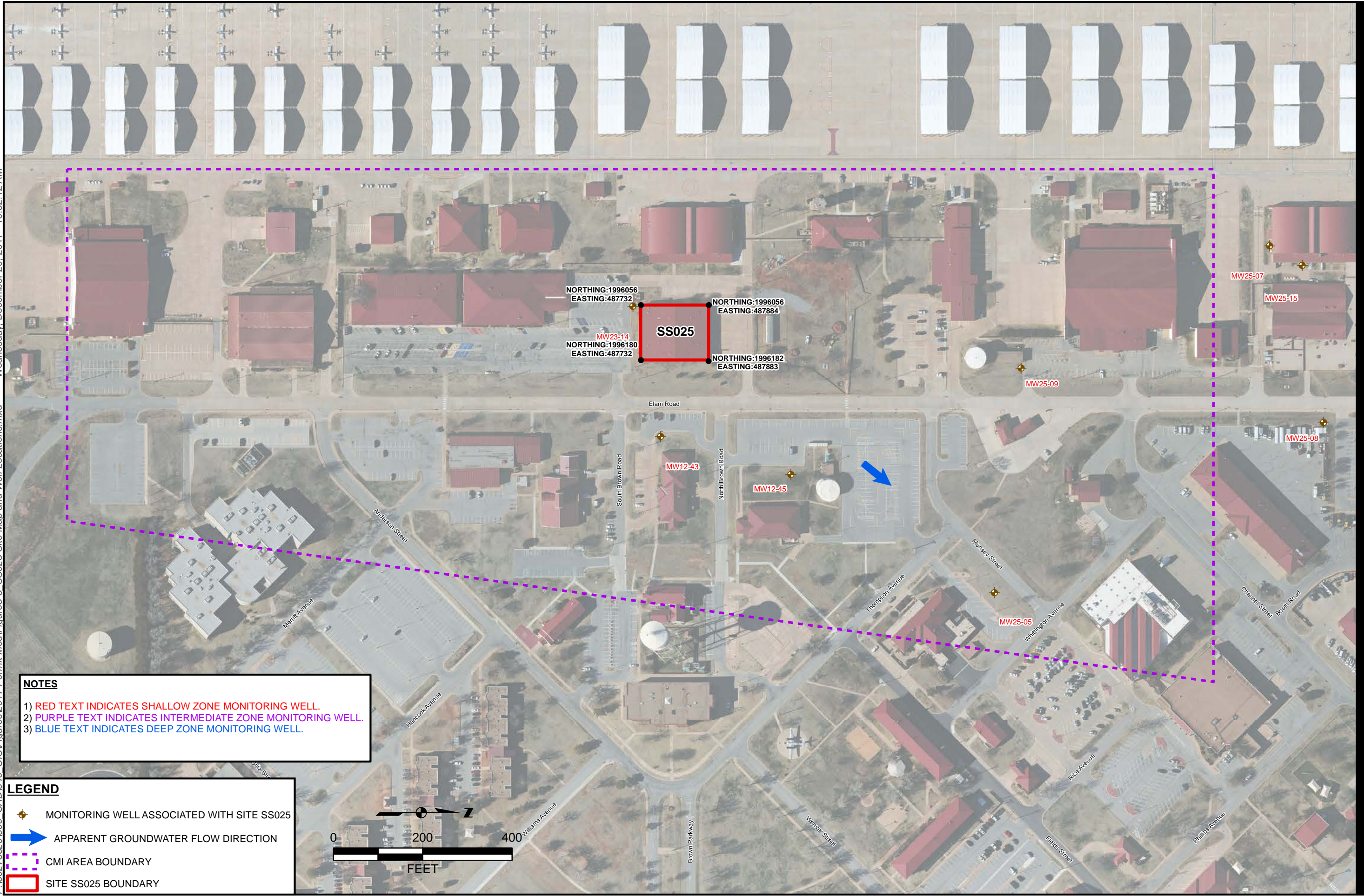


NOTES

- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.

LEGEND

- MONITORING WELL ASSOCIATED WITH SITE SS024
- APPARENT GROUNDWATER FLOW DIRECTION
- CMI AREA BOUNDARY
- SITE SS024 BOUNDARY



NOTES

- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.





LEGEND

- MONITORING WELL ASSOCIATED WITH SITE SS025
- APPARENT GROUNDWATER FLOW DIRECTION
- CMI AREA BOUNDARY
- SITE SS025 BOUNDARY



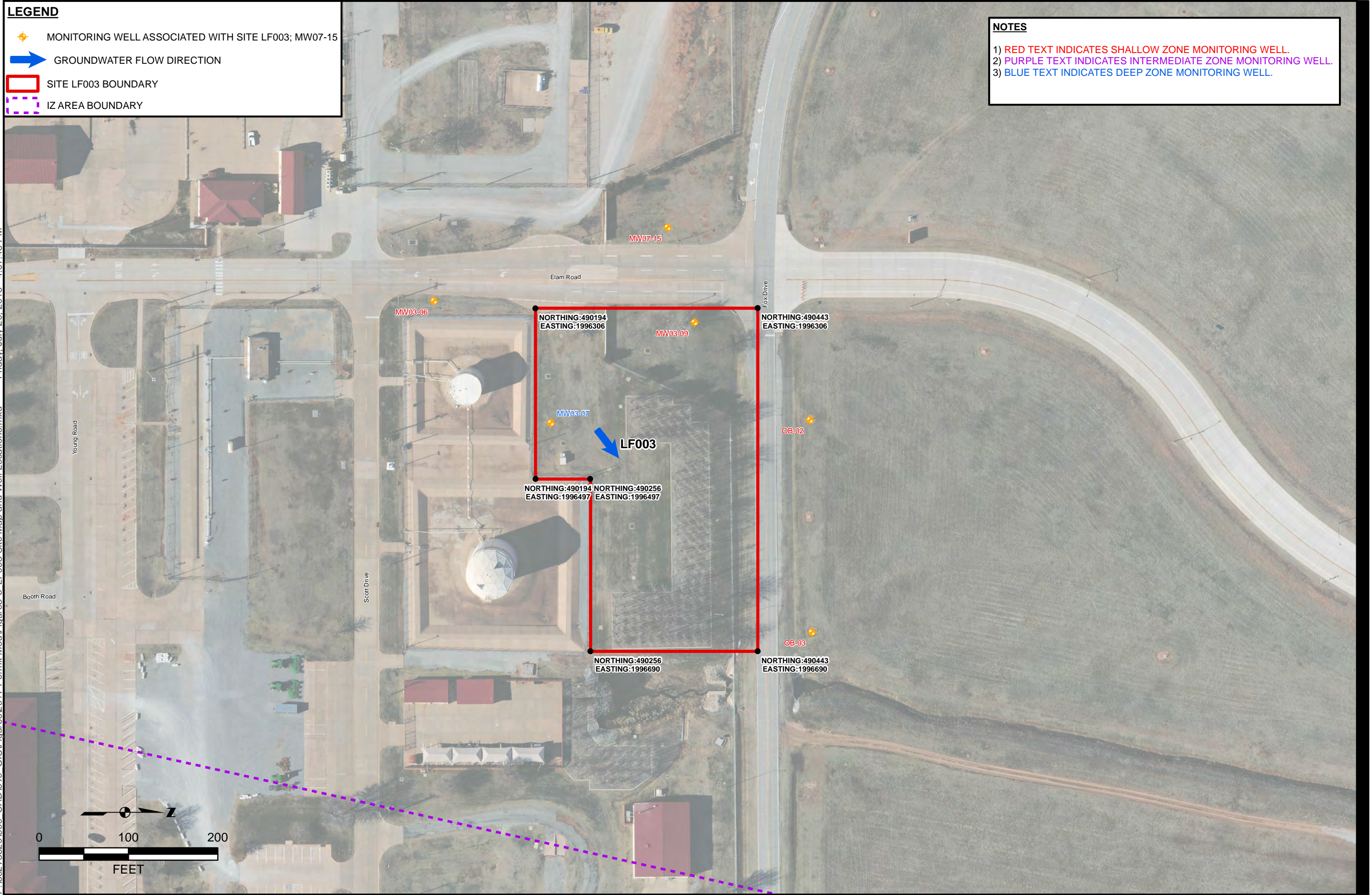
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LEGEND

-  MONITORING WELL ASSOCIATED WITH SITE LF003; MW07-15
-  GROUNDWATER FLOW DIRECTION
-  SITE LF003 BOUNDARY
-  IZ AREA BOUNDARY

NOTES





- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.



VANCE AFB LF003 AREA SITE MAP AND MONITORING WELL LOCATIONS TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

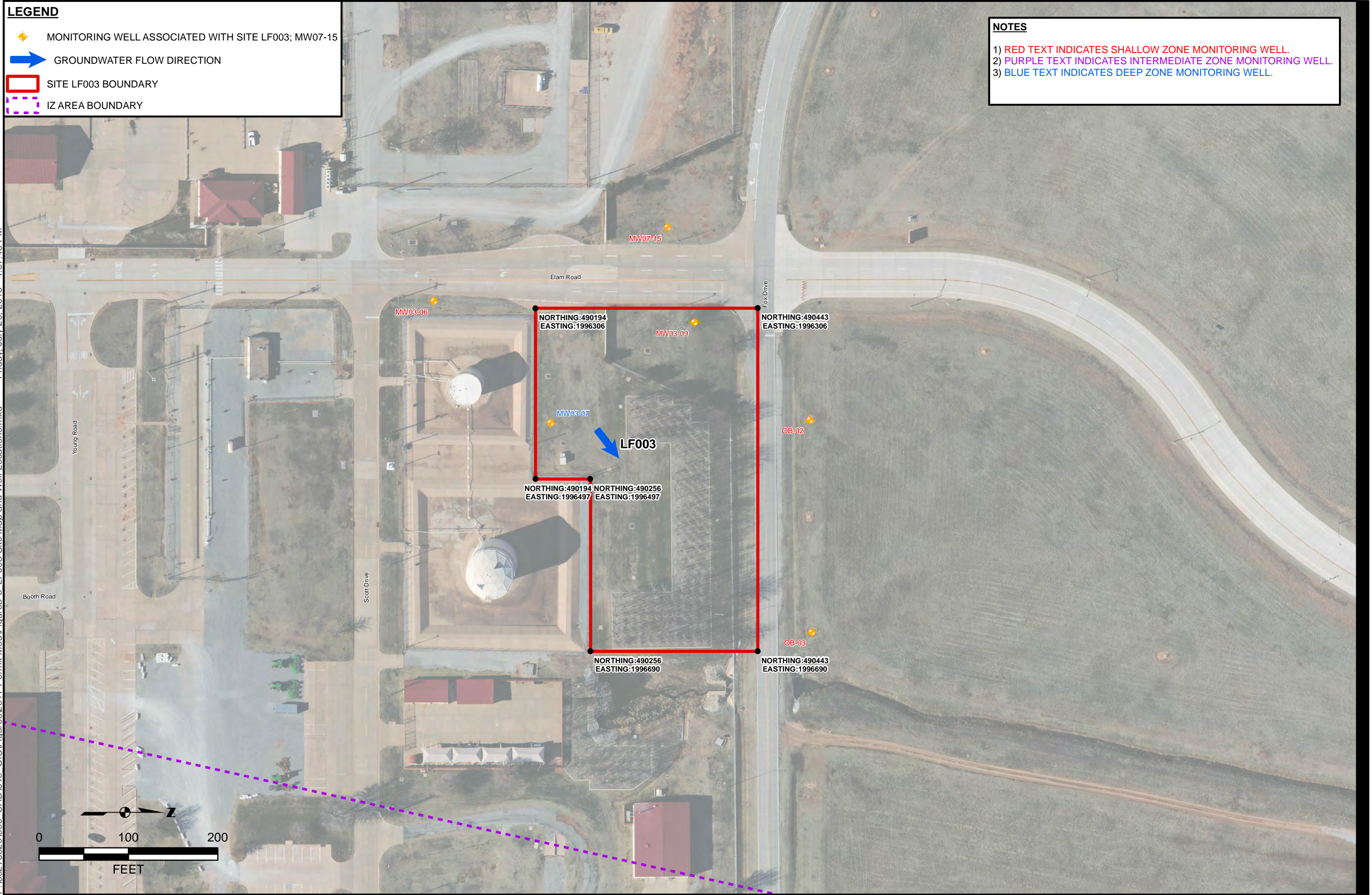
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LEGEND

-  MONITORING WELL ASSOCIATED WITH SITE LF003; MW07-15
-  GROUNDWATER FLOW DIRECTION
-  SITE LF003 BOUNDARY
-  IZ AREA BOUNDARY

NOTES

- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.

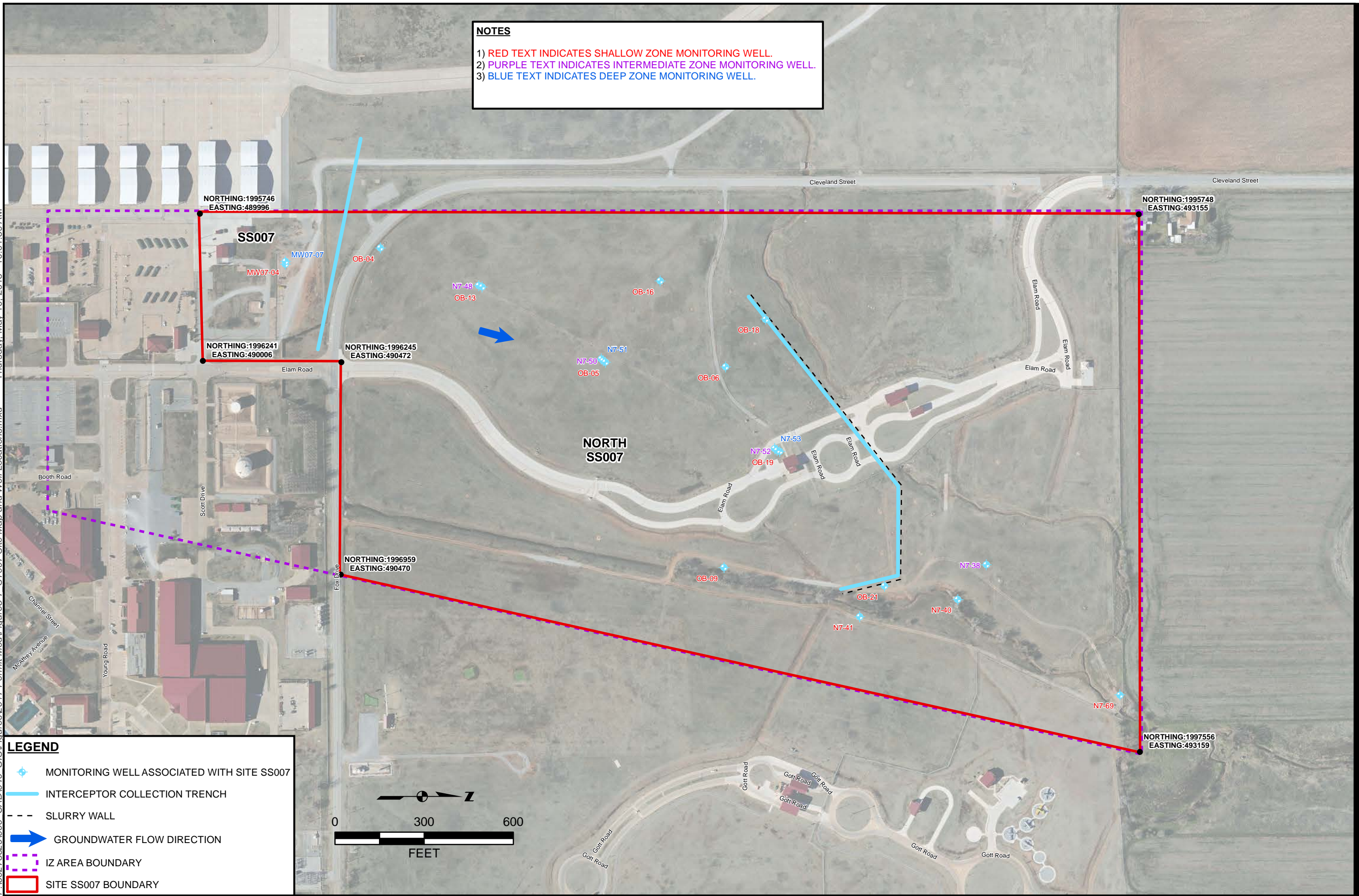


VANCE AFB LF003 AREA SITE MAP AND MONITORING WELL LOCATIONS TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

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NOTES

- 1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
- 2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
- 3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.



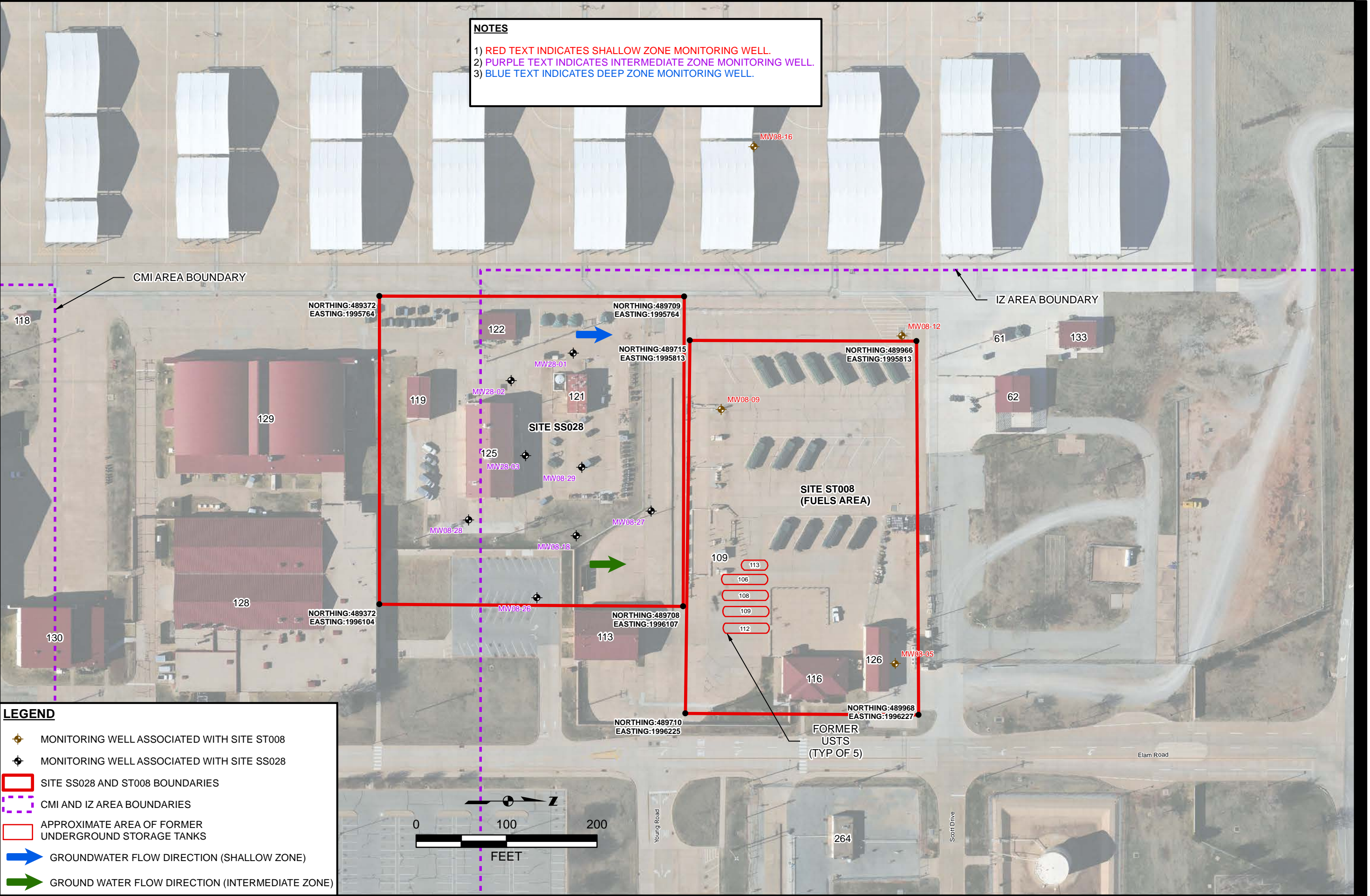
LEGEND

- ◆ MONITORING WELL ASSOCIATED WITH SITE SS007
- INTERCEPTOR COLLECTION TRENCH
- SLURRY WALL
- ➔ GROUNDWATER FLOW DIRECTION
- - - IZ AREA BOUNDARY
- SITE SS007 BOUNDARY



SS007 AREA SITE MAP AND MONITORING WELL LOCATIONS
 TECHNICAL SUPPORT DOCUMENT FOR PERMIT MODIFICATION

P:\60273629\1000 CAD\1040 GIS\Figures\2017 Permit Mod\Figures5-8 STD008 Site Map and Well Locations.mxd Wednesday, December 20, 2017 - 10:35:34 AM



NOTES
1) RED TEXT INDICATES SHALLOW ZONE MONITORING WELL.
2) PURPLE TEXT INDICATES INTERMEDIATE ZONE MONITORING WELL.
3) BLUE TEXT INDICATES DEEP ZONE MONITORING WELL.

LEGEND

- MONITORING WELL ASSOCIATED WITH SITE ST008
- MONITORING WELL ASSOCIATED WITH SITE SS028
- SITE SS028 AND ST008 BOUNDARIES
- CMI AND IZ AREA BOUNDARIES
- APPROXIMATE AREA OF FORMER UNDERGROUND STORAGE TANKS
- GROUNDWATER FLOW DIRECTION (SHALLOW ZONE)
- GROUND WATER FLOW DIRECTION (INTERMEDIATE ZONE)

APPENDIX A

**Current Permit Required Analytes
(ODEQ 2010)**

VOLATILE ORGANIC ANALYSES BY GCMS – LIQUID AND SOLID BY METHOD SW 846 8260B		
Parameter	Reporting Limit	
	Liquid (µg/L)	Solid (µg/kg)
Total Volatile Organics		
Acetone	20	50
Benzene	1	5
Bromodichloromethane	1	5
Bromoform	1	5
Bromomethane (Methyl Bromide)	1	5
Carbon Tetrachloride	1	5
Chlorobenzene	1	5
Chloroethane	1	5
2-Chloroethylvinyl Ether	5	5
Chloroform	1	5
Chloromethane (Methyl Chloride)	1	5
Dibromochloromethane	1	5
1,2-Dichlorobenzene	1	5
1,3-Dichlorobenzene	1	5
1,4-Dichlorobenzene	1	5
1,1-Dichloroethane	1	5
1,2-Dichloroethane	1	5
1,1-Dichloroethene	1	5
cis-1,2-Dichloropropene	1	5
trans-1,2-Dichloroethene	1	5
1,2-Dichloropropane	1	5
cis-1,3-Dichloropropene	1	5
trans-1,3-Dichloropropene	1	5
Ethyl Benzene	1	5
Methylene Chloride	10	10
Methyl Ethyl Ketone	10	10
4-Methyl-2-pentenone	10	10
1,1,2,2-Tetrachloroethane	1	5
Tetrachloroethene	1	5
Toluene	1	5
1,1,1-Trichloroethane	1	5
1,1,2-Trichloroethane	1	5
Trichloroethene	1	5
Trichlorofluoromethane	1	5
Vinyl Chloride	2	5
o-Xylenes	1	5
m+p-xylenes	1	5

SEMIVOLATILE ANALYSES BY GCMS – LIQUID AND SOLID BY METHOD SW-846 8270C		
Parameter	Reporting Limit	
Semivolatile Organics	Liquid (µg/L)	Solid (µg/kg)
Acenaphthene	10	330
Acenaphthylene	10	330
Anthracene	10	330
Benz(a)anthracene	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(g,h,i)perylene	10	330
Benzo(a)pyrene	10	330
Benzyl alcohol	20	330
Bis(2-chloroethyl) ether	10	330
Bis(2-chloroethoxy)methane	10	330
Bis(2-chloroisopropyl) ether	10	330
Bis(2-ethylhexyl) phthalate	10	670
4-Bromophenyl Phenyl Ether	10	670
Butyl benzyl phthalate	10	330
Carbazole	10	330
4-Chloraniline	20	330
4-Chloro-3-methylphenol	20	330
2-Chloronaphthalene	10	330
2-Chlorophenol	10	330
4-Chlorophenyl Phenyl Ether	10	330
Chrysene	10	330
Dibenz(a,h)anthracene	10	330
Dibenzofuran	10	330
Di-n-butyl Phthalate	10	670
1,2-Dichlorobenzene	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
3,3'-Dichlorobenzidine	20	330
2,4-Dichlorophenol	10	1700
Diethylphthalate	10	1700
2,4-Dimethyl Phenol	10	330
Dimethylphthalate	10	330
4,6-Dinitro-2-methyl phenol	50	330
2,4-Dinitrophenol	50	330
2,4-Dinitrotoluene	10	330
2,6-Dinitrotoluene	10	330
Di-n-octyl phthalate	10	330

SEMIVOLATILE ANALYSES BY GCMS – LIQUID AND SOLID BY METHOD SW-846 8270C (Cont.)		
Parameter	Reporting Limit	
Semivolatile Organics	Liquid (µg/L)	Solid (µg/kg)
Fluoranthene	10	330
Fluorene	10	330
Hexachlorobenzene	10	330
Hexachlorobutadiene	10	330
Hexachlorocyclopentadiene	10	330
Hexachloroethane	10	330
Indeno(1,2,3-cd)pyrene	10	330
Isophorone	10	330
2-Methylnaphthalene	10	330
2-Methylphenol	50	1700
3-Methylphenol	50	1700
4-Methylphenol	50	1700
Naphthalene	10	330
2-Nitroaniline	10	330
3-Nitroaniline	50	1700
4-Nitroaniline	10	330
Nitrobenzene	10	330
2-Nitrophenol	50	1700
4-Nitrophenol	10	330
N-Nitrosodiphenylamine	10	330
N-Nitroso-di-n-propylamine	10	330
Pentachlorophenol	10	330
Phenanthrene	10	330
Phenol	10	330
Pyrene	10	330
Pyridine	10	330
1,2,4-Trichlorobenzene	10	330
2,4,5-Trichlorophenol	10	330
2,4,6-Trichlorophenol	10	330

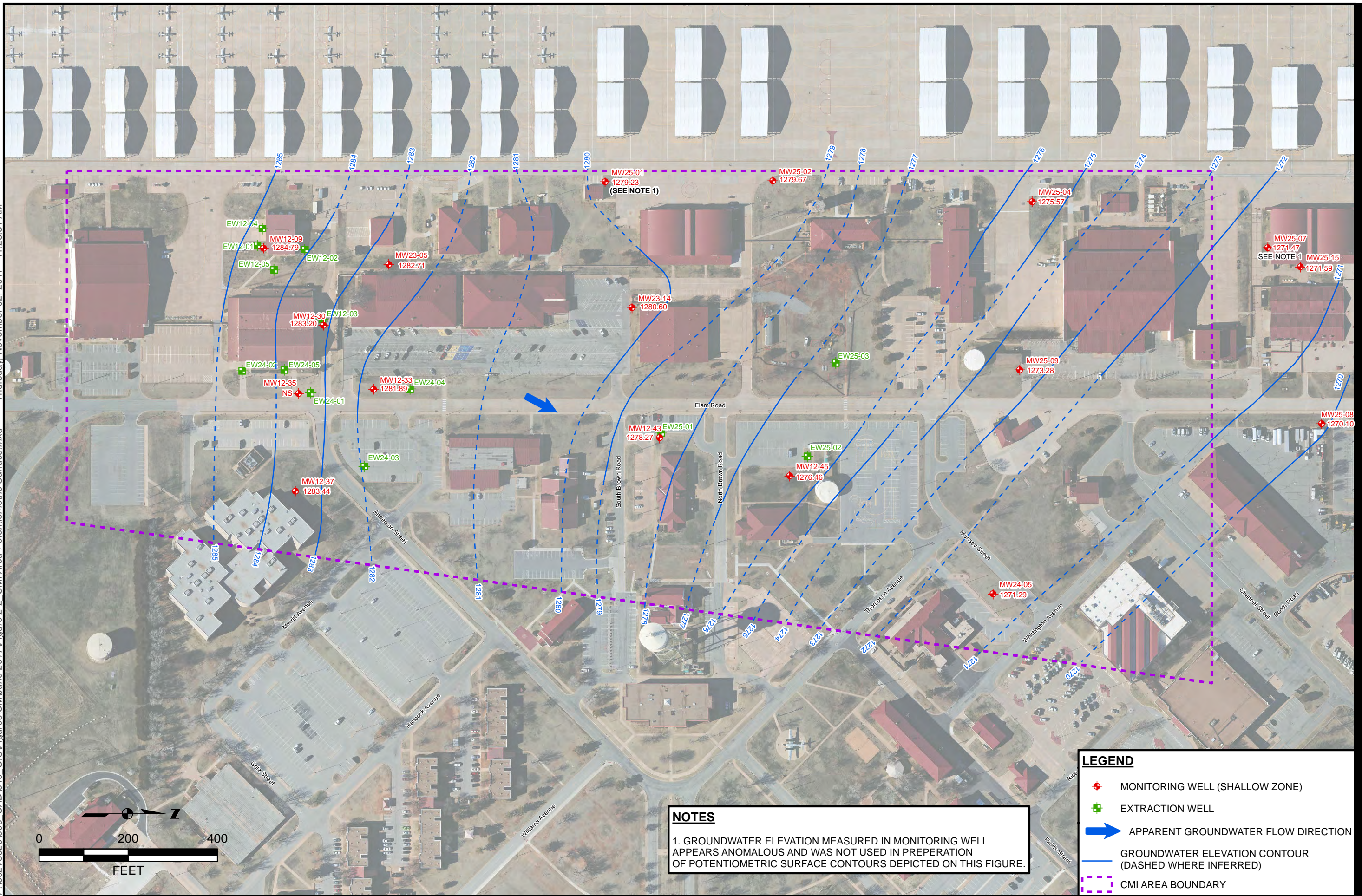
TOTAL PETROLEUM HYDROCARBONS BY GC – LIQUID AND SOLID BY METHOD SW-846 801SM		
Parameter	Reporting Limit	
Total petroleum hydrocarbons	Liquid (mg/L)	Solid (mg/kg)
Gasoline Range Organics	0.1	1
Diesel Range Organics	1.0	10

METALLIC (TOTAL) PARAMETERS BY GFAA FURNACE OR ICAP – LIQUID AND SOLID			
Parameter	Method	Reporting Limit	
Total Metals	SW-846 7000A, 60108 (ICP) or 6020	Liquid (µg/L)	Solid (mg/kg)
Arsenic	SW-846 60108, 6020 or 7060A,	5	1
Barium	SW-846 60108	100	10
Cadmium	SW-846 60108	5	1
Chromium	SW-846 60108	10	1
Lead	SW-846 7421	5	1
Mercury	SW-846 7470A	0.20	0.5
Selenium	SW-846 7740	5	1
Silver	SW-846 60108	10	1

PESTICIDES – LIQUID BY METHOD SW-846 8081A	
Parameter	Reporting Limit
Pesticides	Liquid (µg/L)
Aldrin	0.050
alpha-BHC	0.050
beta-BHC	0.050
delta-BHC	0.050
gamma-BHC (Lindane)	0.050
alpha-Chlordane	0.050
gamma-Chlordane	0.050
Dieldrin	0.10
4,4'-DDE	0.10
4,4'-DDT	0.10
Endrin	0.10
Endosulfan sulfate	0.10
Endrin aldehyde	0.10
Endrin ketone	0.10
Endosulfan-1	0.10
Endosulfan-11	0.10
Heptachlor	0.050
Heptachlor epoxide	0.050
Methoxychlor	0.50
Toxaphene	0.50

APPENDIX B

Basewide Potentiometric and Contaminant Plume Maps



NOTES

1. GROUNDWATER ELEVATION MEASURED IN MONITORING WELL APPEARS ANOMALOUS AND WAS NOT USED IN PREPARATION OF POTENTIOMETRIC SURFACE CONTOURS DEPICTED ON THIS FIGURE.

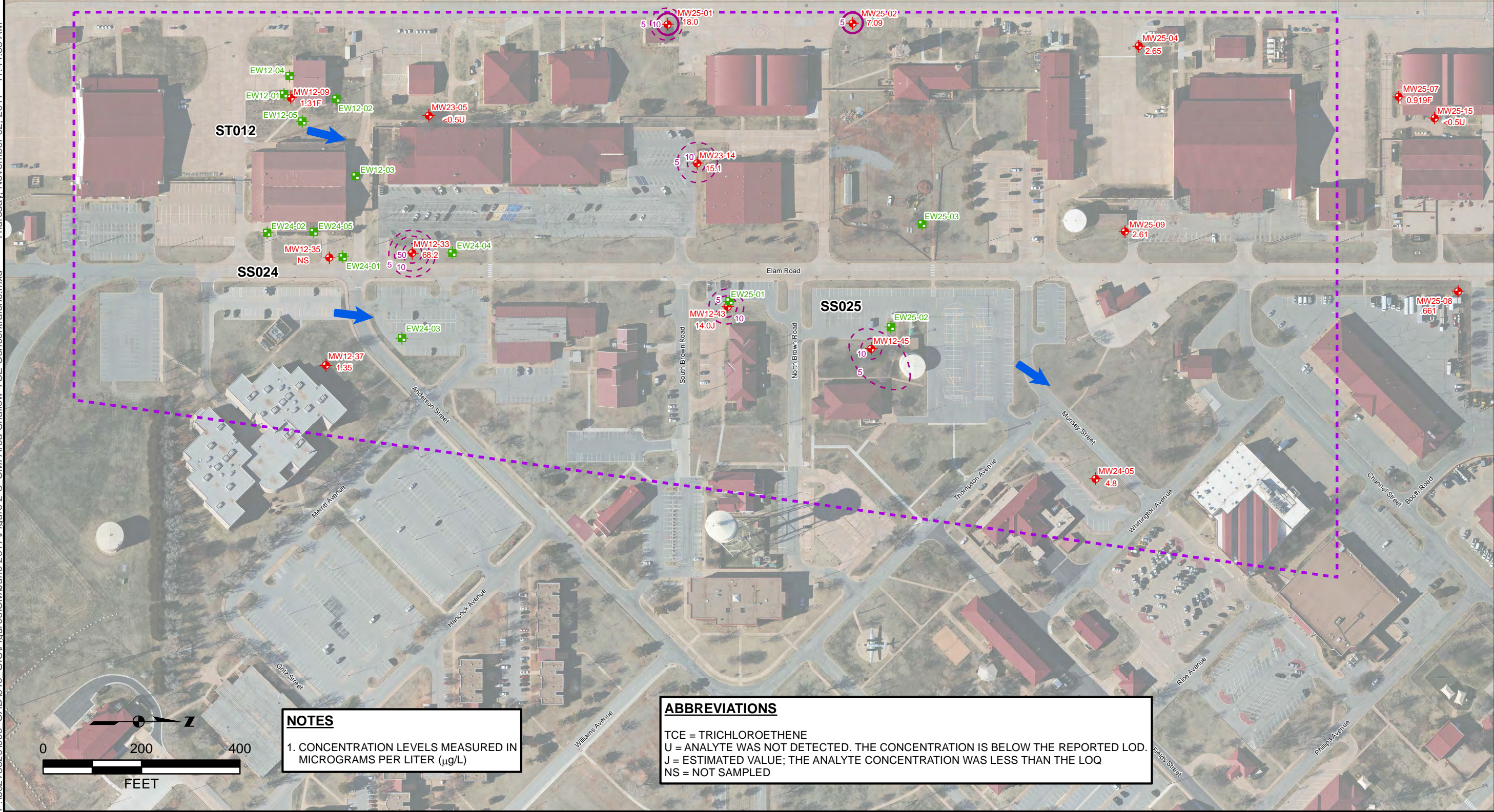
LEGEND

- ◆ MONITORING WELL (SHALLOW ZONE)
- EXTRACTION WELL
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- ⋯ CMI AREA BOUNDARY

P:\60273629\1000_CAD\1040_GIS\Figures\CM\June 2017\Figure 2-3_CMI Area Shallow TCE Concentrations.mxd Thursday, November 02, 2017 - 11:44:58 AM

LEGEND

- + EXTRACTION WELL
- + MONITORING WELL (SHALLOW ZONE)
- APPARENT GROUNDWATER FLOW DIRECTION
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- CMI AREA BOUNDARY



NOTES






1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER ($\mu\text{g/L}$)

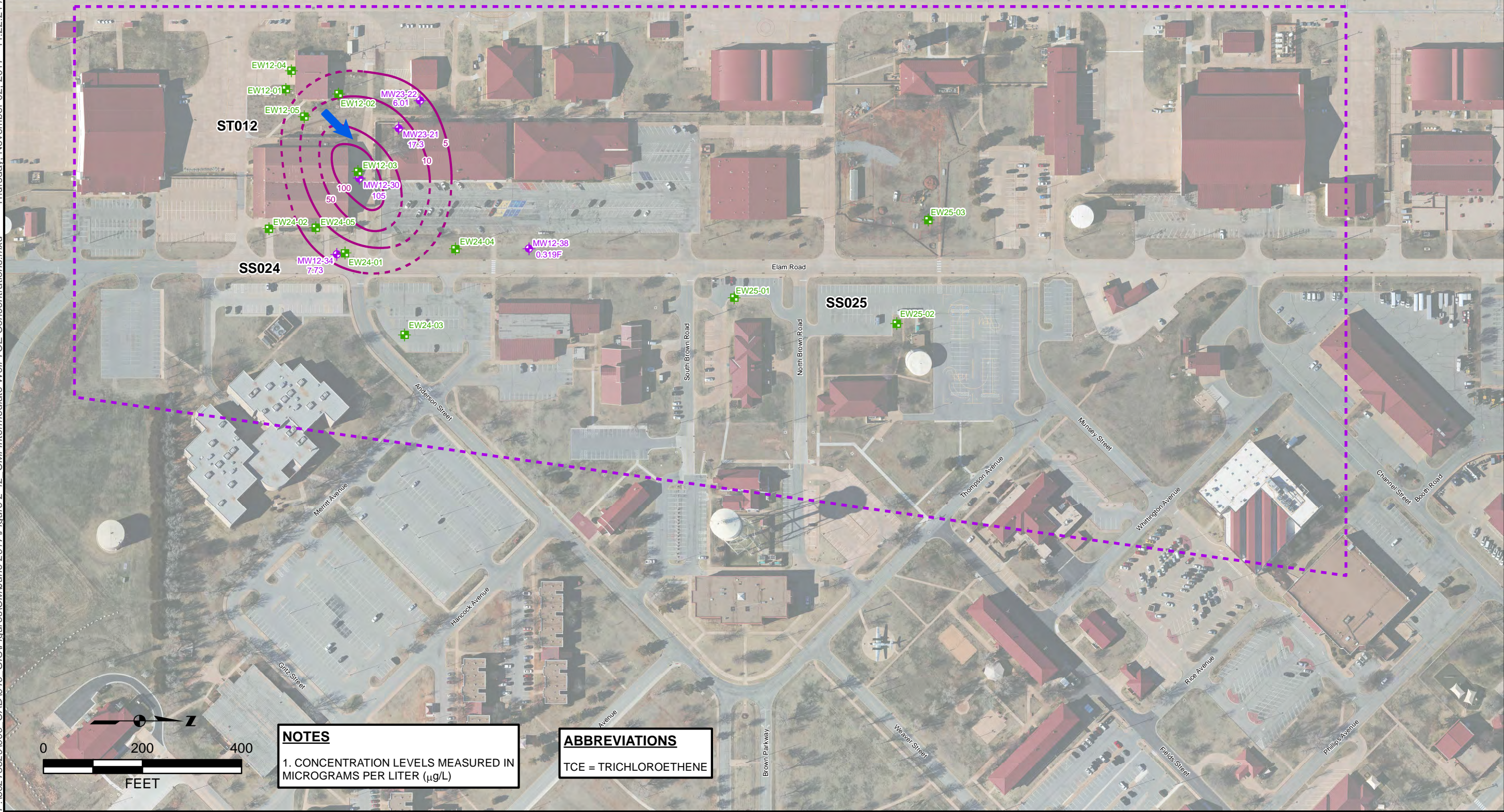
ABBREVIATIONS

TCE = TRICHLOROETHENE
 U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORTED LOD.
 J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS LESS THAN THE LOQ
 NS = NOT SAMPLED

P:\60273629\1000 CAD\1040 GIS\Figures\CM\June 2017\Figure 2-12 CMI Intermediate Well TCE Concentrations.mxd Thursday, November 02, 2017 - 11:22:21 AM

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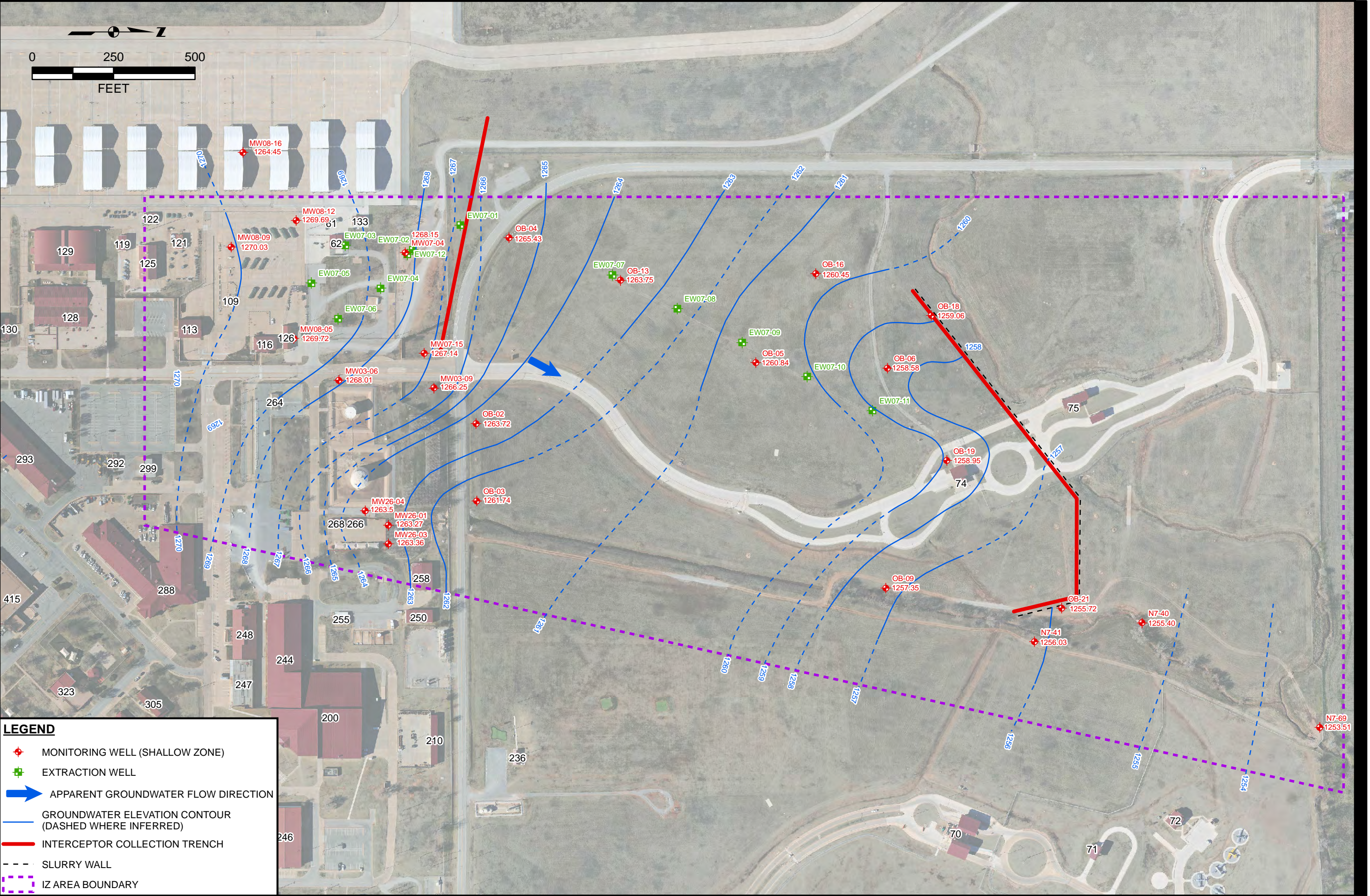
-  EXTRACTION WELL
-  MONITORING WELL (INTERMEDIATE ZONE)
-  TCE CONCENTRATION CONTOUR (DASHED WHEN INFERRED)
-  APPARENT GROUNDWATER FLOW DIRECTION
-  CMI AREA BOUNDARY



NOTES
 1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS
 TCE = TRICHLOROETHENE

P:\160273629\1000_CAD\1040_GIS\Figures\CM\June 2017\Figure 3-2_Iz and SS026 Potentiometric Surface.mxd Thursday, November 02, 2017 - 10:07:04 AM

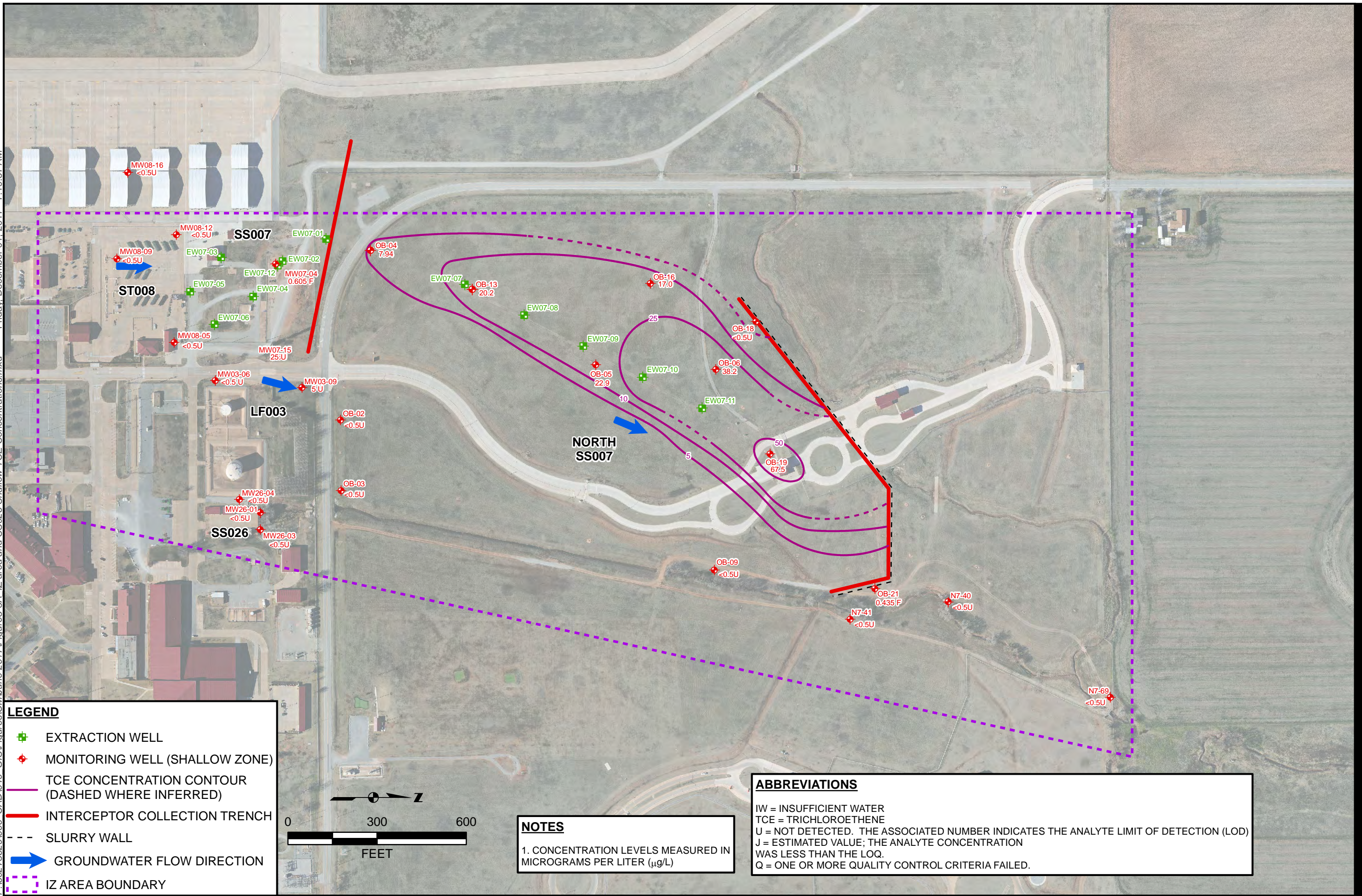


LEGEND

- ◆ MONITORING WELL (SHALLOW ZONE)
- + EXTRACTION WELL
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- - - SLURRY WALL
- - - IZ AREA BOUNDARY

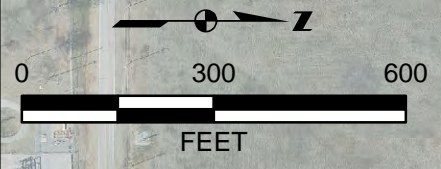


P:\160273629\1000_CAD\1040_GIS\Figures\CM\June 2017\Figure3-3A_Iz area and SS026 Shallow TCE Concentrations.mxd Friday, December 01, 2017 - 7:19:57 AM



LEGEND

- EXTRACTION WELL
- ◆ MONITORING WELL (SHALLOW ZONE)
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- - - SLURRY WALL
- ➔ GROUNDWATER FLOW DIRECTION
- - - IZ AREA BOUNDARY



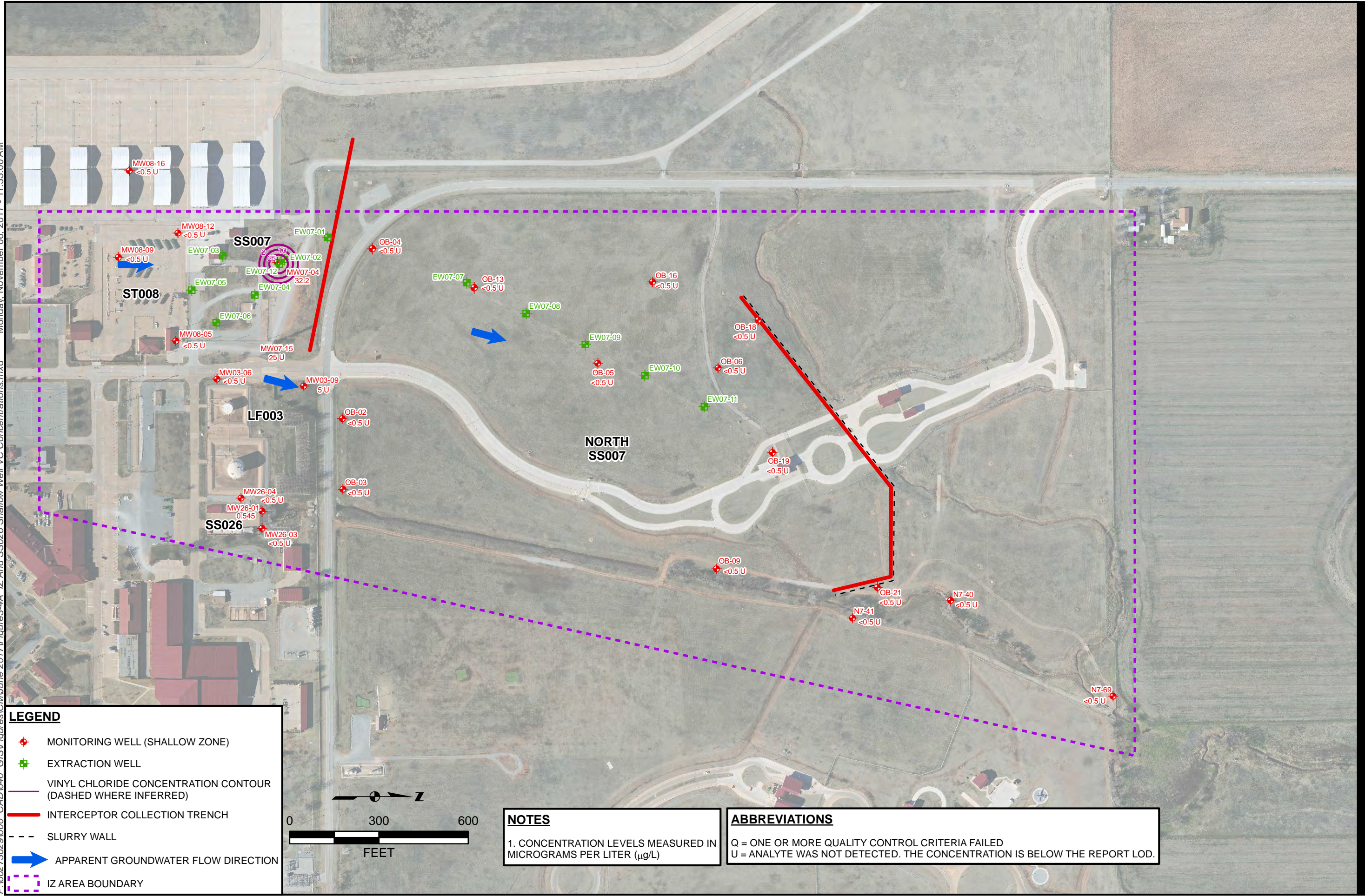
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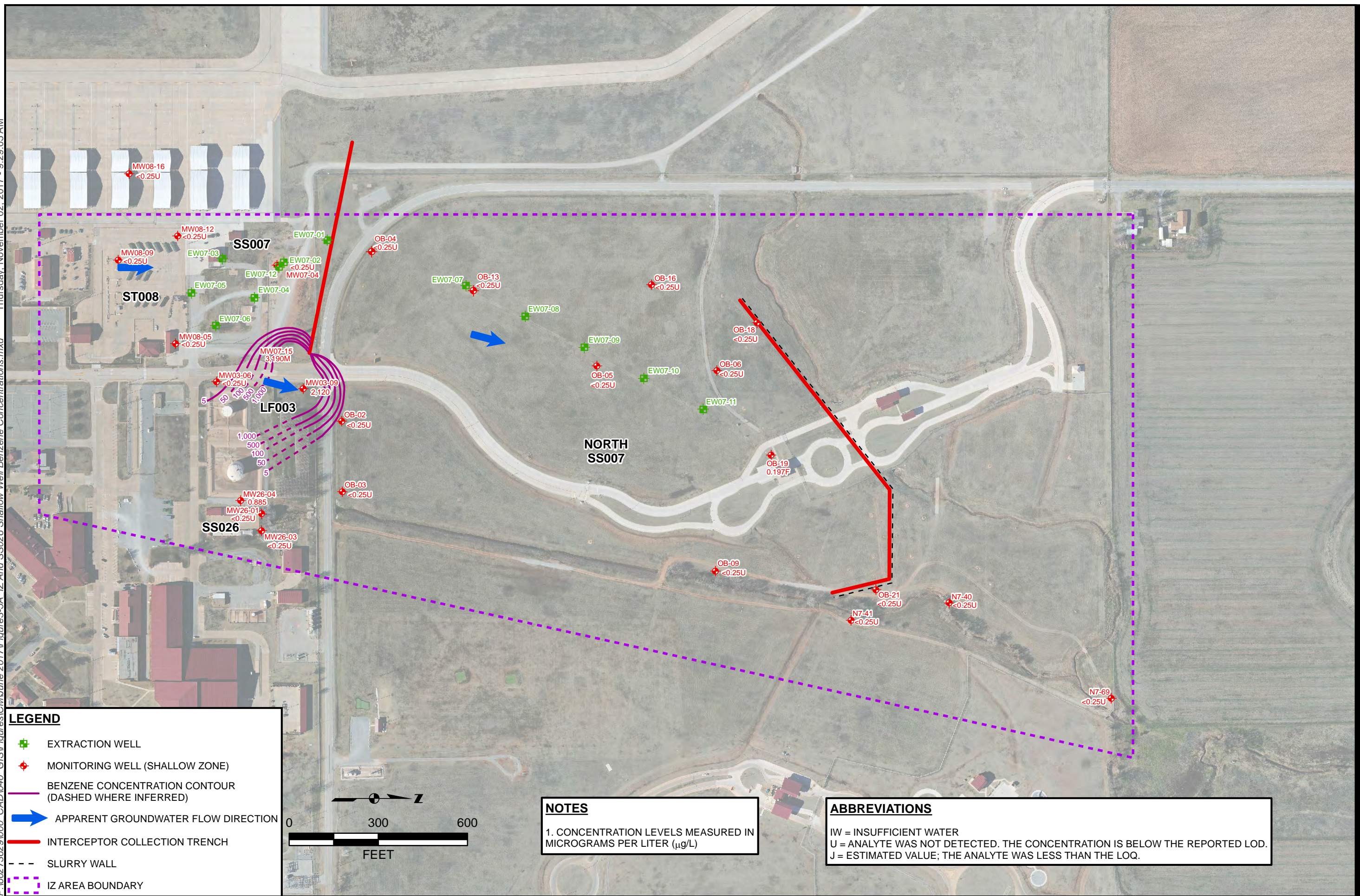
1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS

IW = INSUFFICIENT WATER
TCE = TRICHLOROETHENE
U = NOT DETECTED. THE ASSOCIATED NUMBER INDICATES THE ANALYTE LIMIT OF DETECTION (LOD)
J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS LESS THAN THE LOQ.
Q = ONE OR MORE QUALITY CONTROL CRITERIA FAILED.

P:\160273629\1000_CAD\1040_GIS\Figures\CM\June 2017\Figure3-4A_Iz And SS026 Shallow Well VC Concentrations.mxd Monday, November 06, 2017 - 11:33:00 AM





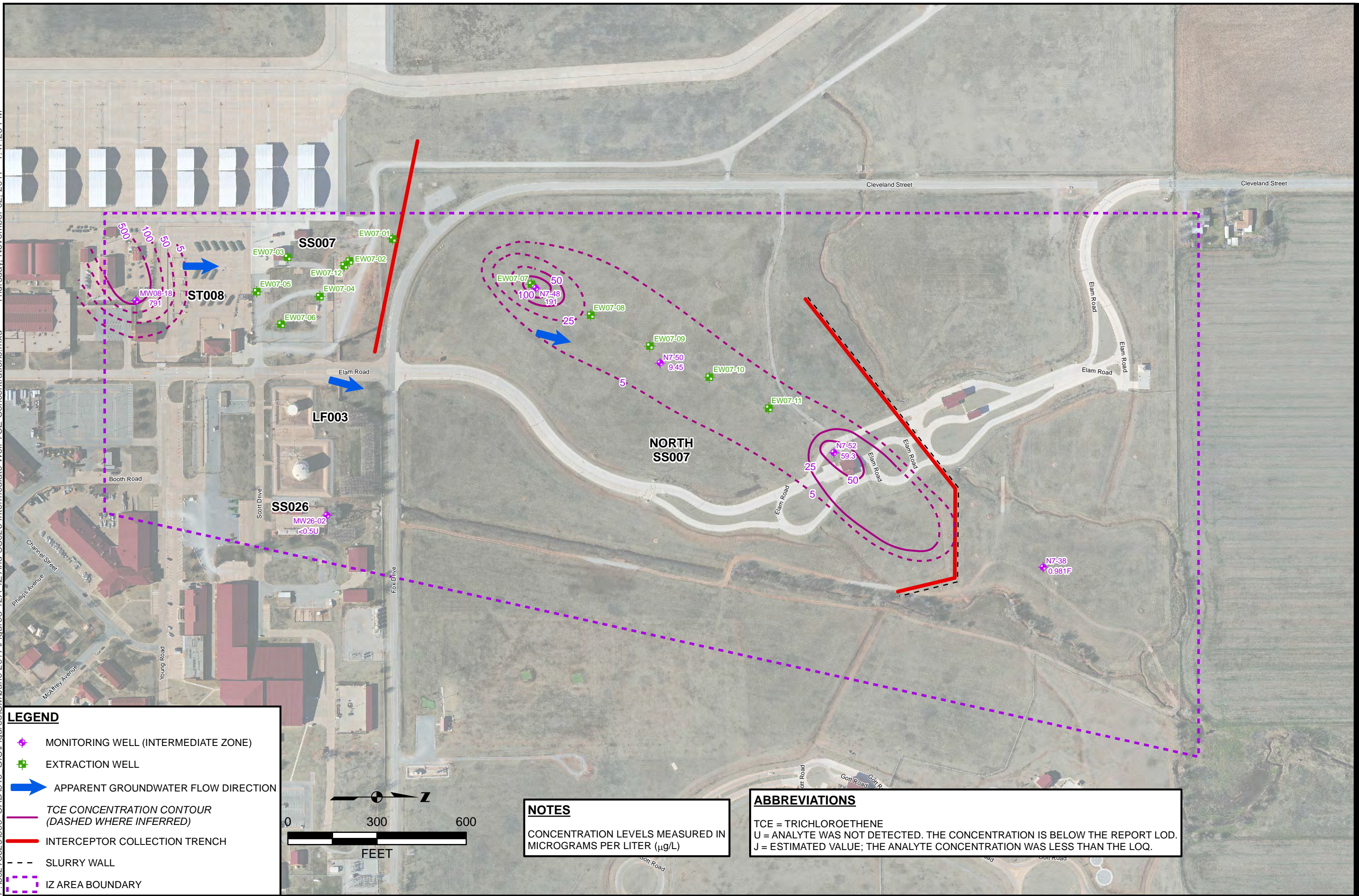
LEGEND

- + EXTRACTION WELL
- ♦ MONITORING WELL (SHALLOW ZONE)
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- APPARENT GROUNDWATER FLOW DIRECTION
- INTERCEPTOR COLLECTION TRENCH
- SLURRY WALL
- IZ AREA BOUNDARY



NOTES
 1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS
 IW = INSUFFICIENT WATER
 U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORTED LOD.
 J = ESTIMATED VALUE; THE ANALYTE WAS LESS THAN THE LOQ.



LEGEND

- ◆ MONITORING WELL (INTERMEDIATE ZONE)
- + EXTRACTION WELL
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- SLURRY WALL
- IZ AREA BOUNDARY







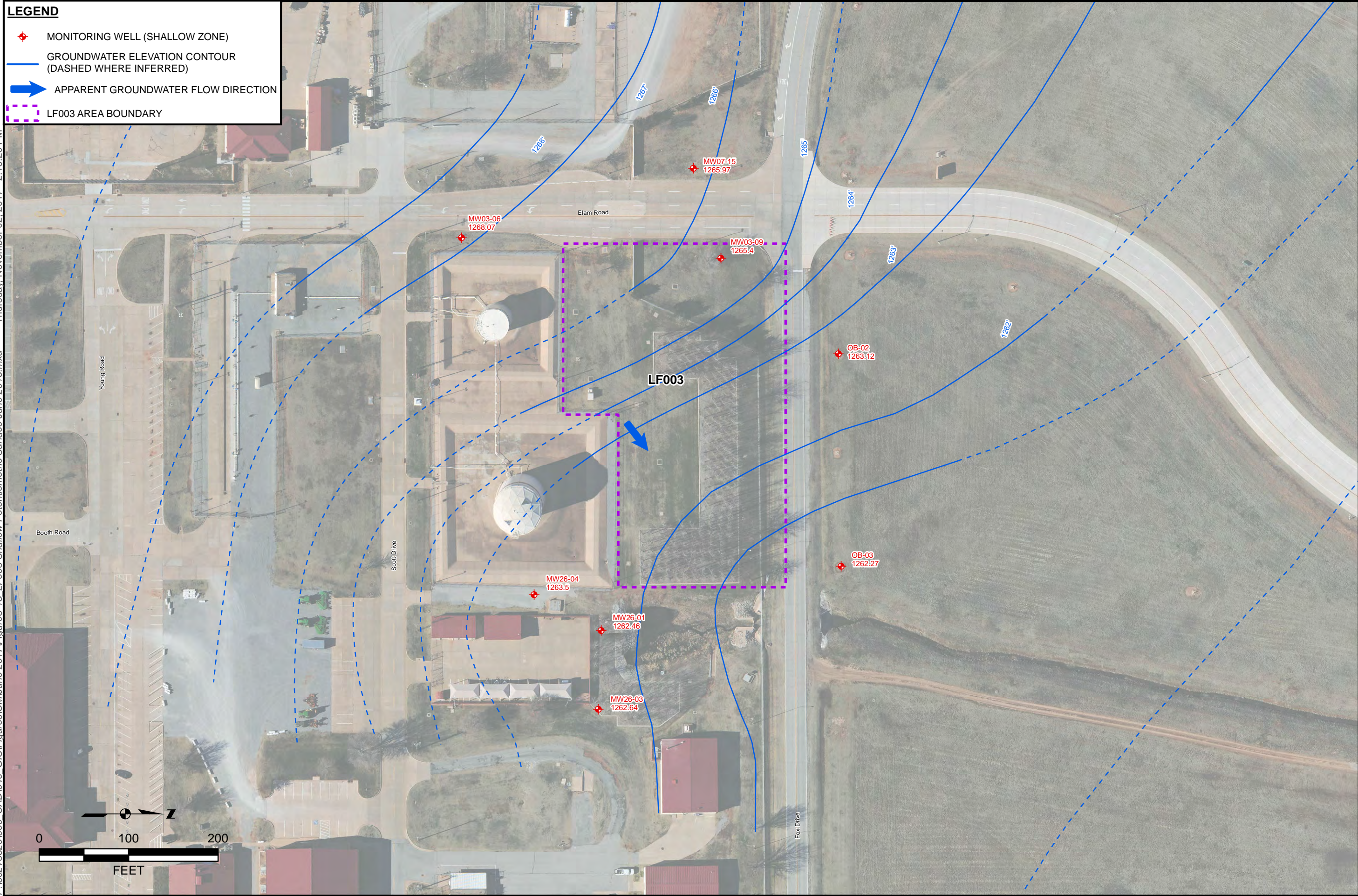
NOTES
 CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

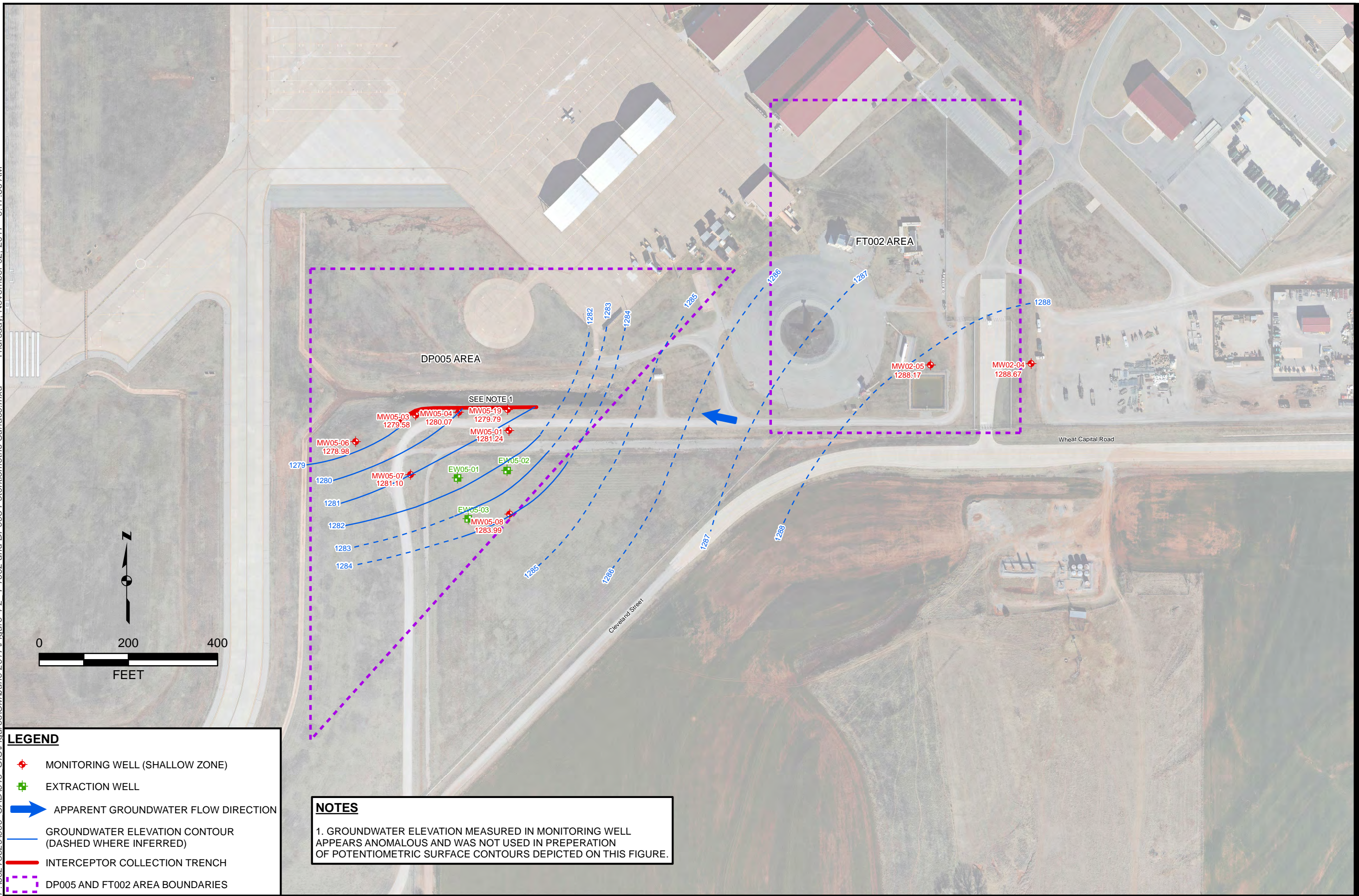
ABBREVIATIONS
 TCE = TRICHLOROETHENE
 U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORT LOD.
 J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION IS LESS THAN THE LOQ.

P:\60273629\1000_CAD\1040_GIS\Figures\CM\June 2017\Figure3-15_LF003 Shallow Potentiometric Surface June 2016.mxd Thursday, November 02, 2017 - 2:18:20 PM

LEGEND

-  MONITORING WELL (SHALLOW ZONE)
-  GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
-  APPARENT GROUNDWATER FLOW DIRECTION
-  LF003 AREA BOUNDARY



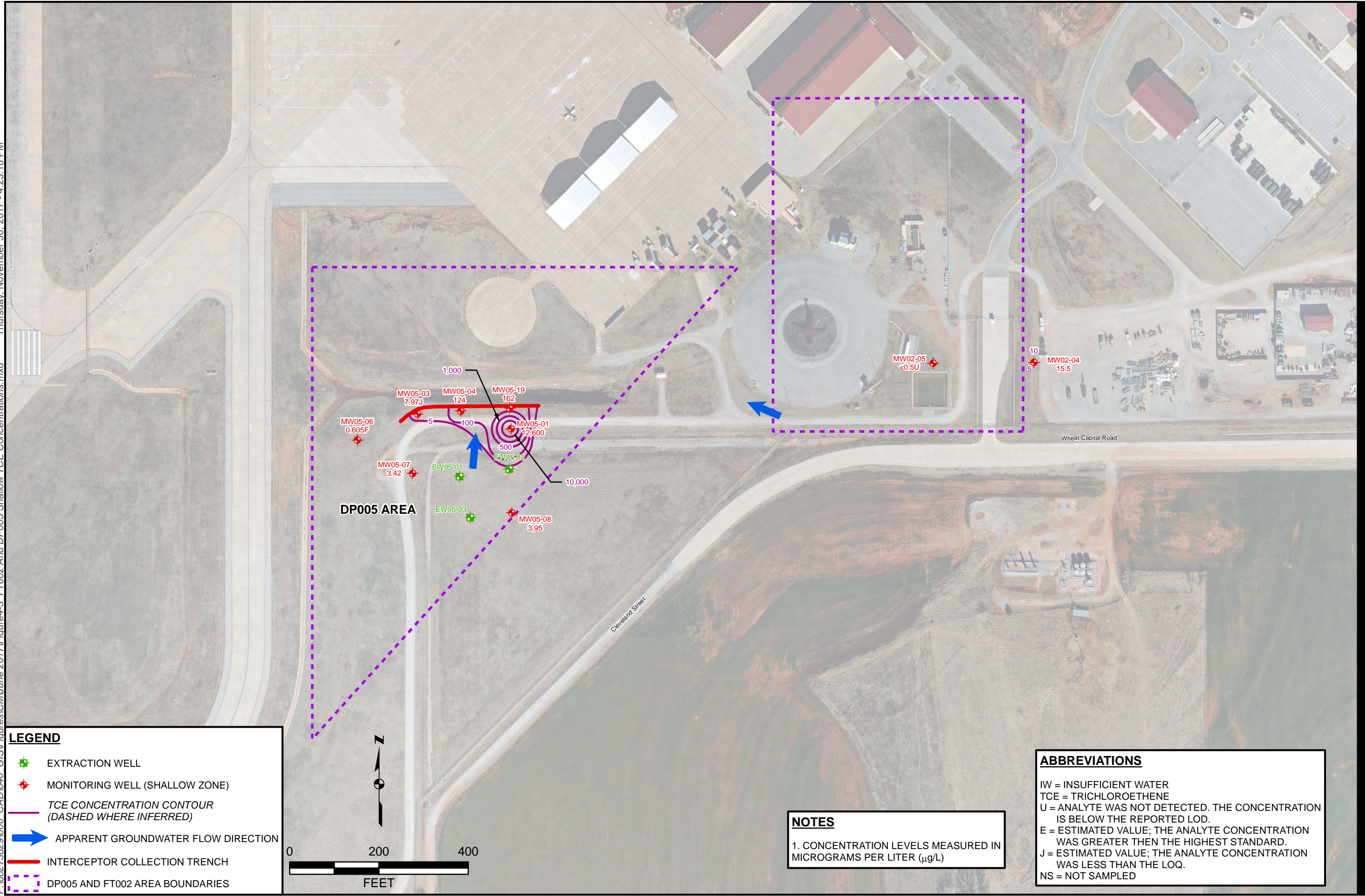


LEGEND

- ◆ MONITORING WELL (SHALLOW ZONE)
- EXTRACTION WELL
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- DP005 AND FT002 AREA BOUNDARIES

NOTES

1. GROUNDWATER ELEVATION MEASURED IN MONITORING WELL APPEARS ANOMALOUS AND WAS NOT USED IN PREPERATION OF POTENTIOMETRIC SURFACE CONTOURS DEPICTED ON THIS FIGURE.



LEGEND

- + EXTRACTION WELL
- + MONITORING WELL (SHALLOW ZONE)
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- INTERCEPTOR COLLECTION TRENCH
- - - DP005 AND FT002 AREA BOUNDARIES

N

0 200 400

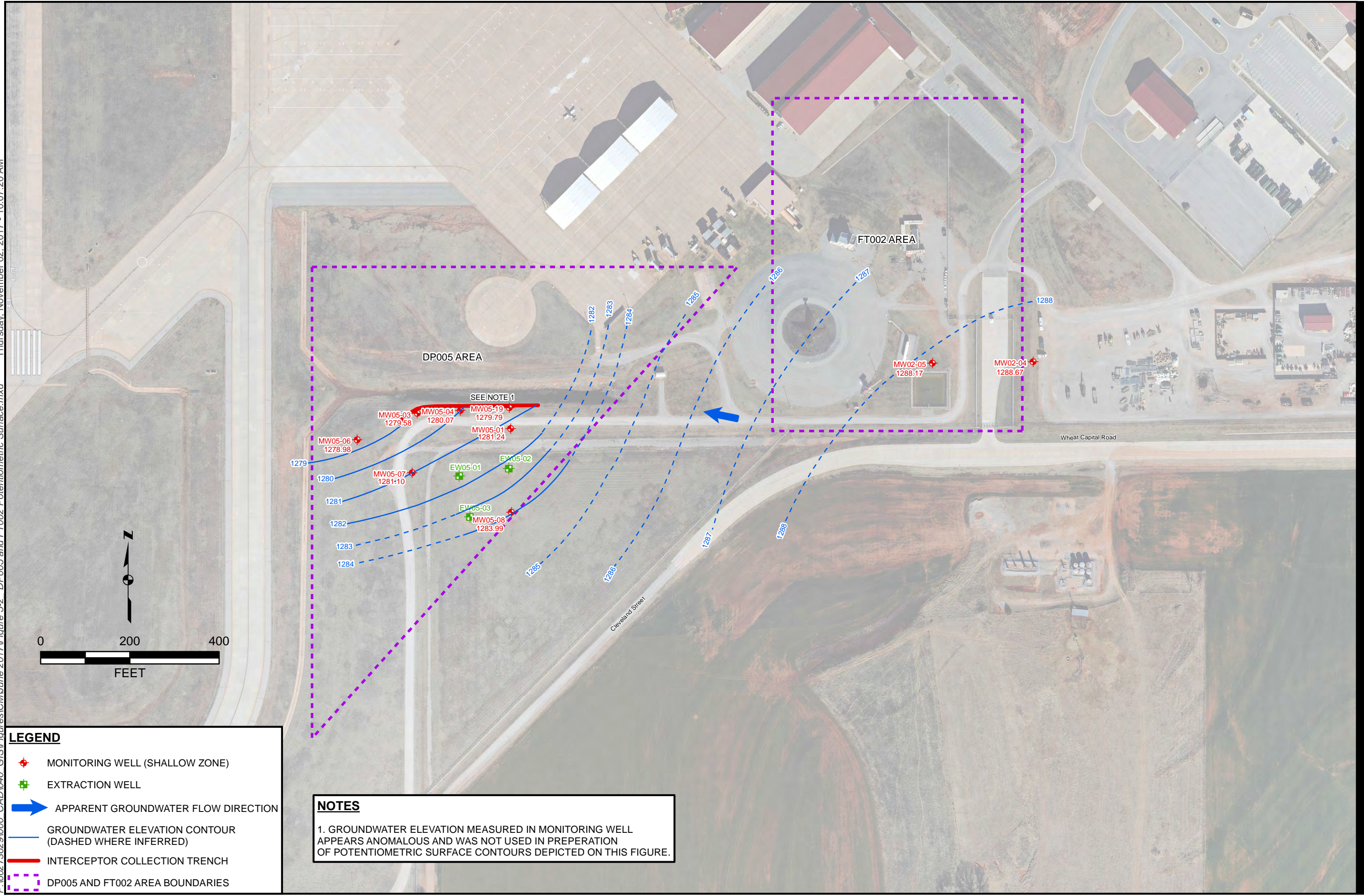
FEET

NOTES

1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS

IW = INSUFFICIENT WATER
TCE = TRICHLOROETHENE
U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORTED LOD.
E = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS GREATER THEN THE HIGHEST STANDARD.
J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS LESS THAN THE LOQ.
NS = NOT SAMPLED

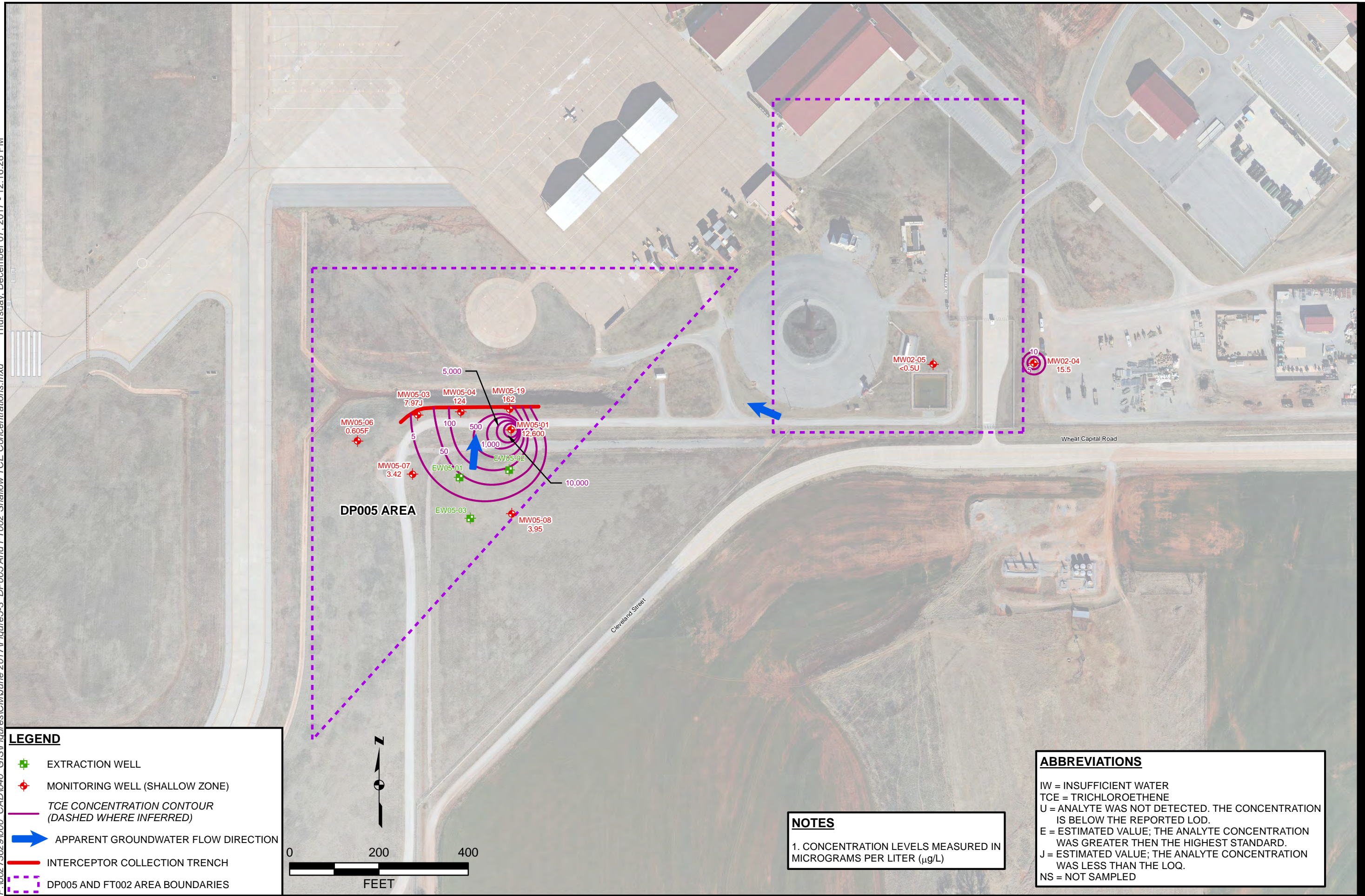


LEGEND

- ◆ MONITORING WELL (SHALLOW ZONE)
- EXTRACTION WELL
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- DP005 AND FT002 AREA BOUNDARIES

NOTES

1. GROUNDWATER ELEVATION MEASURED IN MONITORING WELL APPEARS ANOMALOUS AND WAS NOT USED IN PREPERATION OF POTENTIOMETRIC SURFACE CONTOURS DEPICTED ON THIS FIGURE.



LEGEND

- EXTRACTION WELL
- ◆ MONITORING WELL (SHALLOW ZONE)
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- ➔ APPARENT GROUNDWATER FLOW DIRECTION
- INTERCEPTOR COLLECTION TRENCH
- ⋯ DP005 AND FT002 AREA BOUNDARIES

N

0 200 400

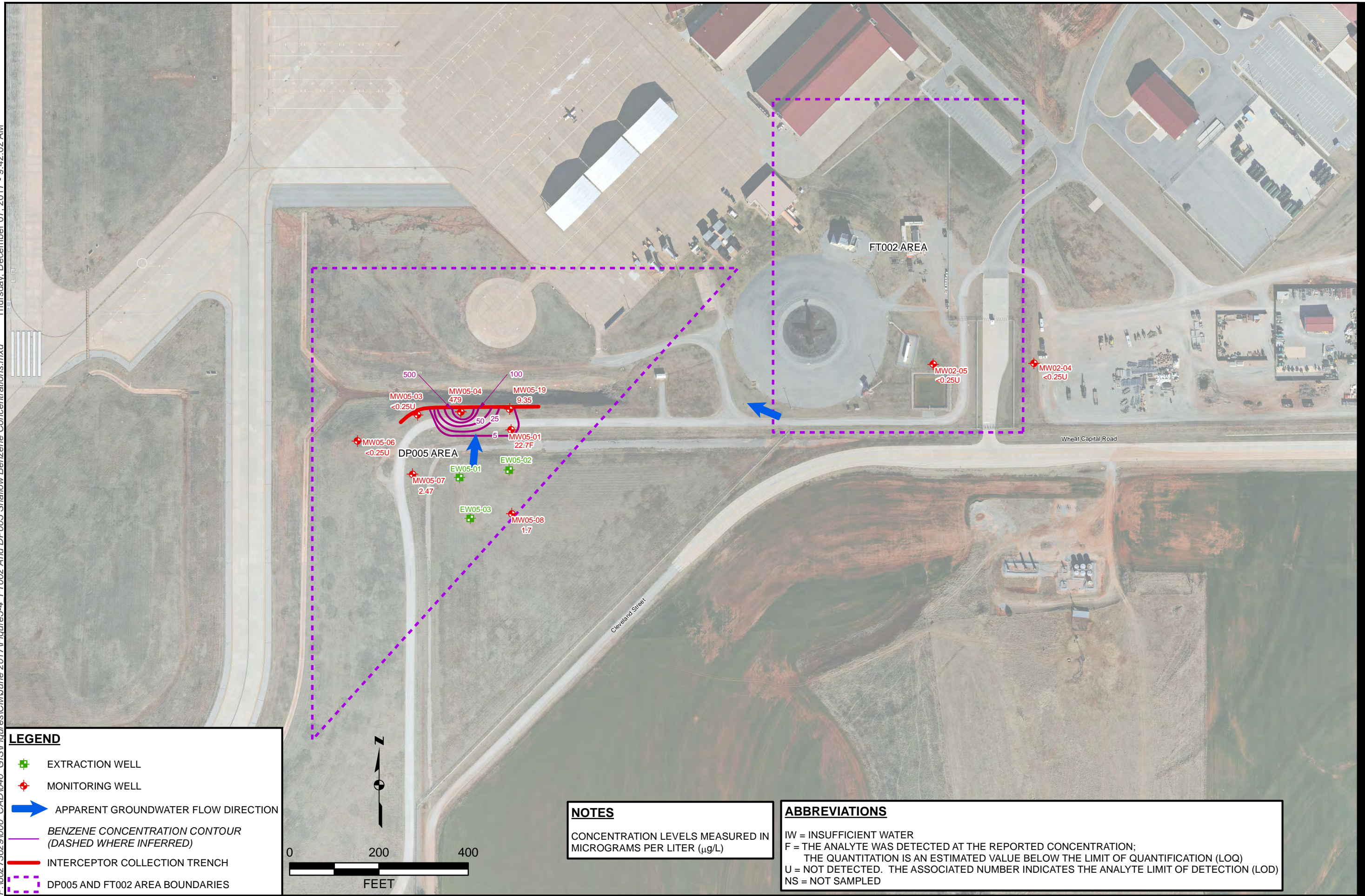
FEET

NOTES

1. CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS

IW = INSUFFICIENT WATER
TCE = TRICHLOROETHENE
U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORTED LOD.
E = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS GREATER THEN THE HIGHEST STANDARD.
J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS LESS THAN THE LOQ.
NS = NOT SAMPLED

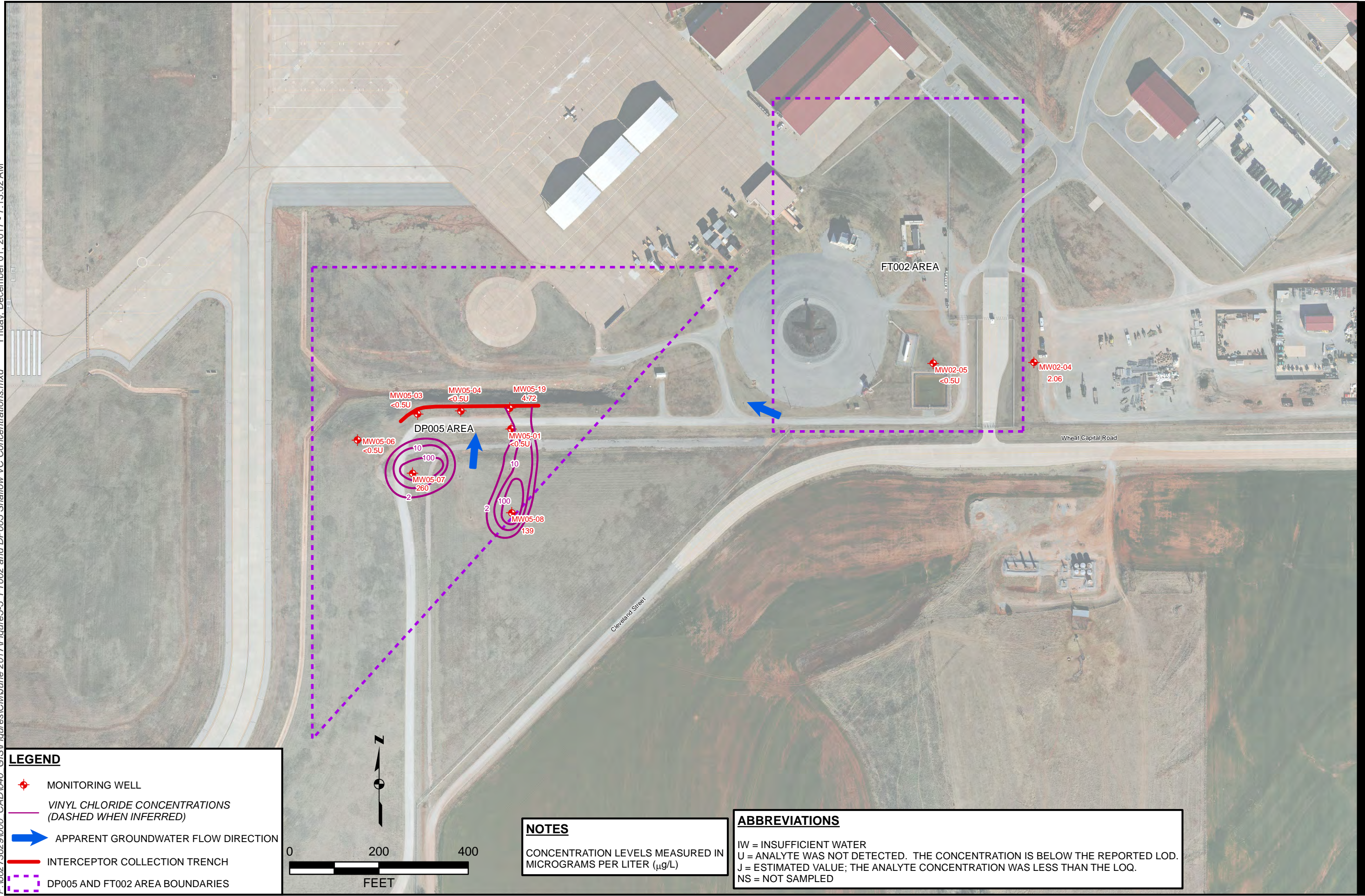


LEGEND

- + EXTRACTION WELL
- + MONITORING WELL
- APPARENT GROUNDWATER FLOW DIRECTION
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- DP005 AND FT002 AREA BOUNDARIES

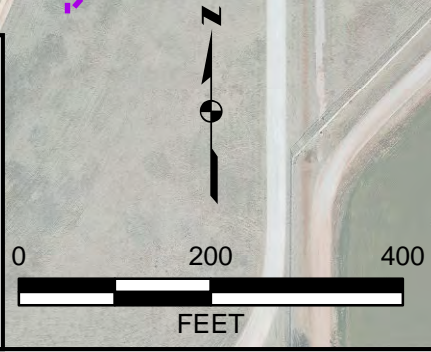
NOTES
 CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS
 IW = INSUFFICIENT WATER
 F = THE ANALYTE WAS DETECTED AT THE REPORTED CONCENTRATION;
 THE QUANTITATION IS AN ESTIMATED VALUE BELOW THE LIMIT OF QUANTIFICATION (LOQ)
 U = NOT DETECTED. THE ASSOCIATED NUMBER INDICATES THE ANALYTE LIMIT OF DETECTION (LOD)
 NS = NOT SAMPLED



LEGEND

- MONITORING WELL
- VINYL CHLORIDE CONCENTRATIONS (DASHED WHEN INFERRED)
- APPARENT GROUNDWATER FLOW DIRECTION
- INTERCEPTOR COLLECTION TRENCH
- DP005 AND FT002 AREA BOUNDARIES



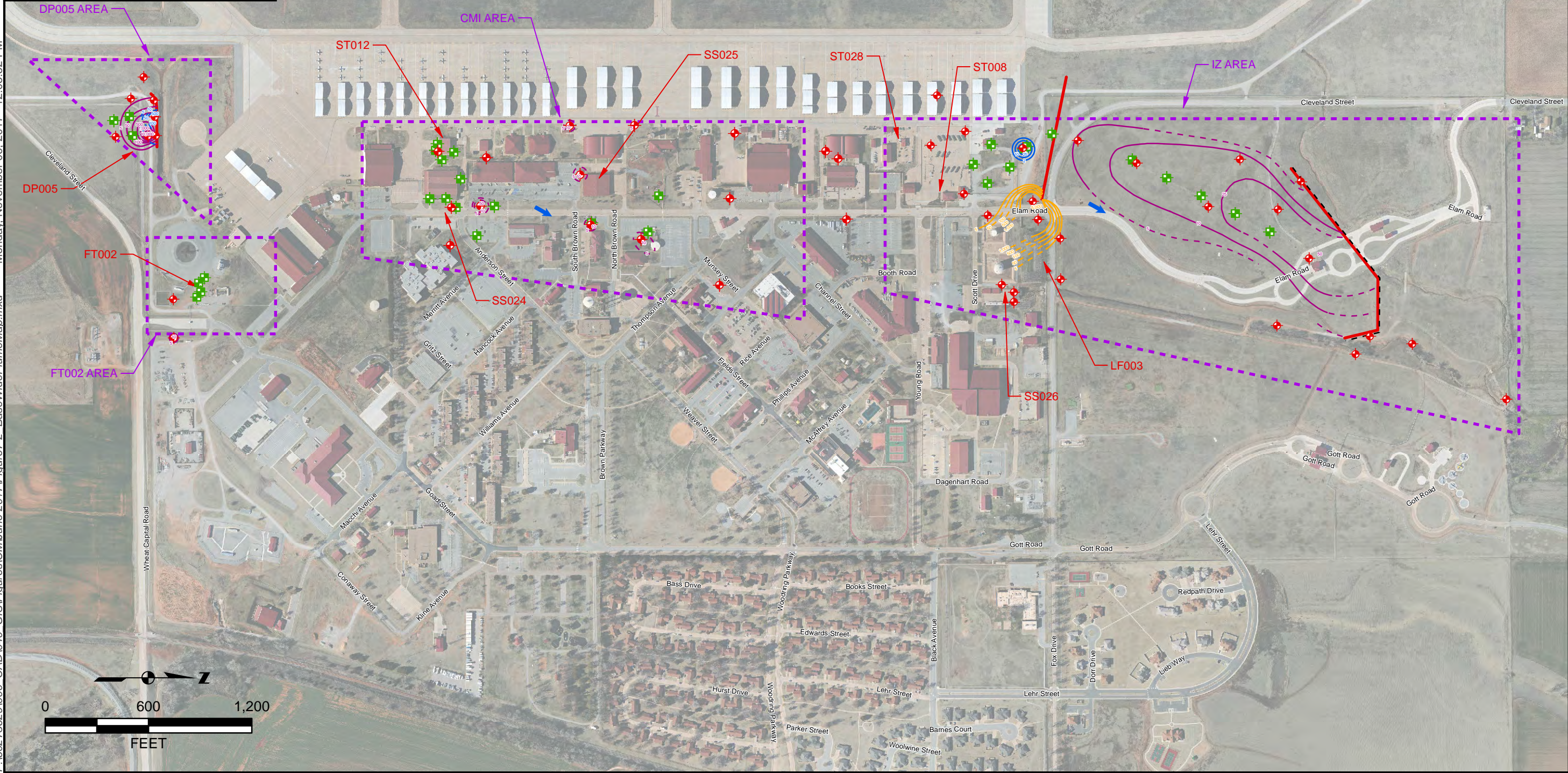
NOTES
 CONCENTRATION LEVELS MEASURED IN MICROGRAMS PER LITER (µg/L)

ABBREVIATIONS
 IW = INSUFFICIENT WATER
 U = ANALYTE WAS NOT DETECTED. THE CONCENTRATION IS BELOW THE REPORTED LOD.
 J = ESTIMATED VALUE; THE ANALYTE CONCENTRATION WAS LESS THAN THE LOQ.
 NS = NOT SAMPLED

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LEGEND

- + EXTRACTION WELL
- + MONITORING WELL (SHALLOW ZONE)
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- TCE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- INTERCEPTOR COLLECTION TRENCH
- SLURRY WALL
- AREA BOUNDARIES



APPENDIX C

Five-Year Analytical Tables (2013-2017)

CMI Area
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
SS024	MW24-05	Shallow	Acetone	14,000 *	< 5 UJ	NS	< 5	NS	5.6 F	NS	< 5	NS	4.6 F
			Carbon Tetrachloride	5	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.284 F	NS	0.25 F
			Chloroform	80	0.346 F	NS	0.325 F	NS	0.207 F	NS	0.354 F	NS	0.194 F
			Trichloroethene (TCE)	5	4.43 F	NS	4.3	NS	3.57	NS	4.92	NS	4.8
SS025	MW25-01	Shallow	1,2-Dichloroethane	5	1.11 F	NS	0.625 F	NS	0.717 F	NS	0.586 F	NS	0.587 F
			Chloroform	80	0.366 F	NS	0.257 F	NS	0.36 F	NS	0.381 F	NS	0.184 F
			cis-1,2-Dichloroethene	70	2.41	NS	1.34	NS	1.71	NS	1.44	NS	1.3
			Trichloroethene (TCE)	5	16.9	NS	11.2	NS	13.8	NS	16.1	NS	18
	MW25-02	Shallow	Acetone	14,000 *	< 5	NS	< 5 UJ	NS	< 5	NS	3.69 F	NS	< 5
			Tetrachloroethene (PCE)	5	0.514 F	NS	0.483 F	NS	0.44 F	NS	0.375 F	NS	0.395 F
			Trichloroethene (TCE)	5	19.7	NS	7.93	NS	14.3	NS	7.84	NS	7.09
	MW25-04	Shallow	Carbon Tetrachloride	5	9	NS	16.1	NS	2.1	NS	5.24	NS	4.11
			Chloroform	80	5.05	NS	7.21	NS	0.913	NS	2.36	NS	1.49
			Trichloroethene (TCE)	5	6.27	NS	6.95	NS	1.97	NS	2.65	NS	2.65
	MW25-07	Shallow	1,1-Dichloroethene	7	7.09	NS	5.98	NS	1.71 F	NS	3.45	NS	3.83
			cis-1,2-Dichloroethene	70	3.25	NS	3.15	NS	0.967 F	NS	2.22	NS	1.99
			Trichloroethene (TCE)	5	1.73 F	NS	1.52	NS	0.545 F	NS	0.932 F	NS	0.919 F
	MW25-08	Shallow	Acetone	14,000 *	< 5	NS	< 5 UJ	NS	< 5	NS	< 5	NS	3.06 F
			Carbon Tetrachloride	5	< 0.5	NS	0.554 F	NS	0.559 F	NS	< 0.5	NS	< 0.5
			Chloroform	80	< 0.25	NS	0.348 F	NS	0.326 F	NS	< 0.25	NS	< 0.25
			Trichloroethene (TCE)	5	0.788 F	NS	1.62	NS	2.51	NS	1.27	NS	0.661 F
	MW25-09	Shallow	Acetone	14,000 *	< 5	NS	< 5	NS	2.87 F	NS	< 5	NS	< 5 UJ
			Bromodichloromethane	80	3.19 F	NS	2.18	NS	0.265 F	NS	< 0.5	NS	< 0.5
			Chloroform	80	1.41 F	NS	1.78	NS	1.56	NS	0.332 F	NS	0.188 F
Dibromochloromethane			80	1.31 F	NS	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	
Trichloroethene (TCE)			5	1.26 F	NS	1.04	NS	1.55	NS	1.99	NS	2.61	

CMI Area
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
SS025	MW25-15	Shallow	1,1-Dichloroethene	7	2.06 F	NS	2.25	NS	1.65 F	NS	0.992 F	NS	0.981 F
			Chloroform	80	< 0.25	NS	< 0.25	NS	0.127 F	NS	< 0.25	NS	< 0.25
			cis-1,2-Dichloroethene	70	0.766 F	NS	1.04	NS	0.897 F	NS	0.594 F	NS	0.535 F
			Trichloroethene (TCE)	5	0.547 F	NS	0.518 F	NS	0.534 F	NS	0.272 F	NS	< 0.5
ST012	MW12-09	Shallow	1,1-Dichloroethane	28 *	2.89 F	NS	5.34 F	NS	0.485 F	NS	3.5	NS	2.53
			1,1-Dichloroethene	7	1.2 F	NS	< 20	NS	< 1	NS	2.02 F	NS	< 5
			2-Butanone (MEK)	5600 *	< 5	NS	< 100	NS	3.22 F	NS	< 12.5	NS	< 25
			Acetone	14,000 *	< 5 UJ	NS	< 100	NS	6.98 F	NS	< 12.5	NS	20.9 F
			Benzene	5	< 0.25	NS	< 5	NS	< 0.25	NS	< 0.626	NS	1.15 F
			Chlorobenzene	100	0.305 F	NS	< 5	NS	< 0.25	NS	< 0.626	NS	< 1.25
			cis-1,2-Dichloroethene	70	751	NS	926	NS	175	NS	617	NS	320
			Ethylbenzene	700	< 0.5	NS	< 10	NS	< 0.5	NS	0.76 F	NS	1.33 F
			m- & p-Xylenes	10,000	NS	NS	< 20	NS	0.723 F	NS	< 2.5	NS	5.15 F
			Methylene Chloride	5	1.26 F	NS	< 10	NS	< 0.5	NS	1.63 F	NS	< 2.5
			n-Propylbenzene	660 *	NS	NS	2.69 F	NS	NS	NS	NS	NS	NS
			o-Xylene	10,000	NS	NS	< 10	NS	1.02	NS	3.19	NS	6.86
			Tetrachloroethene (PCE)	5	944	NS	1560	NS	18.4	NS	54.3	NS	3.53 F
			Toluene	1000	< 0.5	NS	< 10	NS	0.42 F	NS	3.2	NS	4.11 F
			trans-1,2-Dichloroethene	100	1.06	NS	< 10	NS	< 0.5	NS	2.04 F	NS	2.04 F
			Trichloroethene (TCE)	5	519	NS	717	NS	4.35	NS	56.2	NS	1.31 F
	Vinyl Chloride	2	< 0.5	NS	< 10	NS	30.7	NS	165	NS	583		
	MW12-33 ²	Shallow	1,1-Dichloroethane	28 *	1.47 F	NS	1.16	NS	0.503	NS	NS	< 0.25	1.7
			1,1-Dichloroethene	7	6.84	NS	5.3	NS	3.27	NS	NS	< 1	10.2
			1,2-Dichloroethane	5	< 0.5	NS	< 0.5	NS	< 0.5	NS	NS	< 0.5	0.576 F
Acetone			14,000 *	< 5 UJ	NS	< 5 UJ	NS	< 5	NS	NS	< 5	3.49 F	
Chloroform			80	0.393 F	NS	0.287 F	NS	< 0.25	NS	NS	< 0.25	< 0.25	
cis-1,2-Dichloroethene			70	20	NS	13.7	NS	148	NS	NS	12.2	249	
Tetrachloroethene (PCE)			5	7.87	NS	6.1	NS	< 0.5	NS	NS	< 0.5	< 0.5	
Toluene			1000	< 0.5	NS	< 0.5	NS	< 0.5	NS	NS	< 0.5	0.537 F	
trans-1,2-Dichloroethene			100	0.551 F	NS	0.503 F	NS	0.322 F	NS	NS	< 0.5	1.39	
Trichloroethene (TCE)			5	293	NS	422	NS	11.9	NS	NS	0.57 F	68.2	
Vinyl Chloride	2	< 0.5	NS	< 0.5	NS	< 0.5	NS	NS	0.411 F	105			

CMI Area
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17	
ST012	MW12-35 ²	Shallow	1,1-Dichloroethene	7	1.97 F	NS	0.862 F	NS	NS	NS	NS	< 100 UJ	NS	
			2-Butanone (MEK)	5600 *	< 5	NS	< 5	NS	NS	NS	NS	NS	497 F	NS
			Chloroform	80	1.69 F	NS	1.17 J	NS	NS	NS	NS	NS	< 25 UJ	NS
			cis-1,2-Dichloroethene	70	8.25	NS	4.96	NS	NS	NS	NS	NS	39.7 F	NS
			Tetrachloroethene (PCE)	5	4.7 F	NS	2.66	NS	NS	NS	NS	NS	< 50 UJ	NS
			Trichloroethene (TCE)	5	1260	NS	584	NS	NS	NS	NS	NS	134 J	NS
	MW12-37	Shallow	Acetone	14,000 *	< 5	NS	< 5	NS	7.56 F	NS	< 5 UJ	NS	< 5	
			Chloroform	80	1.57 F	NS	0.993	NS	1.09	NS	0.877	NS	0.584	
			Trichloroethene (TCE)	5	9.54	NS	1.65	NS	11.4	NS	3.01	NS	1.35	
	MW12-43	Shallow	1,1-Dichloroethene	7	< 1	NS	0.652 F	NS	< 1	NS	< 1	NS	< 1 UJ	
			Acetone	14,000 *	< 5	NS	< 5 UJ	NS	< 5	NS	< 5	NS	3.23 F	
			Chloroform	80	0.153 F	NS	0.6 J	NS	< 0.25	NS	< 0.25	NS	< 0.25 UJ	
			cis-1,2-Dichloroethene	70	2.1	NS	2.24 J	NS	< 0.5	NS	8.57	NS	10.8 J	
			Styrene	100	< 0.25	NS	0.384 B	NS	NS	NS	NS	NS	NS	
			Tetrachloroethene (PCE)	5	0.529 F	NS	0.687 F	NS	< 0.5	NS	< 0.5	NS	< 0.5 UJ	
			trans-1,2-Dichloroethene	100	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.644 F	
			Trichloroethene (TCE)	5	80.4	NS	103 J	NS	2.06	NS	3.03	NS	14 J	
	MW12-45	Shallow	Acetone	14,000 *	< 50	NS	2.81 F	NS	< 25	NS	< 12.5 UJ	NS	< 10	
			Carbon Disulfide	810 *	< 10	NS	0.606 F	NS	NS	NS	NS	NS	NS	
			Chloroform	80	2.02 F	NS	2.35 J	NS	1.89 F	NS	0.502 F	NS	< 0.5	
			cis-1,2-Dichloroethene	70	13.5	NS	8.85	NS	77.8	NS	197	NS	217	
			Tetrachloroethene (PCE)	5	< 5	NS	0.613 F	NS	< 2.5	NS	< 1.25	NS	< 1	
			trans-1,2-Dichloroethene	100	< 5	NS	1.16	NS	12.2	NS	109	NS	116	
			Trichloroethene (TCE)	5	1690	NS	983	NS	1040	NS	380	NS	20	
			Vinyl Chloride	2	< 5	NS	< 0.5 UJ	NS	< 2.5	NS	0.695 F	NS	1.51 F	

CMI Area
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17	
WP023	MW23-05	Shallow	1,1-Dichloroethane	28 *	< 0.25	NS	< 0.25	NS	0.238 F	NS	0.217 F	NS	< 0.25	
			1,2-Dichlorobenzene	600	<5 UJ	NS	3.36	NS	5.2	NS	4.61	NS	2.93	
			1,4-Dichlorobenzene	75	<5 UJ	NS	0.27 F	NS	0.6	NS	0.581	NS	0.357 F	
			Benzene	5	1.41 F	NS	0.757	NS	2.25	NS	2.11	NS	1.55	
			Chlorobenzene	100	0.251 F	NS	< 0.25	NS	0.177 F	NS	0.169 F	NS	< 0.25	
			cis-1,2-Dichloroethene	70	0.549 F	NS	0.36 F	NS	1.79	NS	3.36	NS	1.24	
			Ethylbenzene	700	10	NS	< 0.5	NS	3.5	NS	0.605 F	NS	0.336 F	
			m- & p-Xylene	10,000	NS	NS	< 1	NS	2.19	NS	< 1	NS	< 1	
			o-Xylene	10,000	NS	NS	< 0.5	NS	0.592 F	NS	< 0.5	NS	< 0.5	
			trans-1,2-Dichloroethene	100	0.318 F	NS	< 0.5	NS	0.635 F	NS	0.627 F	NS	0.346 F	
			Trichloroethene (TCE)	5	< 0.5	NS	< 0.5	NS	1.15	NS	1.43	NS	< 0.5	
			Vinyl Chloride	2	0.844 F	NS	0.268 F	NS	< 0.5	NS	2.18	NS	3.15	
	Xylenes, Total	10,000	2.75 F	NS	NS	NS	NS	NS	NS	NS	NS			
		MW23-14	Shallow	Acetone	14,000 *	< 5	NS	< 5 UJ	NS	< 5	NS	< 5 UJ	NS	3.98 F
				cis-1,2-Dichloroethene	70	< 0.5	NS	0.338 F	NS	< 0.5	NS	0.536 F	NS	0.486 F
	Trichloroethene (TCE)			5	5.1	NS	7.34	NS	< 0.5	NS	16.8	NS	15.1	

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Wells MW12-33 and MW12-35 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

CMI Area
Detected VOC Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
ST012	MW12-30	Intermediate	1,1-Dichloroethene	7	4.62 F	NS	4.76	NS	7.23	NS	6.84	NS	3.96
			Acetone	14,000 *	< 5 UJ	NS	< 5	NS	< 5	NS	< 5	NS	5.71 F
			Chloroform	80	0.163 F	NS	0.24 F	NS	0.434 F	NS	0.381 F	NS	< 0.25
			cis-1,2-Dichloroethene	70	0.626 F	NS	0.466 F	NS	0.952 F	NS	29.7	NS	26.2
			Trichloroethene (TCE)	5	142	NS	128	NS	240	NS	228	NS	105
	MW12-34	Intermediate	1,1-Dichloroethene	7	< 1	NS	< 1	NS	< 1	NS	0.799 F	NS	< 1
			Acetone	14,000 *	< 5	NS	< 5	NS	< 5	NS	< 125	NS	15.6
			Benzene	5	< 0.25	NS	< 0.25	NS	< 0.25	NS	< 0.25	NS	2.4 F
			Chloroform	80	< 0.25	NS	< 0.25	NS	< 0.25	NS	0.191 F	NS	< 0.25
			cis-1,2-Dichloroethene	70	< 0.5	NS	< 0.5	NS	< 0.5	NS	2.31	NS	12.8
			m- & p-Xylene	10,000	NS	NS	< 1	NS	< 1	NS	< 1	NS	7.99 F
			o-Xylene	10,000	NS	NS	< 0.5	NS	< 0.5	NS	< 0.5	NS	3.59 F
			Tetrachloroethene (PCE)	5	< 0.5	NS	< 0.5	NS	0.266 F	NS	3.75	NS	< 0.5
			Toluene	1000	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	NS	18.7
			trans-1,2-Dichloroethene	100	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.259 F
	Trichloroethene (TCE)	5	15.1	NS	17.2	NS	86.1	NS	1130	NS	7.73		
	Vinyl Chloride	2	< 0.5	NS	< 0.5 UJ	NS	< 0.5	NS	0.507 F	NS	187		
	MW12-38 ²	Intermediate	Acetone	14,000 *	< 5	NS	< 5	NS	< 5	NS	NS	9.29 F	4.58 F
			Chloroform	80	0.238 F	NS	0.237 F	NS	0.21 F	NS	NS	< 0.25	< 0.25
			cis-1,2-Dichloroethene	70	0.463 F	NS	0.654 F	NS	0.556 F	NS	NS	6.31	0.935 F
Trichloroethene (TCE)			5	19.4	NS	19.1	NS	18.3	NS	NS	0.344 F	0.319 F	
WP023	MW23-21	Intermediate	Acetone	14,000 *	< 5	NS	< 5 UJ	NS	< 5	NS	< 5	NS	3.83 F
			Chloroform	80	0.203 F	NS	0.147 F	NS	0.225 F	NS	0.285 F	NS	< 0.25
			cis-1,2-Dichloroethene	70	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.27 F	NS	< 0.5
			Trichloroethene (TCE)	5	13.7	NS	12.1	NS	20	NS	30.2	NS	17.3
	MW23-22	Intermediate	1,1-Dichloroethane	28 *	0.136 F	NS	< 0.25	NS	< 0.25	NS	0.126 F	NS	< 0.25
			Chloroform	80	< 0.25	NS	< 0.25	NS	< 0.25	NS	0.142 F	NS	< 0.25
			cis-1,2-Dichloroethene	70	3.96	NS	1.58	NS	2.63	NS	2.44	NS	1.77
			Trichloroethene (TCE)	5	10.3	NS	4.58	NS	5.18	NS	6.59	NS	6.01

CMI Area
Detected VOC Concentrations in the Intermediate Zone
2013 - 2017

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Well MW12-38 was not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. This well was sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

CMI Area
Detected VOC Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
ST012	MW12-13	Deep	1,1,1-Trichloroethane	200	0.833 F	NS	< 50	NS	< 50	NS	< 50	< 25
			1,1-Dichloroethane	28 *	0.97 F	NS	< 25	NS	< 25	NS	< 25	< 12.5
			1,1-Dichloroethene	7	4.69 F	NS	< 100	NS	< 100	NS	< 100	< 50
			Acetone	14,000 *	1630	NS	< 500	NS	< 500	NS	< 500	< 250
			Benzene	5	0.202 F	NS	< 25	NS	< 25	NS	< 25	< 12.5
			Carbon Disulfide	810 *	71 F	NS	< 100	NS	NS	NS	NS	NS
			Chlorobenzene	100	0.853 F	NS	< 25	NS	< 25	NS	< 25	< 12.5
			Chloroform	80	0.18 F	NS	< 25	NS	< 25	NS	< 25	< 12.5
			cis-1,2-Dichloroethene	70	54	NS	2760	NS	1250	NS	1090	1240
			Methylene Chloride	5	0.806 F	NS	< 50	NS	< 50	NS	< 50	< 25
			Tetrachloroethene (PCE)	5	21600	NS	15500	NS	16800	NS	18000	8220
			Toluene	1000	2.21 F	NS	< 50	NS	< 50	NS	< 50	< 25
			trans-1,2-Dichloroethene	100	16	NS	< 50	NS	< 50	NS	< 50	< 25
			Trichloroethene (TCE)	5	714	NS	488	NS	392	NS	1040	536
			Vinyl Chloride	2	< 0.5	NS	< 50	NS	130	NS	108	39.5 F
Xylenes, Total	10,000	4.32 F	NS	NS	NS	NS	NS	NS	NS			

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

CMI Area
Detected SVOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
SS025	MW25-01	Shallow	bis(2-Ethylhexyl)Phthalate	6	9.63 F	NS	<6	NS	<6	NS	< 6	NS	< 6
	MW25-02	Shallow	bis(2-Ethylhexyl)Phthalate	6	12.3	NS	<6	NS	<6	NS	< 6.32	NS	< 6.32
	MW25-07	Shallow	1,4-Dioxane	4.6 *	19.1	NS	15.4	NS	4.77	NS	3.47 J	NS	5.71 J
ST012	MW12-09	Shallow	3- & 4-Methylphenol	-	<5	NS	<5 UJ	NS	2.55 F	NS	< 5 UJ	NS	19.8
			Diethyl Phthalate	15,000 *	<5	NS	4.85 F	NS	<5	NS	< 5 UJ	NS	< 5.1 UJ
	MW12-33 ²	Shallow	1,4-Dioxane	4.6 *	2.67 J	NS	11.1	NS	2.13	NS	NS	NS	15.2 J
			Pentachloroethane	6.5 *	13 J	NS	NS	NS	NS	NS	NS	NS	NS
			bis(2-Ethylhexyl)Phthalate	6	< 5	NS	< 6	NS	NS	NS	NS	1560 F	NS
MW12-45	Shallow	bis(2-Ethylhexyl)Phthalate	6	< 5 UR	NS	< 6 UJ	NS	< 6.32	NS	< 6	NS	5.87 F	
WP023	MW23-05	Shallow	1,2-Dichlorobenzene	600	<5 UJ	NS	3.36	NS	3.7 F	NS	2.65 F	NS	2.58 F
			1,4-Dichlorobenzene	75	<5 UJ	NS	0.27 F	NS	<5.1	NS	< 5.1 UJ	NS	< 5
	MW23-14	Shallow	bis(2-Ethylhexyl)Phthalate	6	10.9 R	NS	9.87 B	NS	12.8	NS	< 6.12	NS	< 6

Notes:

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RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Wells MW12-33 and MW12-35 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016.

MW12-33 was sampled in September 2016, but 1,4-Dioxane and Pentachloroethane were not analyzed.

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U = Not detected. The associated number indicates the analyte limit of detecting (LOD).

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

CMI Area
Detected SVOC Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
ST012	MW12-38 ²	Intermediate	3- & 4-Methylphenol	-	< 5.1	NS	< 5.56	NS	< 5.1	NS	NS	42.6	< 5
			bis(2-Ethylhexyl)Phthalate	6	< 5.1	NS	88.1 B	NS	< 6.12	NS	NS	< 6	< 6
			Phenol	5800 *	< 5.1	NS	NS	NS	< 5.1	NS	NS	3.24 F	< 5
WP023	MW23-21	Intermediate	bis(2-Ethylhexyl)Phthalate	6	4.53 F	NS	< 6.12	NS	< 6.12	NS	< 6.06 UJ	NS	< 6
	MW23-22	Intermediate	bis(2-Ethylhexyl)Phthalate	6	5.74 F	NS	< 6	NS	4.5 F	NS	< 6 UJ	NS	< 6.12

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Well MW12-38 was not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. This well was sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

CMI Area
Detected SVOC Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
ST012	MW12-13	Deep	bis(2-ethylhexyl)Phthalate	6	4.35 F	NS	< 6	NS	< 6	NS	< 6.12 UJ	< 6.52
			Naphthalene	1.7 *	< 5.2 UJ	NS	< 5	NS	2.78 F	NS	< 5.1 UJ	< 5.44
			Pentachloroethane	6.5 *	190	NS	NS	NS	NS	NS	NS	NS

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimate 0.67 *

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metal Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Dec-16	Jun-17
LF003	MW03-06	Shallow	Barium	2000	123	NS	99.3	NS	93.2	NS	113	NS	96.9
			Lead	15	8.05 F	NS	7 F	NS	10.7 F	NS	6.64 F	NS	9.39 F
			Selenium	50	9.36	NS	6.04	NS	13.9	NS	7.13	NS	6.74
	MW03-09	Shallow	Arsenic	10	50.1	< 100	< 100	< 100	19.9 F	NS	17.2 B	16.4	21.1
			Barium	2000	347	268	313	392	304	NS	275	317	326
			Lead	15	639	143	61.2	87.1	135	NS	73.6	106	92.8
			Selenium	50	45.1	6.69	9.22	18.7 B	12.1	NS	10.9	11.6	12.6
		Silver	94 *	< 10	< 10	< 10	< 10	5.57 F	NS	< 10	< 10	< 10	
SS007	MW07-04	Shallow	Arsenic	10	< 10	NS	< 100	NS	14.6 F	NS	6.21 F	NS	12.7
			Barium	2000	85.7	NS	495	NS	364	NS	262	NS	309
			Lead	15	< 10	NS	5.54 F	NS	9.77 F	NS	< 10	NS	< 10
			Selenium	50	2.55	NS	1.7 F	NS	5.42	NS	2.48	NS	3.23
	MW07-15	Shallow	Arsenic	10	33.2	NS	59.6 F	NS	33.3	NS	36.6	NS	8.06 F
			Barium	2000	579	NS	654	NS	374	NS	483	NS	211
			Lead	15	48.6	NS	42.9	NS	33.8	NS	22.2	NS	7.93 F
			Selenium	50	83.2	NS	63.7	NS	46.7	NS	20.5	NS	11.6
	MWN7-40	Shallow	Barium	2000	50.8	63.8	113	67.1	96.9	NS	135	118	159
			Selenium	50	3.34	2.27	2.64	2.38	4.97	NS	4.15	3.37	2.96
	MWN7-41	Shallow	Barium	2000	109	100	113	113	105	NS	87.9	83.6	76.3
			Lead	15	< 10	< 10	< 10	< 100	8.79 F	NS	< 10	< 10	< 10
			Selenium	50	7.41	5.59	7.61	7.09	11.1	NS	4.69	4.96	3.76
			Silver	94 *	< 10	< 10	< 10	< 10	6.8 F	NS	< 10	< 10	< 10
	MWN7-69	Shallow	Arsenic	10	< 10	< 100	< 100	< 100	< 10	NS	< 10	< 10	5.29 F
			Barium	2000	130	103	142	134	119	NS	136	133	308
			Chromium, Total	100	< 20	< 20	< 20	< 20	< 20	NS	< 20	< 20	13.2 F
			Lead	15	< 10	< 10	< 10	< 100	< 10	NS	< 10	5.08 F	16.5
	MWOB-02	Shallow	Selenium	50	2.8	1.09 F	2.65	0.931 F	0.995 F	NS	1.21 F	1.36 F	1.13 F
			Arsenic	10	< 10	< 100	< 100	< 100	16.7 F	NS	< 10	< 10	< 10
Barium			2000	155	177	154	186	165	NS	90.6	118	83.6	
MWOB-03	Shallow	Selenium	50	7.55	10.5	4.66	2.74 B	6.32	NS	4.47	1.79	3.45	
		Barium	2000	319	316	295	316	303	NS	375	397	195	
MWOB-04	Shallow	Selenium	50	6.76	13.7	4.73	4.5	8.04	NS	9.67	6	9.85	
		Barium	2000	NS	36.1	NS	NS	57.4	NS	106	173	106	
		Selenium	50	NS	0.975 F	NS	NS	1.69 F	NS	2.65	4.8	2.73	

Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metal Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Dec-16	Jun-17
SS007	MWOB-05	Shallow	Arsenic	10	< 10	NS	< 100	NS	6.28 F	NS	< 10	NS	< 10
			Barium	2000	23.7	NS	24.4	NS	22.8	NS	29.8	NS	28.5
			Lead	15	< 10 UB	NS	< 10	NS	5.99 F	NS	< 10	NS	< 10
			Selenium	50	12.4	NS	14.9	NS	14.8	NS	16.1	NS	12.8
			Silver	94 *	< 10	NS	< 10	NS	5.72 F	NS	< 10	NS	< 10
	MWOB-06	Shallow	Barium	2000	15.6	NS	19 F	NS	24.2	NS	28.3	NS	23.2
			Lead	15	< 10	NS	< 10	NS	9.05 F	NS	< 10	NS	< 10
			Selenium	50	23	NS	23.7 M	NS	29.2	NS	23.7	NS	21.1
			Silver	94 *	< 10	NS	< 10	NS	7.95 F	NS	< 10	NS	< 10
	MWOB-09	Shallow	Barium	2000	38.3	54.5	69.8	57.3	54.7	NS	80.2	85.9	86.3
			Selenium	50	5.5	6.56	3.14	2.13	3.98	NS	3.32	3.93	2.85
	MWOB-13	Shallow	Barium	2000	NS	45.3	NS	43.1	37.4	NS	43.1	NS	57.7
			Selenium	50	NS	14.8	NS	7.64	10.1	NS	8.76	NS	5.23
			Silver	94 *	NS	< 10	NS	< 10	5.04 F	NS	< 10	NS	< 10
	MWOB-16	Shallow	Barium	2000	18.8	NS	23.6	NS	25.3	NS	19.6 F	NS	20.2
			Selenium	50	15.9	NS	13.8	NS	26.3	NS	17.2	NS	17.7
			Silver	94 *	< 10	NS	< 10	NS	7.06 F	NS	< 10	NS	< 10
	MWOB-18	Shallow	Arsenic	10	< 10	< 100	< 100	< 100	< 10	NS	< 10	6.75 F	< 10
			Barium	2000	13.1	14.2 F	16.3 F	13.9 F	29.4	NS	15.2 F	14	14.6
			Selenium	50	5.04	13.1	6.9	3.47	10.7	NS	10.6	9.98	8.68
	MWOB-19	Shallow	Barium	2000	43.3	NS	45.7	NS	64.7	NS	84.4	NS	59.8
Selenium			50	17.7	NS	26.8	NS	3.12	NS	16.3	NS	15	
MWOB-21	Shallow	Arsenic	10	< 10	< 100	< 100	< 100	< 10	NS	11.9 F	12.5	19.8	
		Barium	2000	33.2	52.2	267	229	206	NS	160	132	132	
		Lead	15	< 10	< 10	< 10	< 100	10.2 F	NS	< 10	< 10	< 10	
		Selenium	50	10.7	8.29	1.69 F	2.05 B	3.99	NS	3.04	5.61	3.8	
		Silver	94 *	< 10	< 10	< 10	< 10	8.24 F	NS	< 10	< 10	< 10	

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
2013 - 2017**

Site	Sample Location	Water Bearing Zone	Metal Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Dec-16	Jun-17
ST008	MW08-05	Shallow	Arsenic	10	< 10	NS	< 100	NS	10.8 F	NS	< 10	NS	< 10
			Barium	2000	103	NS	107	NS	102	NS	116	NS	116
			Lead	15	< 10	NS	< 100	NS	11.2 F	NS	< 10	NS	< 10
			Selenium	50	14.9	NS	7.17	NS	15.3	NS	7.28	NS	6.95
	MW08-09	Shallow	Arsenic	10	< 10	NS	< 100	NS	< 10	NS	< 10	NS	5.45 F
			Barium	2000	408	NS	415	NS	407	NS	417	NS	379
			Lead	15	< 10	NS	5.5 F	NS	< 10	NS	6.75 F	NS	< 10
			Selenium	50	4.83	NS	3.75	NS	4.96	NS	3.13	NS	2.1
	MW08-12	Shallow	Arsenic	10	< 10	NS	< 100	NS	NS	NS	5.01 F	NS	< 10
			Barium	2000	210	NS	189	NS	NS	NS	224	NS	269
			Lead	15	< 10	NS	5.86 F	NS	NS	NS	< 10	NS	< 10
			Selenium	50	5.27	NS	5.19	NS	NS	NS	2.97	NS	3.02
	MW08-16	Shallow	Barium	2000	115	NS	58.6	NS	159	NS	156	NS	156
			Selenium	50	2.76	NS	1.54 F	NS	3.74	NS	1.44 F	NS	1.7 F

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

M = Detected result above the LOQ; a matrix effect was present

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

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**Industrial Zone Area
Detected Metal Concentrations in the Intermediate Zone
2013 - 2017**

Site	Sample Location	Water Bearing Zone	Metal Concentrations (µg/L)											
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Dec-16	Jun-17	
SS007	MWN7-38	Intermediate	Arsenic	10	< 10	< 100	< 100	< 100	5.8 F	NS	< 10	6.03 F	< 10	
			Barium	2000	59.4	79.4	62.5	56.8	51.3	NS	57.9	145	74.4	
			Lead	15	< 10	5.24 F	6.44 F	< 100	< 10	NS	< 10	< 10	6.06 F	
			Selenium	50	11.3	8.02	8.88	6.16	11.3	NS	6.77	13.4	8.47	
			Silver	94 *	< 10	< 10	< 10	< 10	7.1 F	NS	< 10	< 10	< 10	
	MWN7-48	Intermediate	Arsenic	10	< 10	NS	< 100	NS	< 10	NS	< 10	NS	6.4 F	
			Barium	2000	22	NS	23	NS	19.8 F	NS	25.9	NS	22.1	
			Selenium	50	20.4	NS	24.9	NS	23	NS	16.4	NS	14.4	
	MWN7-50	Intermediate	Barium	2000	30.2	NS	30.5	NS	26.8	NS	24.3	NS	26.7	
			Chromium, Total	100	13.1 F	NS	< 20	NS	< 20	NS	< 20	NS	< 20	
			Lead	15	< 10	NS	< 10	NS	10.2 F	NS	< 10	NS	< 10	
			Selenium	50	41.9	NS	36.3	NS	47.2	NS	35.4	NS	36.4	
	MWN7-52	Intermediate	Silver	94 *	< 10	NS	< 10	NS	8.78 F	NS	< 10	NS	< 10	
			Arsenic	10	< 10	< 100	< 100	< 100	< 10	NS	6.01 F	7.49 F	< 10	
			Barium	2000	57.3	57	57.4	69	68	NS	75.1	58.4	67.3	
			Lead	15	< 10	< 10	< 10	< 100	6.84 F	NS	< 10	< 10	< 10	
			Selenium	50	23.7	16.0	20.1	19.7	20.9	NS	17.7	20.4	19.5	
	ST008	MW08-18	Intermediate	Silver	94 *	< 10	< 10	< 10	< 10	7.22 F	NS	< 10	< 10	< 10
				Arsenic	10	< 10	NS	< 100	NS	5.05 F	NS	< 10	NS	< 10
				Barium	2000	42.0	NS	42.9	NS	40.5	NS	48.3	NS	46
Lead				15	< 10	NS	< 10	NS	8.97 F	NS	< 10	NS	< 10	
Selenium				50	11.3	NS	10.1	NS	12.5	NS	7.62	NS	8.19	

Notes:

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RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

M = Detected result above the LOQ; a matrix effect was present.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

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**Industrial Zone Area
Detected Metal Concentrations in the Deep Zone
2013 - 2017**

Site	Sample Location	Water Bearing Zone	Metal Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Dec-16	Jun-17
LF003	MW03-07	Deep	Barium	2000	28	NS	28.6	NS	23.5	NS	32	NS	25.4
			Selenium	50	22.70	NS	21.70	NS	23.5	NS	21.5	NS	22.2
SS007	MW07-07	Deep	Arsenic	10	13.1	NS	< 100	NS	< 10	NS	< 10	NS	< 10
			Barium	2000	25	NS	25	NS	25	NS	24.1	NS	23.3
			Lead	15	< 10	NS	< 10	NS	14.8 F	NS	< 10	NS	< 10
			Selenium	50	66.4	NS	146 M	NS	86.2	NS	74.8	NS	59.2
			Silver	94 *	< 10	NS	< 10	NS	22.2	NS	< 10	NS	< 10
	MWN7-51	Deep	Arsenic	10	8.25 F	NS	< 100	NS	< 10	NS	< 10	NS	7.28 F
			Barium	2000	22.7	NS	22	NS	19.2 F	NS	24.8 B	NS	18.3
			Lead	15	< 10	NS	< 10	NS	10.7 F	NS	< 10	NS	< 10
			Selenium	50	42.7	NS	39.6	NS	47.2	NS	33.4	NS	38.5
	MWN7-53	Deep	Silver	94 *	< 10	NS	< 10	NS	8.37 F	NS	< 10	NS	< 10
			Arsenic	10	10.4	< 100	< 100	< 100	< 10	NS	< 10	< 10	< 10
			Barium	2000	46	110	36	78.6	65	NS	65.8	128	79.6
			Selenium	50	24.1	16.4	22.0	0.869 B	0.922 F	NS	0.727 F	14.6	0.718 F

Notes:

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RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ)

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

M = Detected result above the LOQ; a matrix effect was present.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site FT002
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
FT002	MW02-04	Shallow	1,2-Dichloroethane	5	< 0.5	NS	0.267 F	NS	< 0.5	NS	< 0.5	< 0.5
			2-Butanone (MEK)	5600 *	< 5	NS	< 5 UJ	NS	3.78 F	NS	< 5	< 5
			Acetone	14000 *	< 5	NS	< 5 UJ	NS	165	NS	< 5	7.07 F
			Benzene	5	< 0.25	NS	0.259 F	NS	< 0.25	NS	< 0.25	< 0.25
			cis-1,2-Dichloroethene	70	2.05	NS	7.67	NS	5.38	NS	12.6	11.5
			Trichloroethene	5	6.73	NS	13.2	NS	1.21	NS	2.98	15.5
			Vinyl Chloride	2	< 0.5	NS	0.717 F	NS	0.285 F	NS	< 0.5	2.06
	MW02-05	Shallow	cis-1,2-Dichloroethene	70	0.321 F	NS	0.511 F	NS	0.301 F	NS	< 0.5 UJ	< 0.5
			sec-Butylbenzene	2000 *	NS	NS	0.323 F	NS	NS	NS	NS	NS
			Tetrachloroethene	5	0.901 F	NS	1.45	NS	1.22	NS	1.31 J	0.814 F

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U = Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site FT002
Detected SVOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
FT002	MW02-04	Shallow	Di-n-Butyl Phthalate	900 *	2.79 F	NS	< 5.38	NS	< 5	NS	< 5.1 UJ	< 5
			Di-n-Octyl Phthalate	200 *	103 R	NS	< 5.38	NS	< 5	NS	< 5.1 UJ	< 5
			n-Docosane	-	< 50	NS	61.8 F	NS	< 50 UJ	NS	NS	NS
			n-Hexacosane	-	< 50	NS	49 F	NS	< 50 UJ	NS	NS	NS
			n-Tetracosane	-	< 50	NS	61.2 F	NS	< 50 UJ	NS	NS	NS
	MW02-05	Shallow	Di-n-Octyl Phthalate	200 *	79.9 R	NS	< 5	NS	< 5.1	NS	< 5 UJ	< 5.26
			n-Docosane	-	< 50	NS	58.9 F	NS	< 50 UJ	NS	NS	NS
			n-Eicosane	-	< 50	NS	40.2 F	NS	< 50 UJ	NS	NS	NS
			n-Hexacosane	-	27.2 F	NS	< 50	NS	< 50 UJ	NS	NS	NS
			n-Octadecane	-	< 50	NS	39.7 F	NS	< 50 UJ	NS	NS	NS

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U = Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site FT002
Detected Metals Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
FT002	MW02-04	Shallow	Barium	2000	135	NS	145	NS	135	NS	182	253
			Lead	15	< 10	NS	6.87 F	NS	< 10	NS	< 10	< 10
			Selenium	50	48.7	NS	25.2	NS	34.3	NS	12.5	8.03
			Silver	94 *	< 10	NS	< 10	NS	6.3 F	NS	< 10	< 10
	MW02-05	Shallow	Arsenic	10	< 100	NS	< 100	NS	6.95 F	NS	6.3 F	5.56 F
			Barium	2000	281	NS	282	NS	246	NS	78.1	78.8
			Lead	15	< 10	NS	< 10	NS	8.68 F	NS	< 10	< 10
			Selenium	50	52.8	NS	47.6	NS	61.3	NS	20.7	17.9
			Silver	94 *	< 10	NS	< 10	NS	5.59 F	NS	< 10	< 10

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U = Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site FT002
Detected TPH Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (µg/L)									
			Parameter	OK RBCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
FT002	MW02-04	Shallow	OK DRO (PHC C10-C28)	1000	425 J	NS	698	NS	1890 J	NS	598 J	3780 J
	MW02-05	Shallow	OK DRO (PHC C10-C28)	1000	353 J	NS	98.3 F	NS	199 F	NS	73 F	< 106.4

Notes:

¹ Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Risk Based Cleanup Level for Groundwater (RBCL; October 2012).

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U = Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

OK DRO = Oklahoma Diesel Range Organics

OK GRO = Oklahoma Gasoline Range Organics

PHC = Petroleum hydrocarbons

Sources:

ODEQ, October 2012 accessed at <http://www.deq.state.ok.us/factsheets/land/tpb.pdf>.

Site DP005
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-01	Shallow	1,1,2-Trichloroethane	5	< 5	NS	1.01	NS	< 5	NS	< 5	NS	< 25
			1,1-Dichloroethane	28 *	< 2.5	NS	1.23	NS	< 2.5	NS	< 2.5	NS	< 12.5
			1,1-Dichloroethene	7	< 10	NS	1.62 F	NS	< 10	NS	< 10 UJ	NS	< 50
			1,2-Dichloroethane	5	< 5	NS	0.427 F	NS	< 5	NS	< 5	NS	< 25
			Benzene	5	4.95 F	NS	1.57	NS	< 2.5	NS	10.4	NS	22.7 F
			Chlorobenzene	100	< 2.5	NS	0.16 F	NS	< 2.5	NS	< 2.5	NS	< 12.5
			Chloroform	80	< 2.5	NS	3.17 J	NS	< 2.5	NS	5	NS	< 12.5
			cis-1,2-Dichloroethene	70	414	NS	740	NS	311	NS	287	NS	2000
			Tetrachloroethene (PCE)	5	< 5	NS	3.69	NS	< 5	NS	3.97 F	NS	< 25
			trans-1,2-Dichloroethene	100	< 5	NS	1.12	NS	< 5	NS	< 5	NS	27.3 F
			Trichloroethene (TCE)	5	2840	NS	5800	NS	1900	NS	8170	NS	12600
	MW-05-03	Shallow	Acetone	14,000 *	< 5	NS	< 5	NS	< 5	NS	< 5	NS	4.19 F
			Chloroethane	21,000 *	< 1	NS	< 1	NS	< 1	NS	< 1	NS	0.685 F
			cis-1,2-Dichloroethene	70	5.64	NS	2.71	NS	21.1	NS	41.6	NS	10.3 J
			trans-1,2-Dichloroethene	100	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.252 F	NS	< 0.5 UJ
			Trichloroethene (TCE)	5	9.93	NS	8.41	NS	24.6	NS	20.1	NS	7.97 J
	MW-05-04	Shallow	1,1,1-Trichloroethane	200	NS	NS	NS	NS	NS	NS	118 J	NS	54.9
			1,1,2-Trichloroethane	5	NS	NS	NS	NS	NS	NS	9.7 J	NS	7.86
			1,1-Dichloroethane	28 *	NS	NS	NS	NS	NS	NS	79.9 J	NS	91.1
			1,1-Dichloroethene	7	NS	NS	NS	NS	NS	NS	31.8 J	NS	45.9
			1,2-Dichlorobenzene	600	NS	NS	NS	NS	NS	NS	19.3 J	NS	16.4
			1,3-Dichlorobenzene	600	NS	NS	NS	NS	NS	NS	2.3 J	NS	2.05
			1,4-Dichlorobenzene	75	NS	NS	NS	NS	NS	NS	2.81 J	NS	2.66
			4-Methyl-2-Pentanone	6300 *	NS	NS	NS	NS	NS	NS	11.9 J	NS	7.57 F
			Acetone	14,000 *	NS	NS	NS	NS	NS	NS	390 J	NS	76.4
			Benzene	5	NS	NS	NS	NS	NS	NS	554	NS	479
			Chloroform	80	NS	NS	NS	NS	NS	NS	146	NS	91.2
			cis-1,2-Dichloroethene	70	NS	NS	NS	NS	NS	NS	100,000 J	NS	87800
			Ethylbenzene	700	NS	NS	NS	NS	NS	NS	206 J	NS	205 F
			m- & p-Xylene	10,000	NS	NS	NS	NS	NS	NS	1140	NS	898 F
			Methylene Chloride	5	NS	NS	NS	NS	NS	NS	24.3 J	NS	0.785 F
			o-Xylene	10,000	NS	NS	NS	NS	NS	NS	574	NS	486 F
			Tetrachloroethene (PCE)	5	NS	NS	NS	NS	NS	NS	10.7 J	NS	3.78
Toluene	1000	NS	NS	NS	NS	NS	NS	3490	NS	3220			
trans-1,2-Dichloroethene	100	NS	NS	NS	NS	NS	NS	339	NS	313 F			
Trichloroethene (TCE)	5	NS	NS	NS	NS	NS	NS	1990	NS	124			
Vinyl chloride	2	NS	NS	NS	NS	NS	NS	12.3 J	NS	< 0.5			

Site DP005
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-06 ²	Shallow	2-Butanone (MEK)	5600 *	< 5	NS	18.8 F	NS	3.51 F	NS	NS	< 5	< 5
			Acetone	14,000 *	< 5	NS	< 25 UJ	NS	58	NS	NS	29.5	3.28 F
			Benzene	5	< 2	NS	0.669 F	NS	< 0.25	NS	NS	< 0.25	< 0.25
			cis-1,2-Dichloroethene	70	15.8	NS	29.4 J	NS	11	NS	NS	0.496 F	7.26
			Methylene Chloride	5	< 0.5	NS	2.1 F	NS	< 0.5	NS	NS	< 0.5	< 0.5
			Toluene	1000	< 0.5	NS	< 2.5 J	NS	< 0.5	NS	NS	0.957 F	< 0.5
			Trichloroethene (TCE)	5	53.4	NS	39.1 J	NS	17.6	NS	NS	0.445 F	0.605 F
	MW-05-07 ²	Shallow	1,1-Dichloroethene	7	< 1	NS	< 1R	NS	< 1	NS	NS	< 1	0.901 F
			1,2-Dichlorobenzene	600	NS	NS	0.213 R	NS	< 0.25	NS	NS	< 0.25	0.427 F
			1,3-Dichlorobenzene	600	NS	NS	0.252 R	NS	< 0.5	NS	NS	< 0.5	0.413 F
			1,4-Dichlorobenzene	75	NS	NS	< 0.25 UR	NS	< 0.25	NS	NS	< 0.25	3.3
			2-Butanone (MEK)	5600 *	< 5	NS	65.9 R	NS	< 5	NS	NS	< 5	< 5
			2-Hexanone	38 *	< 5	NS	59.6 R	NS	NS	NS	NS	NS	NS
			Acetone	14,000 *	< 5	NS	40.3 R	NS	7.08 F	NS	NS	134	10.8 J
			Benzene	5	< 2	NS	1.11 R	NS	< 0.25	NS	NS	< 0.25	2.47
			Chlorobenzene	100	< 0.25	NS	< 0.25 UR	NS	< 0.25	NS	NS	< 0.25	1.37 F
			Chloroform	80	0.417 F	NS	< 0.25 UR	NS	< 0.25	NS	NS	< 0.25	< 0.25
			cis-1,2-Dichloroethene	70	236	NS	152 R	NS	1.51	NS	NS	1.62	241
			Isopropylbenzene	450 *	NS	NS	0.648 R	NS	NS	NS	NS	NS	NS
			sec-Butylbenzene	2000 *	NS	NS	0.434 R	NS	NS	NS	NS	NS	NS
			Toluene	1000	< 0.5	NS	< 0.5 UR	NS	< 0.5	NS	NS	< 0.5	0.739 F
			trans-1,2-Dichloroethene	100	1.04	NS	1.15 R	NS	< 0.5	NS	NS	< 0.5	2.62
			Trichloroethene (TCE)	5	207	NS	43.3 R	NS	0.971 F	NS	NS	0.64 F	3.42
	Vinyl Chloride	2	15	NS	75.7 R	NS	7.61	NS	NS	< 0.5	260		
	MW-05-08	Shallow	1,1-Dichloroethane	28 *	< 2.5	NS	0.212 F	NS	< 2.5	NS	< 12.5	NS	< 0.25
			1,1-Dichloroethene	7	< 10	NS	0.981 F	NS	< 10	NS	< 50 UJ	NS	0.741 F
			1,2-Dichlorobenzene	600	NS	NS	0.226 F	NS	< 2.5	NS	< 12.5	NS	0.475 F
			1,3-Dichlorobenzene	600	NS	NS	< 0.5	NS	< 5	NS	< 25	NS	0.605 F
			1,4-Dichlorobenzene	75	NS	NS	< 0.25	NS	< 2.5	NS	< 12.5	NS	0.335 F
			2-Butanone (MEK)	5600 *	< 50	NS	< 5	NS	< 50	NS	< 250	NS	12.6
			Acetone	14,000 *	< 50	NS	< 5	NS	< 50	NS	< 250	NS	283
			Benzene	5	< 2.5	NS	0.209 F	NS	< 2.5	NS	< 12.5	NS	1.7
			Chloroform	80	3.61 F	NS	2.21 J	NS	6.62	NS	< 12.5	NS	< 0.25
cis-1,2-Dichloroethene			70	1140	NS	519	NS	892	NS	1750	NS	87.6	
Methylene Chloride			5	< 5	NS	< 0.5	NS	15 B	NS	< 25	NS	< 0.5	
Tetrachloroethene (PCE)			5	< 5	NS	0.533 F	NS	< 5	NS	< 25	NS	< 0.5	
trans-1,2-Dichloroethene			100	3.69 F	NS	2.87	NS	3.65 F	NS	< 25	NS	2.52	
Trichloroethene (TCE)			5	3510	NS	1950	NS	6570	NS	7430	NS	3.95	
Vinyl Chloride	2	< 5	NS	< 0.5 UJ	NS	< 5	NS	< 25	60.1	139			

Site DP005
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-19 ²	Shallow	1,1,1-Trichloroethane	200	< 0.5	NS	< 0.5 UR	NS	< 0.5	NS	NS	< 0.5	0.946 F
			1,1,2,2-Tetrachloroethane	0.76 *	< 0.4	NS	< 0.4 UR	NS	NS	NS	NS	< 0.5	0.308 F
			1,1,2-Trichloroethane	5	< 0.5	NS	< 0.5 UR	NS	0.58 F	NS	NS	< 0.5	< 0.5
			1,1-Dichloroethane	28 *	1.35 F	NS	0.747 R	NS	0.447 F	NS	NS	10.4	4.25
			1,1-Dichloroethene	7	0.644 F	NS	1.18 R	NS	< 1	NS	NS	1.7 F	< 1
			1,2,4-Trimethylbenzene	15 *	3.36 F	NS	4.77 R	NS	NS	NS	NS	NS	NS
			1,2-Dichlorobenzene	600	< 5.38	NS	0.418 R	NS	0.31 F	NS	NS	0.654	0.432 F
			1,2-Dichloropropane	5	< 0.25	NS	< 0.4 R	NS	< 0.4	NS	NS	0.61 F	< 0.4
			1,3,5-Trimethylbenzene	120 *	< 2	NS	0.371 R	NS	NS	NS	NS	NS	NS
			1,3-Dichlorobenzene	600	< 5.38	NS	0.614 R	NS	0.567 F	NS	NS	0.385 F	< 0.5
			1,4-Dichlorobenzene	75	< 5.38	NS	0.524 R	NS	0.491 F	NS	NS	0.307 F	0.2 F
			Acetone	14,000 *	< 5	NS	< 5 UR	NS	5.64 F	NS	NS	4.8 F	6.51 F
			Benzene	5	5.88	NS	7.59 J	NS	5.09	NS	NS	25.7	9.35
			Chloroethane	21,000 *	4.74	NS	5.79 R	NS	13.7	NS	NS	29	3.84
			Chloroform	80	< 0.25	NS	< 0.25 UR	NS	0.208 F	NS	NS	< 0.25	0.201 F
			cis-1,2-Dichloroethene	70	59.3	NS	78.6 R	NS	24.7	NS	NS	402 J	32.5
			Ethylbenzene	700	1.29 F	NS	1.66 F	NS	0.873 F	NS	NS	63.7	40.9
			Isopropylbenzene	450 *	NS	NS	0.686 R	NS	NS	NS	NS	NS	NS
			m- & p-Xylene	10,000	1.72 F	NS	2.17 F	NS	2.03	NS	NS	203	85.7
			Methylene Chloride	5	< 0.5	NS	< 0.5 R	NS	< 0.5	NS	NS	0.341 F	< 0.5
			o-Xylene	10,000	1.63 F	NS	2.7 F	NS	2.69	NS	NS	118	98.2
			p-Isopropyltoluene	-	NS	NS	0.284 R	NS	NS	NS	NS	NS	NS
			Toluene	1000	2.72 F	NS	3.63 F	NS	4.63	NS	NS	232	56.7
trans-1,2-Dichloroethene	100	1.7	NS	1.11 R	NS	0.676 F	NS	NS	2.36	0.658 F			
Trichloroethene (TCE)	5	83.2	NS	155 R	NS	195	NS	NS	220	162			
Vinyl Chloride	2	150	NS	94.3 R	NS	8.14	NS	NS	213	4.72			
Xylenes, Total	10,000	3.38 F	NS	NS	NS	NS	NS	NS	NS	NS			

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Wells MW-05-06, MW-05-07, and MW-05-19 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected VOC Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-18	Intermediate	Chloroform	80	0.147 F	NS	0.16 F	NS	0.175 F	NS	< 0.25	0.211 F
			cis-1,2-Dichloroethene	70	2.2	NS	4.99	NS	10.9	NS	4.5	22.6
			trans-1,2-Dichloroethene	100	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	0.28 F
			Trichloroethene (TCE)	5	241	NS	254	NS	300	NS	146	309

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected VOC Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-09	Deep	cis-1,2-Dichloroethene	70	3.64	NS	4.06	NS	1.09	NS	0.32 F	0.392 F
			Trichloroethene (TCE)	5	0.291 F	NS	< 0.5	NS	0.303 F	NS	< 0.5	< 0.5 UJ

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected SVOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-01	Shallow	1,2-Dichlorobenzene	600	< 5.38 UR	NS	1.52	NS	< 5	NS	< 5 UJ	NS	< 5
			1,3-Dichlorobenzene	600	< 5.38 UR	NS	< 5	NS	< 5	NS	< 5 UJ	NS	2.68 F
			bis(2-Ethylhexyl)Phthalate	6	6.6 F	NS	< 6	NS	< 6	NS	< 6	NS	418
			Diethyl Phthalate	15,000 *	< 5.38 UR	NS	4.16 F	NS	< 5	NS	< 5	NS	< 5
			Di-n-Octyl Phthalate	200 *	28.6 R	NS	< 5	NS	< 5	NS	< 5	NS	< 5
			n-Hexacosane	-	42.4 F	NS	< 51.2	NS	< 50	NS	NS	NS	NS
	MW-05-03	Shallow	Diethyl Phthalate	15,000 *	< 5.1 UR	NS	4.41 F	NS	< 5.26	NS	< 5	NS	< 5
			Di-n-Octyl Phthalate	200 *	70.7 R	NS	< 5.26	NS	< 5.26	NS	< 5	NS	< 5
			n-Hexacosane	-	30.3 F	NS	< 50	NS	< 55	NS	NS	NS	NS
	MW-05-04	Shallow	1,2-Dichlorobenzene	600	NS	NS	NS	NS	NS	NS	19.3 J	NS	7.42 F
			1,4-Dioxane	4.6 *	NS	NS	NS	NS	NS	NS	3.14	NS	1.89 F
			2,4-Dimethylphenol	360 *	NS	NS	NS	NS	NS	NS	37.1 J	NS	56 J
			2-Methylphenol	930 *	NS	NS	NS	NS	NS	NS	57.4 J	NS	52 J
			3- & 4-Methylphenol	-	NS	NS	NS	NS	NS	NS	723	NS	1120
			Naphthalene	1.7 *	NS	NS	NS	NS	NS	NS	13 J	NS	24.1 J
	MW-05-06 ²	Shallow	Phenol	5800 *	NS	NS	NS	NS	NS	NS	86.6 J	NS	79.1 J
			3- & 4-Methylphenol	-	< 5 UR	NS	< 200	NS	5.42 F	NS	NS	NS	< 5
			bis(2-Ethylhexyl)Phthalate	6	< 5 UR	NS	< 240	NS	< 6	NS	NS	332 J	< 6
			Di-n-Octyl Phthalate	200 *	18.7 R	NS	< 200	NS	< 5	NS	NS	< 5 UJ	< 5
			n-Docosane	-	42.3 F	NS	< 25800	NS	64.4 F	NS	NS	NS	NS
			n-Eicosane	-	< 51	NS	< 25800	NS	170 J	NS	NS	NS	NS
			n-Hexacosane	-	< 51	NS	16700 F	NS	179 J	NS	NS	NS	NS
	n-Octacosane	-	< 51	NS	< 25800	NS	40.3 F	NS	NS	NS	NS		
n-Tetracosane	-	< 51	NS	51600 J	NS	37 F	NS	NS	NS	NS			

Site DP005
Detected SVOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-07 ²	Shallow	1,2-Dichlorobenzene	600	< 5.1 UR	NS	0.213 R	NS	< 5	NS	NS	< 5	< 5
			3- & 4-Methylphenol	-	< 5.1 UR	NS	< 250	NS	3.49 F	NS	NS	< 5	< 5
			Di-n-Octyl Phthalate	200 *	7.53 F	NS	< 250	NS	< 5	NS	NS	< 5	< 5
			n-Decane	-	< 55.6 UJ	NS	< 2000 UJ	NS	26 F	NS	NS	NS	NS
			n-Docosane	-	< 55.6	NS	7020	NS	< 50	NS	NS	NS	NS
			n-Hexacosane	-	< 55.6	NS	11800	NS	32.9 F	NS	NS	NS	NS
	MW-05-08	Shallow	n-Tetracosane	-	< 55.6	NS	31700	NS	< 50	NS	NS	NS	NS
			3- & 4-Methylphenol	-	NS	NS	NS	NS	NS	NS	NS	NS	78.6
			Diethyl Phthalate	15,000 *	< 5 UR	NS	4.73 F	NS	< 5.62	NS	< 5 UJ	NS	< 5
	MW-05-19 ²	Shallow	Di-n-Octyl Phthalate	200 *	42.3 R	NS	< 5.2	NS	< 5.62	NS	< 5 UJ	NS	< 5
			2,4-Dimethylphenol	360 *	< 5.38	NS	< 5	NS	< 5.1	NS	NS	18.5	< 5 UJ
			2-Methylnaphthalene	36 *	< 5.38	NS	< 5	NS	< 5.1 UJ	NS	NS	13	< 5 UJ
			2-Methylphenol	930 *	< 5.38	NS	< 5	NS	< 5.1	NS	NS	4.84 F	< 5 UJ
			3- & 4-Methylphenol	-	< 5.38	NS	< 5	NS	< 5.1	NS	NS	28.1	14.3 J
			bis(2-Ethylhexyl)Phthalate	6	157	NS	3.72 B	NS	133	NS	NS	15.4	11.9 J
Di-n-Butyl Phthalate			900 *	2.91 F	NS	< 5	NS	< 5.1	NS	NS	< 5	< 5 UJ	
Di-n-Octyl Phthalate	200 *	29.2	NS	< 5	NS	< 5.1	NS	NS	< 5	< 5 UJ			
Naphthalene	1.7 *	1.46 F	NS	1.07 F	NS	< 5.1 UJ	NS	NS	28.8	5.63 J			

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Wells MW-05-06, MW-05-07, and MW-05-19 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016
 Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R = The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected SVOC Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-18	Intermediate	Di-n-Octyl Phthalate	200 *	10.2	NS	< 5	NS	< 5	NS	< 5 UJ	< 5

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected SVOC Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-09	Deep	bis(2-Ethylhexyl)Phthalate	6	19.3	NS	< 6 UJ	NS	< 6.12	NS	< 6 UJ	< 6.12
			Di-n-Octyl Phthalate	200 *	14.4	NS	< 5 UJ	NS	< 5.1	NS	< 5 UJ	< 5.1

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected Metal Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metals Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-01	Shallow	Arsenic	10	< 10	NS	< 100	NS	< 10 B	NS	< 10	NS	8.49 F
			Barium	2000	26.1	NS	33.3	NS	27.5	NS	69.8	NS	64
			Lead	15	< 10 B	NS	< 10	NS	7.74 F	NS	< 10	NS	< 10
			Selenium	50	12.2	NS	7.52	NS	15.5	NS	6.62	NS	7.37
			Silver	94 *	< 10	NS	< 10	NS	10.8 F	NS	< 10	NS	< 10
	MW-05-03	Shallow	Barium	2000	NS	NS	114	NS	148	NS	128	NS	139
			Lead	15	NS	NS	20	NS	11.4 F	NS	< 10	NS	< 10
			Selenium	50	NS	NS	2.38	NS	3.94	NS	2.16 F	NS	2.19
	MW-05-04	Shallow	Arsenic	10	IW	IW	IW	IW	NS	NS	34.2 B	NS	22.5
			Barium	2000	IW	IW	IW	IW	NS	NS	254	NS	244
			Selenium	50	IW	IW	IW	IW	NS	NS	3.87	NS	5.29
	MW-05-06 ²	Shallow	Arsenic	0.67 *	< 100	NS	< 100	NS	10.5 B	NS	NS	< 10	< 10
			Barium	2000	48.2	NS	174	NS	300	NS	NS	457	380
			Lead	15	< 10	NS	< 10	NS	9.06 F	NS	NS	< 10	< 10
			Selenium	50	3.43	NS	0.967 F	NS	2.91	NS	NS	0.732 F	0.834 F
	MW-05-07 ²	Shallow	Barium	2000	202	NS	453	NS	194	NS	NS	331	332
			Lead	15	< 10	NS	< 10	NS	9.03 F	NS	NS	< 10	< 10
			Selenium	50	2.43	NS	1.34 F	NS	0.613 F	NS	NS	0.517 F	0.532 F
			Silver	94 *	< 10	NS	< 10	NS	5.37 F	NS	NS	< 10	< 10
	MW-05-08	Shallow	Arsenic	10	< 10	NS	< 100	NS	6.07 B	NS	< 10	NS	7.99 F
			Barium	2000	46.5	NS	51.8	NS	37.3	NS	43.3	NS	254
			Lead	15	< 10 B	NS	< 10	NS	5.15 F	NS	< 10	NS	< 10
			Selenium	50	3.97	NS	4.71	NS	6.46	NS	4.12 F	NS	1.52 F
	MW-05-19 ²	Shallow	Barium	2000	81.1	NS	73	NS	57.4	NS	NS	289	44
Lead			15	< 10	NS	< 10	NS	10.2 F	NS	NS	< 10	< 10	
Selenium			50	11.8	NS	14.9	NS	20.1	NS	NS	5.05	14.1	
Silver			94 *	< 10	NS	< 10	NS	9.28 F	NS	NS	< 10	< 10	

Site DP005
Detected Metal Concentrations in the Shallow Zone
2013 - 2017

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

² Wells MW-05-06, MW-05-07, and MW-05-19 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown.

B = Result is judged to be an artifact because of contamination in associated blanks

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ)

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies

IW = An insufficient volume of groundwater was present in the well for sample collection and analysis

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected Metal Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-18	Intermediate	Arsenic	10	< 100	NS	< 100	NS	< 10	NS	< 10	8.66 F
			Barium	2000	23	NS	24.3	NS	22.7	NS	21.3	24
			Lead	15	< 10	NS	< 10	NS	10.2 F	NS	< 10	< 10
			Selenium	50	27.1	NS	30.9	NS	28	NS	20.3	26.7
			Silver	94 *	< 10	NS	< 10	NS	7.97 F	NS	< 10	< 10

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected Metal Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-09	Deep	Barium	2000	10.6 F	NS	11.8 F	NS	12.1 F	NS	11 F	11.8
			Lead	15	< 10	NS	< 10	NS	17.6 F	NS	< 10	< 10
			Selenium	50	45.6	NS	41.1	NS	37.4	NS	40.3	42.4
			Silver	94 *	< 10	NS	< 10	NS	11 F	NS	< 10	< 10

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site DP005
Detected TPH Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (µg/L)										
			Parameter	OK RBCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Sep-16	Jun-17
DP005	MW-05-01	Shallow	OK DRO (PHC C10-C28)	1000	72.3 F	NS	< 102.6	NS	76.1 F	NS	< 102	NS	< 100
			OK GRO (PHC as Gasoline)	1000	696	NS	1910	NS	550	NS	2070	NS	3960
	MW-05-03	Shallow	OK DRO (PHC C10-C28)	1000	418 J	NS	< 100	NS	65 F	NS	< 100	NS	< 101
	MW-05-04	Shallow	OK DRO (PHC C10-C28)	1000	NS	NS	NS	NS	NS	NS	7230	NS	13700 J
			OK GRO (PHC as Gasoline)	1000	NS	NS	NS	NS	NS	NS	34200	NS	32900
	MW-05-06 ²	Shallow	OK DRO (PHC C10-C28)	1000	120 F	NS	335000	NS	5860 J	NS	NS	987 F	3530 J
	MW-05-07 ²	Shallow	OK DRO (PHC C10-C28)	1000	< 111.2	NS	176000	NS	3010	NS	NS	401	81.8 F
			OK GRO (PHC as Gasoline)	1000	122 F	NS	< 16000	NS	< 160	NS	NS	< 160	134 F
	MW-05-08	Shallow	OK DRO (PHC C10-C28)	1000	58.2 F	NS	< 100	NS	84.1 F	NS	< 102	NS	924 J
			OK GRO (PHC as Gasoline)	1000	1100	NS	661	NS	1760	NS	2380	NS	380
	MW-05-19 ²	Shallow	OK DRO (PHC C10-C28)	1000	968 J	NS	< 102	NS	779	NS	NS	5590	2010
			OK GRO (PHC as Gasoline)	1000	130 F	NS	104 F	NS	195 F	NS	NS	1540	1140

Notes:

¹ Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Risk Based Cleanup Level for Groundwater (RBCL; October 2012).

² Wells MW-05-06, MW-05-07, and MW-05-19 were not sampled in June 2016 due to the presence of Emulsified Vegetable Oil (EVO) in the well. These wells were sampled in September 2016.

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ)

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies

NS = Not sampled

OK DRO = Oklahoma Diesel Range Organics

OK GRO = Oklahoma Gasoline Range Organics

PHC = Petroleum hydrocarbons

Sources:

ODEQ, October 2012 accessed at <http://www.deq.state.ok.us/factsheets/land/tph.pdf>

Site DP005
Detected TPH Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (µg/L)									
			Parameter	OK RBCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-18	Intermediate	OK DRO (PHC C10-C28)	1000	54.3 F	NS	<100	NS	54.2 F	NS	< 102	< 108.6
			OK GRO (PHC as Gasoline)	1000	<160	NS	<160	NS	106 F	NS	< 160	113 F

Notes:

¹ Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Risk Based Cleanup Level for Groundwater (RBCL; October 2012).

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ)

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancy:

NS = Not sampled

OK DRO = Oklahoma Diesel Range Organics

OK GRO = Oklahoma Gasoline Range Organics

PHC = Petroleum hydrocarbons

Sources:

ODEQ, October 2012 accessed at <http://www.deq.state.ok.us/factsheets/land/tph.pdf>

Site DP005
Detected TPH Concentrations in the Deep Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (µg/L)									
			Parameter	OK RBCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
DP005	MW-05-09	Deep	OK DRO (PHC C10-C28)	1000	51.6 F	NS	<102	NS	<102	NS	< 107.6	< 100

Notes:

¹ Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Risk Based Cleanup Level for Groundwater (RBCL; October 2012).

Bold value with shaded cell indicates exceedance of listed regulatory criteria

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ)

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancy:

NS = Not sampled

OK DRO = Oklahoma Diesel Range Organics

OK GRO = Oklahoma Gasoline Range Organics

PHC = Petroleum hydrocarbons

Sources:

ODEQ, October 2012 accessed at <http://www.deq.state.ok.us/factsheets/land/tph.pdf>

Site SS026
Detected VOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)										
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17	
SS026	MW26-01	Shallow	1,1-Dichloroethane	28 *	< 0.25	NS	0.302 F	NS	< 0.25	NS	< 0.25	< 0.25 UJ	
			1,2-Dichloroethene, Total	-	19.1	NS	NS	NS	NS	NS	NS	NS	NS
			1,4-Dichlorobenzene	75	NS	NS	1.85	NS	< 0.25	NS	< 0.25	NS	0.203 F
			Acetone	14,000 *	< 5 UJ	NS	< 5	NS	< 5	NS	< 5	NS	2.72 F
			Benzene	5	0.253 F	NS	0.519	NS	< 0.25	NS	< 0.25	NS	0.222 F
			Chlorobenzene	100	1.6 F	NS	2.26	NS	< 0.25	NS	< 0.25	NS	0.291 F
			cis-1,2-Dichloroethene	70	19.1	NS	8.7	NS	< 0.5	NS	3.68	NS	2.42 J
			Isopropylbenzene	450 *	NS	NS	4.98	NS	NS	NS	NS	NS	NS
			n-Propylbenzene	-	NS	NS	1.3	NS	NS	NS	NS	NS	NS
			sec-Butylbenzene	2000 *	NS	NS	1.27	NS	NS	NS	NS	NS	NS
			tert-Butylbenzene	690 *	NS	NS	0.676 F	NS	NS	NS	NS	NS	NS
			Trichloroethene	5	0.854 F	NS	0.5 F	NS	< 0.5	NS	0.313 F	NS	< 0.5 UJ
	Vinyl Chloride	2	2.42	NS	1.64	NS	< 0.5	NS	< 0.5	NS	< 0.5 UJ		
	MW26-03	Shallow	1,2-Dichloropropane	5	< 0.25	NS	0.346 F	NS	< 0.4	NS	< 0.4	< 0.4	
			Acetone	14,000 *	< 5 UJ	NS	7.12 F	NS	< 5	NS	< 5	3.28 F	
			Benzene	5	< 0.25	NS	0.239 F	NS	< 0.25	NS	< 0.25	< 0.25	
			Chlorobenzene	100	0.711 F	NS	1.55	NS	< 0.25	NS	< 0.25	< 0.25	
			cis-1,2-Dichloroethene	70	< 0.5	NS	3.6	NS	0.746 F	NS	0.61 F	< 0.5	
			Isopropylbenzene	450 *	NS	NS	0.398 F	NS	NS	NS	NS	NS	
			Methyl Tert-Butyl Ether	140 *	NS	NS	22.8	NS	NS	NS	NS	NS	
			n-Propylbenzene	-	NS	NS	0.314 F	NS	NS	NS	NS	NS	
	sec-Butylbenzene	2000 *	NS	NS	0.91 F	NS	NS	NS	NS	NS			
	MW26-04	Shallow	1,1-Dichloroethane	28 *	0.49 F	NS	0.33 F	NS	0.685	NS	0.185 F	0.552 J	
			1,2-Dichloroethane	5	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	0.895 F	
			Benzene	5	2.28 F	NS	0.474 F	NS	0.885	NS	0.229 F	3.65 J	
			Bromodichloromethane	80	< 0.5	NS	< 0.5	NS	< 0.5	NS	< 0.5	2.66 J	
			Ethylbenzene	700	< 0.5	NS	< 0.5	NS	0.586 F	NS	< 0.5	0.851 F	
			Isopropylbenzene	450 *	NS	NS	3.53	NS	NS	NS	NS	NS	
			Methylene Chloride	5	< 0.5	NS	< 0.5	NS	0.432 F	NS	< 0.5	< 0.5 UJ	
			n-Propylbenzene	-	NS	NS	4.19	NS	NS	NS	NS	NS	
	sec-Butylbenzene	2000 *	NS	NS	0.367 F	NS	NS	NS	NS	NS			

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site SS026
Detected VOC Concentrations in the Intermediate Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
SS026	MW26-02	Intermediate	1,2-Dichloroethane	5	< 0.5	NS	< 0.5	NS	< 0.5	NS	0.36 F	< 0.5
			Acetone	14,000 *	< 5 UJ	NS	< 5	NS	< 5	NS	< 5	3.42 F
			Chlorobenzene	100	0.256 F	NS	< 0.25	NS	< 0.25	NS	< 0.25	< 0.25
			Chloroform	80	0.319 F	NS	0.237 F	NS	0.583	NS	0.69	< 0.25
			Trichloroethene	5	< 0.5	NS	< 0.5	NS	0.352 F	NS	< 0.5	< 0.5

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site SS026
Detected SVOC Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Semivolatile Organic Compound Concentrations (µg/L)									
			Parameter	MCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17
SS026	MW26-01	Shallow	Naphthalene	1.7 *	< 5 UR	NS	0.878	NS	< 5.32 UJ	NS	< 5.1 UJ	< 5
	MW26-03	Shallow	1,2-Dichlorobenzene	600	< 5.38 UR	NS	0.271 F	NS	< 5 UJ	NS	< 5 UJ	< 5
			Bis(2-Ethylhexyl)Phthalate	6	< 0.5	NS	4.17 F	NS	< 6	NS	< 6 UJ	< 6
			Fluoranthene	800 *	0.21 J	NS	< 5 UJ	NS	< 5	NS	< 5 UJ	< 5
	MW26-04	Shallow	2-Methylnaphthalene	36 *	< 5.1	NS	< 5.32	NS	14.4 J	NS	< 5 UJ	4.99 F
			Naphthalene	1.7 *	11	NS	2.72	NS	14.2 J	NS	< 5 UJ	6.12 F
			Phenanthrene	-	< 5.1	NS	< 5.32	NS	3 F	NS	< 5 UJ	< 5

Notes:

¹ USEPA Maximum Contaminant Level (MCL; April 2012). "*" indicates an MCL is unavailable and the USEPA Regional Screening Level (RSL; June 2017) is used.

RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not sampled

Sources:

USEPA, April 2012 accessed at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information#dw-standards>.

USEPA, June 2017 accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

Site SS026
Detected TPH Concentrations in the Shallow Zone
2013 - 2017

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (µg/L)										
			Parameter	OK RBCL ¹	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	Jun-16	Jun-17	
SS026	MW26-01	Shallow	OK DRO (PHC C10-C28)	1000	NS	NS	NS	NS	NS	NS	NS	55.3 F	NS
	MW26-03	Shallow	OK DRO (PHC C10-C28)	1000	NS	NS	NS	NS	NS	NS	NS	87.9 F	NS
	MW26-04	Shallow	OK DRO (PHC C10-C28)	1000	NS	NS	NS	NS	NS	NS	NS	98.4 F	NS
			OK GRO (PHC as Gasoline)	1000	NS	NS	NS	NS	NS	NS	NS	144 F	4710 J

Notes:

¹ Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Risk Based Cleanup Level for Groundwater (RBCL; October 2012).

Bold value with shaded cell indicates exceedance of listed regulatory criteria.

For non-detected results, the MDL is shown.

F = The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ).

J = The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

UJ = Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = Not Sampled. Analyte was not part of the RCRA Permit required sampling criteria. Analyte was added to CM sampling in 2016 at request of ODEQ.

OK DRO = Oklahoma Diesel Range Organics

OK GRO = Oklahoma Gasoline Range Organics

PHC = Petroleum hydrocarbons

Sources:

ODEQ, October 2012 accessed at <http://www.deq.state.ok.us/factsheets/land/tph.pdf>

APPENDIX D

Five-Year Analytical Tables (2009-2013)

CMI Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-09	Shallow	1,1,1-Trichloroethane	200	< 18	< 7.2	< 11	NS	<0.2	NS	NS	<4*	<0.5 U	NS
			1,1-Dichloroethane	2.4 ¹	28.7	19.1	< 11	NS	<5.0	NS	NS	64.4*	2.89 F	NS
			1,1-Dichloroethene	7	< 21.3	< 8.53	< 15	NS	<0.23	NS	NS	40.1*	1.2 F	NS
			Acetone	12,000 ¹	< 41	< 16.4	< 500	NS	<10.0	NS	NS	<20*	<5 UJ	NS
			Chloroform	80	< 17.4	< 6.97	24.2 J	NS	<20.0	NS	NS	<4*	<0.25 U	NS
			cis-1,2-Dichloroethene	70	2,120	2,810	2,420	NS	1,000 J+	NS	NS	16,300*	751	NS
			trans-1,2-Dichloroethene	100	< 18.6	< 7.44	< 17	NS	<7.0	NS	NS	<4*	1.06	NS
			Ethylbenzene	700	< 20.8	< 8.31	< 10	NS	<20.0	NS	NS	49.5*	<0.5 U	NS
			Methylene Chloride	5	< 21.1	< 8.44	857	NS	61.7 J	NS	NS	14,400*	1.26 F	NS
			o-Xylene	190 ¹	< 19.3	< 7.73	17.2 J	NS	<4.0	NS	NS	278*	<1 U**	NS
			Tetrachloroethene (PCE)	5	1,180	1,200	1,460	NS	341 J+	NS	NS	11,200*	944	NS
			Toluene	1,000	< 19.6	< 7.82	17.5 J	NS	<4.0	NS	NS	142*	<0.5 U	NS
			Trichloroethene (TCE)	5	719	810	1,200	NS	1,080 J+	NS	NS	3,900*	519	NS
			Vinyl Chloride	2	< 20.1	< 8.04	92.7	NS	<4.4	NS	NS	<4*	<0.5 U	NS
	MW 12-33	Shallow	1,1,1-Trichloroethane	200	< 3.6	< 3.6	< 0.22	NS	<1.0	NS	NS	<0.2	<0.5 U	NS
			1,1-Dichloroethane	2.4 ¹	< 3.74	< 3.74	0.83 J	NS	<1.3	NS	NS	2.04	1.47 F	NS
			1,1-Dichloroethene	7	8.19	12.9	3.3	NS	6.5 J+	NS	NS	11.9 J	6.84	NS
			Acetone	12,000 ¹	< 8.19	< 8.19	1,490	NS	<50.0	NS	NS	<1	<5 UJ	NS
			Chloroform	80	< 3.49	< 3.49	0.42 J	NS	<1.1	NS	NS	<0.2	0.393 F	NS
			cis-1,2-Dichloroethene	70	25.8	26.8	7.8	NS	14 J+	NS	NS	34.4 J	20	NS
			trans-1,2-Dichloroethene	100	< 3.72	< 3.72	0.35 J	NS	<1.8	NS	NS	0.703 J	0.551 F	NS
			Methylene Chloride	5	<4.22	<4.22	<2	NS	17.5 J	NS	NS	<0.5	<0.5 U	NS
			Tetrachloroethene (PCE)	5	41.4	10	12.6	NS	12.8 J+	NS	NS	5.76 J	7.87	NS
			Trichloroethene (TCE)	5	568	637	149	NS	354 J+	NS	NS	587 J	293	NS
	MW 12-35	Shallow	1,1,1-Trichloroethane	200	< 7.2	< 18	< 11	NS	<2.0	NS	NS	<0.2	<0.5 U	NS
			1,1-Dichloroethane	7	< 8.53	< 21.3	< 15	NS	<2.3	NS	NS	1.66 J	1.97 F	NS
			Acetone	12,000 ¹	< 16.4	< 41	< 500	NS	<100.0	NS	NS	<1	<5 UJ	NS
			Chloroform	80	< 6.97	< 17.4	< 13	NS	<2.2	NS	NS	1.38 J	1.69 F	NS
			cis-1,2-Dichloroethene	70	< 7.35	< 18.4	< 16	NS	4.8 J+	NS	NS	5.78 J	8.25	NS
			Methylene Chloride	5	<8.44	<21.1	<100	NS	29.4 J	NS	NS	<0.5	<0.5 U	NS
			Tetrachloroethene (PCE)	5	8.22	23.6	< 22	NS	4 J+	NS	NS	4.92 J	4.7 F	NS
			Trichloroethene (TCE)	5	2,530	9,560	2,460	NS	761 J+	NS	NS	1,300 J	1,260	NS
	MW 12-37	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	10.7 J-	NS	<10.0	NS	NS	<1	<5 U	NS
			Chloroform	80	1.79	1.55	0.77 J-	NS	0.89 J	NS	NS	1.45	1.57 F	NS
			Trichloroethene (TCE)	5	1.5	1.15	1.7 J-	NS	1.7 J	NS	NS	8.91	9.54	NS
	MW 12-43	Shallow	1,1-Dichloroethane	7	0.463	< 0.427	< 0.29 UJ-	NS	0.98 J+	NS	NS	0.953 J	<1 U	NS
			cis-1,2-Dichloroethene	70	4.35	0.753	0.39 J-	NS	2.7 J+	NS	NS	3.64	2.1	NS
			trans-1,2-Dichloroethene	100	3.6	0.762	< 0.34 UJ-	NS	<0.35	NS	NS	<0.2	<0.5 U	NS
			Tetrachloroethene (PCE)	5	< 0.398	< 0.398	< 0.44 UJ-	NS	1.1 J+	NS	NS	0.541 J	0.529 F	NS
			Trichloroethene (TCE)	5	79	18.9	5.8 J-	NS	99.9 J+	NS	NS	121	80.4	NS

CMI Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
	MW12-45	Shallow	Carbon Tetrachloride	5	< 20.4	< 20.4	< 6.8	NS	<5.0	NS	NS	<2.5*	<5 U	NS
			Chloroform	80	< 17.4	< 17.4	< 5	NS	4.7 J+	NS	NS	<1*	2.02 F	NS
			cis-1,2-Dichloroethene	70	< 18.4	< 18.4	< 6.4	NS	<5.2	NS	NS	<1*	13.5	NS
			trans-1,2-Dichloroethene	100	< 18.6	< 18.6	< 6.8	NS	<7.0	NS	NS	<1*	<5 U	NS
			Ethylbenzene	700	<20.8	<20.8	<4	NS	4.2 J+	NS	NS	<1*	<5 U	NS
			Methylene Chloride	5	<21.1	<21.1	<40	NS	54.7 J	NS	NS	<2.5*	<5 U	NS
			Trichloroethene (TCE)	5	2,120	2,140	1,640	NS	1,300 J+	NS	NS	1,570*	1,690	NS
WP-23	MW 23-05	Shallow	1,1-Dichloroethane	2.4 ¹	0.412	< 0.374	< 0.22	NS	0.26 J	NS	NS	<0.2	<0.25 U	NS
			1,2-Dichlorobenzene	600	5.26	< 0.434	3.1	NS	4.5	NS	NS	5.44	<5 UJ	NS
			1,4-Dichlorobenzene	75	0.589	< 0.376	< 0.22	NS	0.55 J	NS	NS	0.672 J	<5 UJ	NS
			Acetone	12,000 ¹	2.01	< 0.819	< 10	NS	<10.0	NS	NS	13.2	<5 U	NS
			Benzene	5	2.43	< 0.392	1.2	NS	1.8	NS	NS	1.78	1.41 F	NS
			Chloromethane	190	< 0.482	< 0.482	< 0.5	NS	<0.5	NS	NS	<0.2	<1 U	NS
			cis-1,2-Dichloroethene	70	0.985	< 0.367	0.5 J	NS	0.47 J	NS	NS	0.56 J	0.549 F	NS
			Ethylbenzene	700	54.8	< 0.416	45.7	NS	35.9	NS	NS	15.8	10	NS
			m,p-Xylenes	380 ¹	40.9	< 0.826	16.4	NS	19.2	NS	NS	4.56	2.75 F**	NS
			o-Xylene	190 ¹	0.661	< 0.386	< 0.2	NS	<0.2	NS	NS	<0.2	2.75 F**	NS
			Toluene	1,000	1.12	< 0.391	< 0.2	NS	<0.2	NS	NS	<0.2	<0.5 U	NS
			trans-1,2-Dichloroethene	100	0.982	< 0.372	0.56 J	NS	0.63 J	NS	NS	0.439 J	0.318 F	NS
	Vinyl Chloride	2	1.82	< 0.402	0.95 J	NS	1.3	NS	NS	0.902 J	0.844 F	NS		
	MW 23-14	Shallow	Acetone	12,000 ¹	1.08	< 0.819	< 10 UJ-	NS	<10.0	NS	NS	<1	<5 U	NS
	cis-1,2-Dichloroethene		70	0.574	< 0.367	0.33 J-	NS	0.55 J	NS	NS	0.836 J	<0.5 U	NS	
Trichloroethene (TCE)	5		20.3	14.6	12.5 J-	NS	19.6 J	NS	NS	31.0	5.1	NS		
SS-24	MW 24-05	Shallow	Chloroform	80	0.486	0.51	0.28 J	NS	0.44 J	NS	NS	<0.2	0.346 F	NS
			Trichloroethene (TCE)	5	4.94	5.16	2.8	NS	4.3	NS	NS	3.94	4.6 F	NS
SS-25	MW 25-01	Shallow	1,2-Dichloroethane	5	0.584	1.44	1.6	NS	1.4	NS	NS	1.25	1.13 F	NS
			Acetone	12,000 ¹	1.6	< 0.819	< 10	NS	96.3 J+	NS	NS	<1	<5 U	NS
			Chloroform	80	0.415	0.508	0.49 J	NS	0.37 J	NS	NS	0.483 J	0.394 F	NS
			cis-1,2-Dichloroethene	70	0.629	2.12	2.7	NS	2.1	NS	NS	2.71	2.5	NS
			Trichloroethene (TCE)	5	5.06	17.5	18.6	NS	15.2	NS	NS	18.8	17	NS
	MW 25-02	Shallow	Acetone	12,000 ¹	0.977	1.3	< 10	NS	32.6 J+	NS	NS	1.33 J	<5 U	NS
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	0.34 J	NS	<0.26	NS	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	13.7	8.19	56.3	NS	30.2	NS	NS	11.1	19.7	NS
	MW 25-04	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NS	<10.0	NS	NS	0.601 J	<5 UJ	NS
			Carbon Tetrachloride	5	2.25	1.5	3	NS	4.1 J+	NS	NS	11.5	9	NS
			Chloroform	80	0.429	0.519	1.5	NS	2 J+	NS	NS	7.02	5.05	NS
			Toluene	1,000	< 0.391	< 0.391	0.23 J	NS	<0.2	NS	NS	<0.2	<0.5 U	NS
MW 25-07	Shallow	Trichloroethene (TCE)	5	1.51	0.507	2.7	NS	3.6 J+	NS	NS	8.22	6.27	NS	
		1,1-Dichloroethene	7	6.04	0.861	7.1	NS	8.2 J+	NS	NS	8.69	7.09	NS	

CMI Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
			cis-1,2-Dichloroethene	70	2.51	0.731	2.1	NS	2.9 J+	NS	NS	3.81	3.25	NS
			Trichloroethene (TCE)	5	1.23	< 0.449	1.2	NS	1.6 J+	NS	NS	1.9	1.73 F	NS
	MW 25-08	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NS	<10.0	NS	NS	1.1 J	<5 U	NS
			Carbon Tetrachloride	5	1.15	< 0.407	< 0.34	NS	0.29 J+	NS	NS	0.645 J	<0.5 U	NS
			Chloroform	80	0.986	< 0.349	< 0.25	NS	0.33 J+	NS	NS	0.623 J	<0.25 U	NS
			Trichloroethene (TCE)	5	1.35	< 0.449	0.39 J	NS	1.3 J+	NS	NS	1.87	0.788 F	NS
			Acetone	12,000 ¹	2.45	< 0.819	< 10	NS	<10.0	NS	NS	11.8	<5 U	NS
	MW 25-09	Shallow	Bromodichloromethane	80	< 0.369	< 0.369	0.57 J	NS	<0.2	NS	NS	<0.2	3.19 F	NS
			Chloroform	80	< 0.349	< 0.349	1	NS	1.1	NS	NS	0.549 J	1.41 F	NS
			Tetrachloroethene (PCE)	5	<0.398	<0.398	<0.44	NS	0.45 J	NS	NS	<0.5	<0.5 U	NS
			Trichloroethene (TCE)	5	9.48	23	13.4	NS	7.5	NS	NS	10.3	1.26 F	NS
	MW 25-15	Shallow	1,1-Dichloroethene	7	< 0.427	1.1	1.4	NS	2.2 J+	NS	NS	2.02	2.06 F	NS
			Acetone	12,000 ¹	< 0.819	1.16	< 10	NS	<10.0	NS	NS	<1	<5 UJ	NS
			cis-1,2-Dichloroethene	70	< 0.367	0.401	< 0.32	NS	0.62 J+	NS	NS	0.691 J	0.766 F	NS
			Trichloroethene (TCE)	5	< 0.449	< 0.449	0.25 J	NS	0.48 J+	NS	NS	<0.2	0.547 F	NS

Notes:

* Well resampled on November 2012

** = May 2013 value is for total xylenes

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012)..

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**CMI Area
Detected VOC Concentrations in the
Intermediate Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-30	Intermediate	1,1-Dichloroethene	7	0.688	2.31	8.6	NS	1.9	NS	NS	8.75 J	4.93 F	NS
			Acetone	12,000 ¹	2.19	< 0.819	< 10	NS	<10.0	NS	NS	1.15 J	<5 UJ	NS
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	0.63 J	NS	<0.26	NS	NS	3.29 J	0.626 F	NS
			Trichloroethene (TCE)	5	34.6	48.7	191 J+	NS	56.6	NS	NS	130 J	148	NS
	MW 12-34	Intermediate	Trichloroethene (TCE)	5	4.34	< 0.449	0.32 J	NS	3.3	NS	NS	4.81	15.1	NS
	MW 12-38	Intermediate	1,1-Dichloroethene	7	0.62	0.456	0.38 J	NS	0.38 J	NS	NS	0.279 J	<1 U	NS
			Acetone	12,000 ¹	3.24	< 0.819	< 10	NS	<10.0	NS	NS	1 U	<5 U	NS
			Chloroform	80	< 0.349	< 0.349	< 0.25	NS	0.24 J	NS	NS	<0.2	0.238 F	NS
			cis-1,2-Dichloroethene	70	0.899	0.759	0.43 J	NS	0.47 J	NS	NS	0.478 J	0.463 F	NS
			Tetrachloroethene (PCE)	5	0.474	< 0.398	< 0.44	NS	<0.25	NS	NS	<0.5	<0.5 U	NS
Trichloroethene (TCE)			5	30.6	28.1	16.9	NS	18	NS	NS	16.9	19.4	NS	
WP-23	MW 23-21	Intermediate	Acetone	12,000 ¹	<0.819	<0.819	<10	NS	154 J+	NS	NS	<1	<5 U	NS
			Trichloroethene (TCE)	5	8.3	6	7.9	NS	8.1 J+	NS	NS	9.08 J	13.7	NS
	MW 23-22	Intermediate	1,1-Dichloroethene	7	< 0.427	< 0.427	0.44 J	NS	0.57 J+	NS	NS	0.809 J	<1 U	NS
			Acetone	12,000 ¹	<0.819	<0.819	<10	NS	22.7 J+	NS	NS	<1	<5 U	NS
			cis-1,2-Dichloroethene	70	0.442	1.71	2.2	NS	3.8 J+	NS	NS	6.9	3.96	NS
			Trichloroethene (TCE)	5	0.535	4.79	7.9	NS	11.5 J+	NS	NS	17.6	10.3	NS

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012)..

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

CMI Area
Detected VOC Concentrations in the Deep Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-13	Deep	Acetone	1,200	NE	NE	NE	NS	NE	NS	NS	NE	1,630	NS
			cis-1,2-Dichloroethene	70	<184	<184	<320	NS	300 J+	NS	NS	<10*	54	NS
			Ethylbenzene	700	<208	<208	<200	NS	231 J+	NS	NS	<10*	<0.5 U	NS
			Methylene Chloride	5	<211	<211	<2000	NS	1520 J	NS	NS	<25*	0.806F	NS
			Tetrachloroethene (PCE)	5	35,200	15,700	20,500	NS	25,000 J+	NS	NS	22,900*	21,600	NS
			Toluene	1,000	<196	<196	<200	NS	313 J+	NS	NS	<10*	2.21 F	NS
			Trichloroethene (TCE)	5	< 224	< 224	408 J	NS	357 J+	NS	NS	258*	714	NS
			m,p-Xylenes	380 ¹	<413	<413	<340	NS	696 J+	NS	NS	<20*	4.32 F**	NS
o-Xylene	190 ¹	<193	<193	<200	NS	249 J+	NS	NS	<10*	4.32 F**	NS			

Notes:

* Well resampled on November 2012.

** = May 2013 value is for total xylenes

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

NS = not sampled

NA = not analyzed

NE = no exceedance

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**CMI Area
Detected SVOC Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-09	Shallow	2-Methylnaphthalene	27 ¹	< 0.941	< 0.932	< 0.95	NS	<0.55	NS	NS	4.66 J*	<5 U	NS
			2-Methylphenol (o-Cresol)	1,800	< 1.77	< 1.75	< 0.95	NS	<0.52	NS	NS	<0.500*	<5 U	NS
			Benzyl alcohol	1,500 ¹	< 1.59	< 1.58	9.6	NS	<0.96	NS	NS	551*	<5 U	NS
			Naphthalene	0.14 ¹	< 0.85	< 0.842	3.6 J	NS	<0.77	NS	NS	30.3*	<5 U	NS
	MW 12-33	Shallow	Phenol	4,500 ¹	< 2.07	< 2.05	535	NS	4.4 J	NS	NS	4,920*	<5 U	NS
			1,4-Dioxane	0.67 ^{1,2}	NA	NA	NA	NS	21	NS	NS	12	2.67 J	NS
	MW 12-35	Shallow	Pentachloroethane	0.56	NE	NE	NE	NS	NE	NS	NS	NE	13 J	NS
MW 12-43	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.63	< 2.61	< 1.9	NS	<1.0	NS	NS	<0.5	<5 UJ	NS	
WP-23	MW 23-05	Shallow	2,4-Dimethylphenol	270 ¹	3.74	< 1.81	3.6 J	NS	2.6 J	NS	NS	<1.2	<5 UJ	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.66	7.63	< 1.9	NS	<1.1	NS	NS	<0.5	<5 UJ	NS
			Phenol	4,500 ¹	<2.07	<2.03	<0.95	NS	0.56 J	NS	NS	<0.5	<5 UJ	NS
	MW 23-14	Shallow	bis(2-Ethylhexyl)phthalate	6	13.7	28.2	< 1.9	NS	1.7 J	NS	NS	52.5	10.9 R	NS
			Cresols, m & p	180	< 2.56	< 2.53	6	NS	<1.0	NS	NS	<0.5	NA	NS
SS-24	MW 24-05	Shallow	bis(2-Ethylhexyl)phthalate	6	4.33	4.25	< 1.9	NS	<1.1	NS	NS	<0.5	<5.1 UR	NS
SS-25	MW 25-01	Shallow	Benzo(g,h,i)perylene	NL	< 0.733	< 0.733	< 0.96	NS	<0.49	NS	NS	<0.5	<5 U	NS
			Benzyl butyl phthalate	35	< 0.949	4.07	< 0.96	NS	<1.1	NS	NS	<0.5	<5 U	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.63	8.25	< 1.9	NS	<1.1	NS	NS	<0.5	10.2	NS
			Dibenz(a,h)anthracene	0.0029	< 0.97	< 0.97	< 0.96	NS	<0.5	NS	NS	<0.5	<5 U	NS
			Indeno(1,2,3-c,d)pyrene	0.029	< 1.1	< 1.1	< 0.96	NS	<0.49	NS	NS	<0.5	<5 U	NS
	MW 25-02	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.68	24.1	< 1.9	NS	<1.1	NS	NS	<0.5	12.3	NS
	MW 25-04	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.74	< 2.63	< 1.9	NS	<1.0	NS	NS	<0.5	<5 U	NS
	MW 25-07	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.63	< 2.66	< 1.9	NS	<1.0	NS	NS	<0.505	<5.1 U	NS
			1,4-Dioxane	0.67 ^{1,2}	NA	NA	NA	NS	32.7	NS	NS	13.6	19.1	NS
	MW 25-08	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.66	< 2.63	< 1.9	NS	24	NS	NS	<0.5	<5 UR	NS
			Benzyl butyl phthalate	35	< 0.958	2.06	< 0.95	NS	<1.0	NS	NS	<0.5	<5 UR	NS
MW 25-09	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.66	2.94	< 1.9	NS	<1	NS	NS	<0.5	<5.1 U	NS	
MW 25-15	Shallow	Acenaphthene	2,200	< 1.08	< 1.06	< 0.95	NS	<0.48	NS	NS	<0.505	<5 U	NS	
		bis(2-Ethylhexyl)phthalate	6	< 2.68	7.05	< 1.9	NS	<1.1	NS	NS	<0.505	<5 U	NS	

Notes:

* Well resampled on November 2012.

¹2013 EPA Regional Screening Level for tap water

²6.1 µg/L Concentration specified in the RCRA Permit (EPA Screening Level for tap water).

¹2013 EPA Regional Screening Level for tap water

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

NS = not sampled

NA = not analyzed

NL = not listed

NE = no exceedance

MCL = Maximum Contaminant Level

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**CMI Area
Detected SVOC Concentrations in the
Intermediate Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-30	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.63	7.52	< 1.9	NA	<1.0	NA	NS	<0.5	<5.16 U	NS
	MW 12-34	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.63	5.98	< 1.9	NA	2.3 J	NA	NS	<0.5	<5.26 U	NS
	MW 12-38	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.63	< 2.63	< 1.9	NA	<1.0	NA	NS	<0.5	<5.1 U	NS
WP-23	MW 23-21	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.66	2.76	< 1.9	NA	<1.0	NA	NS	<0.5	4.53 FR	NS
	MW 23-22	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.61	11.2	< 1.9	NA	<1.0	NA	NS	<0.5	5.74 F	NS

Notes:

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

CMI Area
Detected SVOC Concentrations in the Deep Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-12	MW 12-13	Deep	bis(2-Ethylhexyl)phthalate	6	< 2.63	< 2.61	< 1.9	NS	1.8 J	NS	NS	1.69 J*	4.35 F	NS
			Pentachloroethane	0.56	NE	NE	NE	NS	NE	NS	NS	NE	190	NS
			Naphthalene	0.14 ¹	10	5.28	4 J	NS	2 J	NS	NS	2.76 J*	<5.2 UJ	NS
	MW 12-20	Deep	bis(2-Ethylhexyl)phthalate	6	< 2.71	< 2.68	< 1.9	NS	<1.0	NS	NS	<0.5	<5.2 U	NS
MW 12-21	Deep	bis(2-Ethylhexyl)phthalate	6	< 2.61	6.05	< 1.9	NS	<1.0	NS	NS	<0.5	<5.16 U	NS	

Notes:

* Well resampled on November 2012.

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOQ).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

NL = not listed

NE = no exceedance

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Industrial Zone Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
LF-03	MW 03-06	Shallow	1,1-Dichloroethane	2.4 ¹	< 0.374	< 0.374	< 2.2	NA	3.3	NA	NS	<0.2	1.06 F	NS
			4-Methyl-2-pentanone (MIBK)	2,000	< 0.416	< 0.416	< 20	NA	<2.0	NA	NS	<0.5	<5 U	NS
			Acetone	12,000 ¹	< 0.819	< 0.819	< 100	NA	<10.0	NA	NS	<1	<5 U	NS
			Benzene	5	< 0.392	< 0.392	< 2.1	NA	0.27 J	NA	NS	<0.2	<0.25 U	NS
			cis-1,2-Dichloroethene	70	6.77	6.69	9.6 J	NA	3.3	NA	NS	1.45	2.24	NS
			Ethylbenzene	700	2.29	2.37	124	NA	2.4	NA	NS	<0.2	<0.5 U	NS
			m,p-Xylenes	380 ¹	< 0.826	< 0.826	16.1 J	NA	0.65 J	NA	NS	1.35 J	<1 U**	NS
			o-Xylene	190 ¹	< 0.386	< 0.386	< 2	NA	<0.2	NA	NS	0.554 J	<1 U**	NS
			Tetrachloroethene (PCE)	5	0.744	< 0.398	< 4.4	NA	<0.25	NA	NS	<0.5	<0.5 U	NS
			trans-1,2-Dichloroethene	100	< 0.372	< 0.372	< 3.4	NA	<0.35	NA	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	2.64	0.611	< 2.4	NA	<0.26	NA	NS	<0.2	<0.5 U	NS
	Vinyl Chloride	2	< 0.402	1.43	< 2.8	NA	1.1	NA	NS	<0.2	<0.5 U	NS		
	MW 03-09	Shallow	1,1,2-Trichloroethane	5	129	< 35.2	< 29	< 29	<40.0	<10.0	<4	<4	<0.5 U	<0.5 U
			Benzene	5	11,200	11,700	8,650	12,000	6,610 J+	12,300	4,560	6,490	3,760	5,050
			Ethylbenzene	700	3,060	3,720	2,180	2,810	1,970 J+	2,410 J	1,970	1,030	581	1,520
			m,p-Xylenes	380 ¹	20,800	36,100	14,400	13,600	13,600 J+	12,800 J	12,600	5,390	9,250**	8,180
			Methylene Chloride	5	<84.4	<42.2	<200	<200	526 J	<80.0	<10	<10	<0.5 U	<0.5 U
			o-Xylene	190 ¹	8,640	8,770	5,580	4,310	3,580 J+	2,310 J	2,410	226	9,250**	1,830
			Toluene	1,000	1,420	980	1,530	1,370	494 J+	234	142	151	71.6	3,810
	Trichloroethene (TCE)	5	< 89.7	< 44.9	< 24	< 24	167 J+	<10.0	<4	<4	2.2 F	<0.5 U		
	SS-07	MW 07-04	Shallow	1,1-Dichloroethane	7	< 42.7	< 21.3	< 29	NA	31 J+	NA	NS	26.2 J	13.2
cis-1,2-Dichloroethene				70	3,130	6,110	4,280	NA	3,880 J+	NA	NS	3,440 J	2,310	NS
Tetrachloroethene (PCE)				5	< 39.8	< 19.9	< 44	NA	<25.0	NA	NS	3.08 J	0.691 F	NS
trans-1,2-Dichloroethene				100	< 37.2	< 18.6	< 34	NA	<35.0	NA	NS	11.1 J	5.22	NS
Trichloroethene (TCE)				5	3,440	6,920	5,860	NA	5,710 J+	NA	NS	3,610 J	2,460	NS
MW 7-15		Shallow	Vinyl Chloride	2	< 40.2	< 20.1	< 28	NA	42.7 J+	NA	NS	30.2 J	6.57	NS
			1,1,2,2-Tetrachloroethane	0.067	< 31	< 62	< 150	NA	<230	NA	NS	20 UJ	<0.5 U	NS
			1,1,2-Trichloroethane	5	< 35.2	< 70.4	< 150	NA	<220	NA	NS	20 UJ	<0.5 U	NS
			1,1-Dichloroethane	2.4 ¹	< 37.4	< 74.9	< 110	NA	<250	NA	NS	20 UJ	<0.25 U	NS
			1,2-Dichloroethane	5	< 39.2	< 78.5	< 170	NA	<200	NA	NS	20 UJ	<0.5 U	NS
			4-Methyl-2-pentanone (MIBK)	2,000	< 41.6	< 83.3	< 1000	NA	<2000	NA	NS	85.1 J	<5 U	NS
			Benzene	5	8,040	6,900	16,000	NA	15,300 J+	NA	NS	18,100 J	8,690	NS
			Chloroethane	NL	< 44.9	< 89.9	< 260	NA	<500	NA	NS	<50	<1 U	NS
			Chloromethane	190	< 48.2	< 96.4	< 250	NA	<500	NA	NS	<20	<1 U	NS
			Ethylbenzene	700	1,220	1,050	1,830	NA	1,940 J+	NA	NS	2,060 J	1,040	NS
			m,p-Xylenes	380 ¹	8,050	6,370	8,730	NA	10,100 J+	NA	NS	10,500 J	8,780**	NS
			Methylene Chloride	5	<42.2	<84.4	<1000	NA	3,160 J	NA	NS	50	<0.5 U	NS
o-Xylene	190 ¹	3,340	2,670	3,250	NA	4,110 J+	NA	NS	4,540 J	8,780**	NS			
Toluene	1,000	18,600	20,700	39,200	NA	38,100 J+	NA	NS	41,500 J	19,100	NS			

Industrial Zone Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07 (Cont'd)	MW N7-40	Shallow	Acetone	12,000 ¹	1.81	< 0.819	< 10	< 10	<10.0	<20.0	<1	1.24 J	<5 U	<5 U
			Chloroform	80	< 0.349	< 0.349	< 0.25	< 0.25	<0.22	<0.5	<0.2	<0.2	<0.25 U	<0.25 U
			cis-1,2-Dichloroethene	70	0.65	< 0.367	< 0.32	< 0.32	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U
			Trichloroethene (TCE)	5	18.1	1.32	2.1	2.7	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U
	MW N7-41	Shallow	Acetone	12,000 ¹	1.04	< 0.819	< 10	< 10	<10.0	<20.0	<1	<1	<5 U	<5 U
			Chloromethane	190	< 0.482	< 0.482	< 0.5	< 0.5	<0.5	<1.0	<0.2	<0.2	<1 U	<1 U
			Trichloroethene (TCE)	5	1.21	1.53	1.6	2.2	2.4	1.8	1.06	0.764 J	0.367 F	0.449 F
	MW N7-69	Shallow	Acetone	12,000 ¹	0.885	2.04	< 10	< 10	<10.0	<20.0	<1	<1	<5 U	<5 U
			Toluene	1,000	< 0.391	0.507	< 0.2	< 0.2	<0.2	<0.5	<0.2	<0.2	0.911 F	<5 U
	MW OB-02	Shallow	1,2-Dichloroethane	5	< 0.785	0.462	< 1.7 U	< 0.33	<0.4	NA	<0.2	NS	<0.5 UM	<0.5 U
			2-Butanone (MEK)	4,900 ¹	<1.68	<0.841	<10	<2	12.7	NA	<0.5	NS	<5 UM	<5 UJ
			Acetone	12,000 ¹	< 1.64	< 0.819	< 50 U	< 10	<20	NA	<1	NS	<5 UM	<5 UJ
			Benzene	5	70.7	588	256	146	109	NA	193	NS	365	298
			Ethylbenzene	700	< 0.831	8.22	4.2 J	0.6 J	<0.4	NA	1.78	NS	6.76	1.23
			m,p-Xylenes	380 ¹	< 1.65	7.98	4.6 J	2.5	2.2 J	NA	3.7	NS	14.8**	5.11
			o-Xylene	190 ¹	< 0.773	0.716	< 1 U	< 0.2	<0.4	NA	0.344 J	NS	14.8**	0.391 F
	MW OB-03	Shallow	1,1-Dichloroethane	2.4 ¹	<0.374	<0.374	<0.22	<0.22	0.65 J	<0.5	<0.2	<0.2	<0.25 U	<0.25 U
			Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10.0	211	<1	1.87 J	<5 U	<5 UJ
			Benzene	5	0.399	< 0.392	< 0.21	< 0.21	<0.2	<0.5	<0.2	0.139 J	<0.25 U	0.165 F
	MW OB-04	Shallow	Acetone	12,000 ¹	1.03	< 0.819	< 10 UJ-	< 10	11.2 J	NA	<1	NS	NS	<5 UJ
			cis-1,2-Dichloroethene	70	3.89	3.58	< 0.32 UJ-	0.33 J	<0.26	NA	<0.2	NS	NS	<0.5 U
			trans-1,2-Dichloroethene	100	0.459	< 0.372	< 0.34 UJ-	< 0.34	<0.35	NA	<0.2	NS	NS	<0.5 U
			Trichloroethene (TCE)	5	110	87.9	5.7 J-	7.9	7.9	NA	<0.2	NS	NS	<0.5 U
	MW OB-05	Shallow	1,1,2-Trichloroethane	5	< 3.52	< 1.76	< 2.9 U	NA	<1.1	NA	NS	0.254 J	<0.5 U	NS
			1,1-Dichloroethane	2.4 ¹	< 3.74	< 1.87	< 2.2 U	NA	<1.3	NA	NS	<0.2	0.221 F	NS
			Acetone	12,000 ¹	< 8.19	< 4.1	< 100 U	NA	<50	NA	NS	2.98 J	<5 U	NS
			Benzene	5	< 3.92	< 1.96	< 2.1 U	NA	<1.0	NA	NS	<0.2	<0.25 U	NS
			Chloroform	80	< 3.49	< 1.74	< 2.5 U	NA	<1.1	NA	NS	0.292 J	0.296 F	NS
			cis-1,2-Dichloroethene	70	10.6	13.3	11.6	NA	8.4	NA	NS	10.1	8.54	NS
			trans-1,2-Dichloroethene	100	< 3.72	< 1.86	< 3.4 U	NA	<1.8	NA	NS	<0.2	<0.5 U	NS
	Trichloroethene (TCE)	5	433	494	442	NA	370	NA	NS	350	255	NS		
	MW OB-06	Shallow	1,1-Dichloroethane	2.4 ¹	0.473	0.394	0.36 J	NA	<0.25	NA	NS	<0.2	<0.25 U	NS
			Acetone	12,000 ¹	< 0.819	2.49	< 10	NA	18.1 J	NA	NS	2.52 J	<5 UJ	NS
			cis-1,2-Dichloroethene	70	0.814	0.702	0.8 J	NA	0.33 J	NA	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	66	60.4	76.5	NA	38.8	NA	NS	26.3	27	NS
	MW OB-09	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10	<20.0	<1	0.93 J	<5 U	<5 UJ
MW OB-13	Shallow	1,1-Dichloroethane	2.4 ¹	< 0.374	0.38	0.24 J	NA	<0.25	NA	NS	<0.2	NS	<0.25 U	
		Acetone	12,000 ¹	< 0.819	1.71	< 10	NA	132	NA	NS	2.84 J	NS	<5 UJ	
		cis-1,2-Dichloroethene	70	0.841	1.69	2.6	NA	0.52 J	NA	NS	0.386 J	NS	0.486 F	
		Trichloroethene (TCE)	5	41.2	62.3	42	NA	30.4	NA	NS	26.7	NS	27.6	

**Industrial Zone Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07 (Cont'd)	MW OB-16	Shallow	1,1-Dichloroethane	2.4 ¹	< 0.374	< 0.374	0.26 J-	NA	<0.25	NA	NS	<0.2	<0.25 U	NS
			Acetone	12,000 ¹	< 0.819	< 0.819	< 10 UJ-	NA	<10.0	NA	NS	1.9 J	<5 U	NS
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	< 0.32 UJ-	NA	<0.26	NA	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	10.7	8.62	9.8 J-	NA	7.1	NA	NS	6.53	6.61	NS
	MW OB-18	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10.0	<20.0	<1	0.863 J	<5 U	<5 UJ
			cis-1,2-Dichloroethene	70	0.372	< 0.367	< 0.32	< 0.32	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U
			Trichloroethene (TCE)	5	11.8	9.09	5.1 J+	3.1	2.4	1.1	<0.2	<0.2	0.477 F	1.12
	MW OB-19	Shallow	cis-1,2-Dichloroethene	70	6.46	4.54	3.2 J	NA	4.9 J+	NA	NS	7.37 J	6.15	NS
			Trichloroethene (TCE)	5	429	307	222	NA	351 J+	NA	NS	476 J	312	NS
	MW OB-21	Shallow	Acetone	12,000 ¹	1.66	< 0.819	< 10	< 10	<10	<20.0	<1	1.37 J	<5 U	<5 UJ
			cis-1,2-Dichloroethene	70	< 0.735	0.53	0.55 J	0.7 J	0.27 J	1	<0.2	0.643 J	<0.5 U	<0.5 U
			trans-1,2-Dichloroethene	100	<0.744	<0.372	<0.34	<0.34	0.55 J	2.1	<0.2	0.512 J	<0.5 U	<0.5 U
Trichloroethene (TCE)			5	72.8	76.2	91.4 J+	85.4	64.7	73.1	41.4	28.2	15.3	7.03	
MW 08-05	Shallow	1,1-Dichloroethane	2.4 ¹	11.8	11.2	7.5	NA	10.6 J+	NA	NS	15 J	9.16	NS	
		1,2-Dichlorobenzene	600	0.613	< 2.17	0.49 J	NA	0.84 J+	NA	NS	1.66 J	NS	NS	
		Acetone	12,000 ¹	< 0.819	< 4.1	< 10	NA	37.8 J+	NA	NS	<1	<5 UJ	NS	
		Benzene	5	1.66	< 1.96	0.77 J	NA	1.2 J+	NA	NS	1.6 J	0.495 F	NS	
		Chlorobenzene	100	0.559	< 1.66	0.43 J	NA	0.78 J+	NA	NS	1.33 J	0.587 F	NS	
		cis-1,2-Dichloroethene	70	140	151	70	NA	81.5 J+	NA	NS	99.5 J	52.1 M	NS	
		Methylene Chloride	5	<0.422	<2.11	<2	NA	9.1 J	NA	NS	<0.5	<0.5 U	NS	
		trans-1,2-Dichloroethene	100	0.793	< 1.86	< 0.34	NA	<0.7	NA	NS	3.59 J	<0.5 U	NS	
		Trichloroethene (TCE)	5	1.58	< 2.24	0.62 J	NA	0.64 J+	NA	NS	<0.2	0.402 F	NS	
Vinyl Chloride	2	135	131	66.3	NA	101 J+	NA	NS	129 J	49.1 M	NS			
MW 08-09	Shallow	4-Methyl-2-pentanone (MIBK)	2,000	< 0.416	< 0.416	< 2	NA	<2.0	NA	NS	<0.5	<5 U	NS	
		Acetone	12,000 ¹	< 0.819	3.81	< 10	NA	<10.0	NA	NS	2.68 J	<5 UJ	NS	
		Benzene	5	3.61	3.43	4	NA	2.5 J-	NA	NS	1.66	0.78 F	NS	
		Chloroform	80	<0.349	<0.349	<0.25	NA	0.7 J	NA	NS	<0.2	<0.25 U	NS	
		Ethylbenzene	700	0.503	0.501	0.73 J	NA	0.45 J	NA	NS	0.398 J	0.334 F	NS	
		o-Xylene	190 ¹	< 0.386	< 0.386	0.21 J	NA	0.31 J	NA	NS	<0.2	<1 U**	NS	
		Toluene	1,000	<0.391	<0.391	<0.2	NA	0.26 J	NA	NS	<0.2	<0.5 U	NS	
Vinyl Chloride	2	<0.402	<0.402	<0.28	NA	0.25 J	NA	NS	0.176 J	<0.5 U	NS			
MW 08-12	Shallow	1,1-Dichloroethane	2.4 ¹	8.18	5.2	2.9	NA	4.2 J+	NA	NS	1.62	1.99 F	NS	
		Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NA	<10.0	NA	NS	<1	<5 UJ	NS	
		Benzene	5	< 0.392	< 0.392	< 0.21	NA	<0.2	NA	NS	<0.2	<0.25 U	NS	
		Chlorobenzene	100	0.896	0.719	0.56 J	NA	0.51 J+	NA	NS	0.218 J	0.286 F	NS	
		cis-1,2-Dichloroethene	70	11.1	4.21	1.5	NA	2.4 J+	NA	NS	1.23	1.18	NS	
		Trichloroethene (TCE)	5	< 0.449	< 0.449	< 0.24	NA	<0.26	NA	NS	<0.2	<0.5 U	NS	
Vinyl Chloride	2	1.58	0.415	< 0.28	NA	<0.22	NA	NS	0.274 J	<0.5 U	NS			
MW 08-16	Shallow	1,1-Dichloroethane	7	0.526	< 0.427	< 0.29	NA	<0.23	NA	NS	<0.5	<1 U	NS	
		Acetone	12,000 ¹	< 0.819	3.47	< 10	NA	<10.0	NA	NS	<1	<5 U	NS	

**Industrial Zone Area
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-08 (Cont'd)			cis-1,2-Dichloroethene	70	4.72	5.12	4.3	NA	3.7	NA	NS	5.16	5.53	NS
			trans-1,2-Dichloroethene	100	1.82	2.41	3.7	NA	1.9 J	NA	NS	1.13	1.1	NS
			Trichloroethene (TCE)	5	22.3	9.67	9.3	NA	10.1	NA	NS	4.42	5.62	NS
			Vinyl Chloride	2	3.28	6.6	4.6	NA	2.3	NA	NS	1.46	1.91 F	NS

Notes:

¹2013 EPA Regional Screening Level for tap water

** = May 2013 value is for total xylenes

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

M – Detected result above the LOQ; a matrix effect was present.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

NL = not listed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Industrial Zone Area
Detected VOC Concentrations in the Intermediate Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07	MW N7-38	Intermediate	Chloromethane	190	< 0.482	< 0.482	< 0.5	< 0.5 UJ	<0.5	<1.0	<0.2	<0.2	<1 U	<1 U
			Trichloroethene (TCE)	5	< 0.449	< 0.449	0.29 J	0.28 J	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U
	MW N7-48	Intermediate	Acetone	12,000 ¹	<0.819	<0.819	<10	NA	30.3 J+	NA	NS	<1*	<5 U	NS
			cis-1,2-Dichloroethene	70	1.06	1.83	0.64 J+	NA	1.8	NA	NS	5.03*	5.87	NS
			Methylene Chloride	5	< 0.422	< 0.422	< 2	NA	<2.0	NA	NS	<0.5*	<0.5 U	NS
			Tetrachloroethene (PCE)	5	< 0.398	< 0.398	< 0.44	NA	<0.25	NA	NS	2.57*	<0.5 U	NS
			Trichloroethene (TCE)	5	44.2	79.6	46 J+	NA	87.8	NA	NS	120*	210	NS
	MW N7-50	Intermediate	Acetone	12,000 ¹	0.996	< 0.819	< 10	NA	<10.0	NA	NS	<1	<5 U	NS
			cis-1,2-Dichloroethene	70	0.755	0.49	0.68 J	NA	0.44 J	NA	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	28.2	22.6	27.1	NA	23.6	NA	NS	19	11.8	NS
	MW N7-52	Intermediate	Acetone	12,000 ¹	<0.819	<0.819	<10	<10	13.4 J+	<20.0	<1	<1	<5 U	<5 UJ
			cis-1,2-Dichloroethene	70	1.29	2.1	0.95 J	1.1	0.85 J	1.3	0.999 J	1.28 J	0.85 F	0.747 F
			Methylene Chloride	5	< 0.422	0.812	< 2	< 2	<2.0	<4.0	<0.5	<0.5	<0.5 U	<0.5 U
			Tetrachloroethene (PCE)	5	< 0.398	29.9	< 0.44	< 0.44	<0.25	<0.5	<0.5	<0.5	<0.5 U	<0.5 U
			Trichloroethene (TCE)	5	60.8	53.5	50.1	56.1	48	53.8 J+	49.3 J	62.3 J	32.8	25
ST-08	MW 08-18	Intermediate	Acetone	12,000 ¹	< 1.64	< 8.19	< 10	NA	<50.0	NA	NS	6.71 J	<5 UJ	NS
			Carbon Tetrachloride	5	1.96	< 4.07	< 0.34	NA	<1.3	NA	NS	3.77 J	3.22 F	NS
			Chloroform	80	1.98	< 3.49	< 0.25	NA	1.7 J	NA	NS	2.4 J	2.46 F	NS
			cis-1,2-Dichloroethene	70	44.9	128	21.3	NA	50.9 J	NA	NS	48.8 J	44.2 M	NS
			Tetrachloroethene (PCE)	5	26.6	22.1	4.1	NA	16.0 J	NA	NS	39.5 J	33.1	NS
			trans-1,2-Dichloroethene	100	< 0.744	< 3.72	< 0.34	NA	<1.8	NA	NS	<0.2	0.44 F	NS
			Trichloroethene (TCE)	5	598	576	73.4	NA	495 J	NA	NS	880 J	737	NS
			Vinyl Chloride	2	2.1	4.64	2.3	NA	7.5 J	NA	NS	1.81 J	<0.5 U	NS

Notes:

* Well resampled on November 2012.

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

M – Detected result above the LOQ; a matrix effect was present.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Industrial Area
Detected VOC Concentrations in the Deep Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07	MW 7-07	Deep	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NA	<10.0	NA	NS	<1	<5 U	NS
	MW N7-51	Deep	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NA	<10.0	NA	NS	<1	<5 U	NS
			Chloromethane	190	< 0.482	< 0.482	< 0.5	NA	<0.5	NA	NS	<0.2	<1 U	NS
			Trichloroethene (TCE)	5	1.29	0.641	0.72 J	NA	0.53 J	NA	NS	0.453 J	1.09 F	NS
	MW N7-53	Deep	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10.0	<20.0	<1	<1	<5 U	<5 UJ
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	< 0.32	< 0.32	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U
Trichloroethene (TCE)			5	< 0.449	< 0.449	< 0.24	< 0.24	<0.26	<0.5	<0.2	<0.2	<0.5 U	<0.5 U	

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
LF-03	MW 03-06	Shallow	Arsenic	10	< 2.5	3.9	< 2	NA	<2.0	NA	NS	6.73	<10 U	NS
			Barium	2,000	130	119	152 J	NA	147 J	NA	NS	181	123	NS
			Chromium	100	< 0.8	< 0.8	< 1	NA	<1.0	NA	NS	<0.21	<20 U	NS
			Lead	15	28.8	18.2	92.4	NA	20.9	NA	NS	4.2	8.05 F	NS
			Selenium	50	1.6	2.8	< 2	NA	<2.0	NA	NS	1.07 J	9.36	NS
	MW 03-09	Shallow	Arsenic	10	63.9	118	49.5	53.2	62	62.5	49 J	63.5	50.1	<100 U***
			Barium	2,000	444	516	341	383	378	397	431	392	347	268
			Chromium	100	21.9	52.9	< 1	< 1 U	<1.0	<1.0	0.31 J	0.5 J	<20 U	<20 U
			Lead	15	1,030	5,010	503	278	213	183	441	102	639	143
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<1.0	<0.1	<0.2	0.2 U	<0.2	<0.2
SS-07	MW 07-04	Shallow	Arsenic	10	11.9	4	< 2	NA	<2.0	NA	NS	2.06 J	<10 U	NS
			Barium	2,000	384	144	90.6 J	NA	106 J	NA	NS	109 J	88.9	NS
			Chromium	100	48	14.8	< 1	NA	<10.0	NA	NS	0.37 J	<20 U	NS
			Lead	15	27.5	6	2.9 J	NA	<5.0	NA	NS	<0.12	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	< 1.3	1.4	2.3 J	NA	<2.0	NA	NS	0.65 J	2.55	NS
			Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS
	MW 07-15	Shallow	Arsenic	10	26.3	35.6	43.6	NA	62.6	NA	NS	50.1 J	33.2	NS
			Barium	2,000	656	406	946	NA	1090	NA	NS	921 J	579	NS
			Cadmium	5	< 0.2	< 0.2	< 1	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Chromium	100	1.5	33.8	1.5 J	NA	<10.0	NA	NS	0.64 J	<20 U	NS
			Lead	15	105	221	97.2	NA	128	NA	NS	52.5 J	48.6	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	3.1	2.1	4.1 J	NA	<2.0	NA	NS	2.53 J	83.2	NS
	MW N7-40	Shallow	Arsenic	10	9.3	4.4	< 2	< 2	<2.0	2.6 J	4.73 J	5.43	<10 U	<100 U***
			Barium	2,000	457	244	85.8 J	86.7 J	86.8 J	47.1 J	105	45.7	51.5	63.8
			Cadmium	5	0.7	< 0.2	< 1	< 1	<1.0	<1.0	0.053 J	<0.1	<10 U	<20 U
			Chromium	100	41.6	20.7	< 1	< 1 U	<1.0	<1.0	0.32 J	<0.27	<20 U	<20 U
			Lead	15	21.9	8.6	< 1 U	< 1	<1.0	<1.0	0.17 J	<0.1	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U
Selenium			50	2.4	4.5	< 2 U	< 2 U	2.3 J	2.5 J	1.27 J	1.05	3.78	2.27	
MW N7-41	Shallow	Silver	180	< 1.2	< 1.2	< 1	< 1	<1.0	<1.0	0.024 J	<0.06	<10 U	<10 U	
		Arsenic	10	6.1	3.8	< 2 U	< 2	<2.0	2.2 J	3.53 J	8.86	<10 U	<100 U***	
		Barium	2,000	311	136	241	178 J	208	154 J	176	135	109	100	
		Cadmium	5	1	< 0.2	< 1	< 1	<1.0	<1.0	0.19 J	0.21 J	<10 U	<20 U	
		Chromium	100	17.4	3.1	< 1 U	< 1 U	<10.0	1.2 J	2.69	2.39	<20 U	<20 U	
		Lead	15	10.2	< 2.2	10.2	< 1	<5.0	1.3 J	5.57	2.09	<10 U	<10 U	
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2	

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07 (Cont'd)	MW N7-69	Shallow	Arsenic	10	10	13	< 2 U	4 J	<2.0	2.8 J	NS	5.73	<10 U	<100 U***
			Barium	2,000	1,300	674	160 J	159 J	106 J	130 J	NS	177	130	103
			Cadmium	5	1.2	0.4	< 1	< 1	<1.0	<1.0	NS	0.15 J	<10 U	<20 U
			Chromium	100	75.8	43.6	< 1 U	< 1 U	<1.0	<1.0	NS	<0.54	<20 U	<20 U
			Lead	15	48.9	32.5	3.8 J	< 1	<1.0	<1.0	NS	0.45 J	<10 U	<10 U
			Mercury	2	0.2	< 0.1	< 0.071	< 0.071	<0.05	<0.1	NS	<0.2	<0.2 U	<0.2 U
			Selenium	50	2.9	< 1.3	< 2	< 2	<2.0	<2.0	NS	0.74 J	2.8	1.09
			Silver	180	4.2	< 1.2	< 1	< 1	<1.0	<1.0	NS	<0.06	<10 U	<10 U
	MW OB-02	Shallow	Arsenic	10	< 2.5	6.8	< 2 U	< 2	<2.0	NA	2.22 J	NS	<10 U	<100 U***
			Barium	2,000	220	343	120 J	125 J	141 J	NA	123	NS	155	177
			Cadmium	5	< 0.2	< 0.2	< 1	< 1	<1.0	NA	<0.1	NS	<10 U	<20 U
			Chromium	100	10.8	48.2	< 1	< 1	<1.0	NA	0.21 J	NS	<20 U	<20 U
			Lead	15	4.8	19.5	1.7 J	< 1	<1.0	NA	0.11 J	NS	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	NA	<0.2	NS	<0.2 U	<0.2 U
			Selenium	50	3.1	5.8	< 2 U	< 2 U	<2.0	NA	0.81 J	NS	7.55	10.5
			Silver	180	< 1.2	< 1.2	< 1	< 1	<1.0	NA	<0.06	NS	<10 U	<10 U
	MW OB-03	Shallow	Arsenic	10	11.7	17	< 2	< 2	<2.0	<2.0	1.53 J	6.74	<10 U	<100 U***
			Barium	2,000	1,190	1,330	388	343	361	305	401	357	319	316
			Cadmium	5	0.7	< 0.2	< 1	< 1	<1.0	<1.0	<0.1	<0.1	<10 U	<20 U
			Chromium	100	149	190	< 1	< 1 U	<1.0	<1.0	0.37 J	<0.28	<20 U	<20 U
			Lead	15	60.4	78	3.9 J	< 1	<1.0	2.4 J	1.32	1.28	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	0.076 J	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U
			Selenium	50	5.5	11.5	< 2	< 2	<2.0	<2.0	0.52 J	0.88 J	6.76	13.7
			Silver	180	5.4	< 1.2	< 1	< 1	<1.0	<1.0	<0.06	<0.06	<10 U	<10 U
	MW OB-04	Shallow	Arsenic	10	12.6	17.3	< 2	< 2	<2.0	NA	1.58 J	NS	NS	<100 U***
			Barium	2,000	596	792	91.7 J	142 J	178 J	NA	61.8	NS	NS	361
			Chromium	100	125	178	5.3 J	5.5 J	11.3	NA	1.01	NS	NS	<20 U
			Lead	15	56.7	84.8	6.6	< 1 U	7.6 J+	NA	0.57 J	NS	NS	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	NA	<0.2	NS	NS	<0.2 U
			Selenium	50	6.3	11.2	< 2	< 2 U	<2.0	NA	0.45 J	NS	NS	0.975 F
			Silver	180	3.2	< 1.2	< 1	< 1	<1.0	NA	<0.06	NS	NS	<10 U
			MW OB-05	Shallow	Arsenic	10	7.3	9.8	< 2	NA	<2.0	NA	NS	9.74
Barium	2,000	199			343	27.5 J	NA	28.1 J	NA	NS	83.7	23.7	NS	
Cadmium	5	0.5			< 0.2	< 1	NA	<1.0	NA	NS	0.07J	<10 U	NS	
Chromium	100	24.5			64.1	< 1 U	NA	<10.0	NA	NS	10.5	<0.02 U	NS	
Lead	15	8.2			17	2.5 J	NA	<1.0	NA	NS	2.48	<10 U	NS	
Mercury	2	< 0.1			< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS	
Selenium	50	10.9			14.1	15.1	NA	10.3 J-	NA	NS	12 J	12.4	NS	
Silver	180	< 1.2			< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS	

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07 (Cont'd)	MW OB-06	Shallow	Arsenic	10	< 2.5	2.7	< 2	NA	<2.0	NA	NS	8.47	<10 U	NS
			Barium	2,000	64.4	59.8	19 J	NA	17.8 J	NA	NS	21.6	15.6	NS
			Cadmium	5	0.9	< 0.2	< 1	NA	<1.0	NA	NS	0.049 J	<10 U	NS
			Chromium	100	16.2	14.9	< 1 U	NA	<10.0	NA	NS	2.9	<20 U	NS
			Lead	15	3.6	3.3	< 1 U	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.1 U	<0.2 U	NS
			Selenium	50	25.8	25.4	26.3	NA	20 J+	NA	NS	15.9	23	NS
	MW OB-09	Shallow	Arsenic	10	< 2.5	< 2.5	< 2	< 2	<2.0	<2.0	2.19 J	5.73	<10 U	<100 U***
			Barium	2,000	59.6	116	45.1 J	43.2 J	47.2 J	46.4 J	56.2	53.4	38.3	54.5
			Cadmium	5	< 0.2	3.3	< 1	< 1	<1.0	<1.0	<0.1	<0.1	<10 U	<20 U
			Chromium	100	1.4	12.6	< 1	< 1	<1.0	<1.0	0.21 J	<0.21	<20 U	<20 U
			Lead	15	< 2.2	3.5	< 1 U	< 1	<1.0	<1.0	0.031 J	<0.1	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	0.11 J	<0.05	<0.1	0.2 U	<0.2	<0.2 U	<0.2 U
			Selenium	50	< 1.3	< 1.3	< 2 U	< 2 U	<2.0	<2.0	0.77 J	0.98 J	5.5	6.56
	Silver	180	< 1.2	< 1.2	< 1	< 1	<1.0	<1.0	<0.06	<0.06	<10 U	<10 U		
	MW OB-13	Shallow	Arsenic	10	6.7	< 2.5	< 2 U	NA	<10.0	NA	NS	11.3	NS	<100 U***
			Barium	2,000	190	71	24.1 J	NA	371	NA	NS	228	NS	45.3
			Cadmium	5	0.7	< 0.2	< 1	NA	<1.0	NA	NS	1.77	NS	<20 U
			Chromium	100	28.1	11.3	15.3	NA	37.9	NA	NS	20.4	NS	<20 U
			Lead	15	11.7	< 2.2	5.8	NA	24.3 J+	NA	NS	13.9	NS	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	NS	<0.2 U
			Selenium	50	4.5	10.4	18.7	NA	<10.0	NA	NS	6.55	NS	14.8
	Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	NS	<10 U		
	MW OB-16	Shallow	Arsenic	10	2.6	< 2.5	< 2 U	NA	<2.0	NA	NS	7.42	<10 U	NS
			Barium	2,000	60.2	65.1	24.5 J	NA	21.1 J	NA	NS	24.1	19.9	NS
			Cadmium	5	< 0.2	< 0.2	< 1	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Chromium	100	10	13.8	< 1 U	NA	<10.0	NA	NS	2.48	<20 U	NS
			Lead	15	4.6	2.5	1.4 J	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	15.3	10.7	11.7	NA	<10.0	NA	NS	7.86	15.9	NS
	Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS		
	MW OB-18	Shallow	Arsenic	10	10.4	5.6	< 2	< 2	<2	<2.0	1.42 J	5.64	<10 U	<100 U***
			Barium	2,000	283	124	19.7 J	19.8 J	17.5 J	17.2 J	17.9	15.4	13.1	14.2
Cadmium			5	0.4	< 0.2	< 1	< 1	<1.0	<1.0	<0.1	<0.1	<10 U	<20 U	
Chromium			100	72.8	24.7	< 1	< 1 U	<1.0	<1.0	0.32 J	<0.5	<20 U	<20 U	
Lead			15	22.9	10.8	< 1 U	< 1	<1.0	<1.0	0.027 J	<0.1	<10 U	<10 U	
Mercury			2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U	
Selenium			50	14.1	15.8	12.3	< 2 U	<10	<2.0	1 J	3.27	5.04	13.1	
Silver	180	4.4	< 1.2	< 1	< 1	<1	<1.0	<0.06	<0.06	<10 U	<10 U			

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07 (Cont'd)	MW OB-19	Shallow	Arsenic	10	20.6	7.6	< 2 U	NA	<2.0	NA	NS	7.54 J	<10 U	NS
			Barium	2,000	452	147	84.1 J	NA	42.5 J	NA	NS	71.5 J	43.3	NS
			Cadmium	5	1.8	< 0.2	< 1	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Chromium	100	15.3	24	< 1 U	NA	<10	NA	NS	8.37 J	<20 U	NS
			Lead	15	10.8	8.5	4.1 J	NA	<1.0	NA	NS	2.68 J	<10 U	NS
			Mercury	2	0.2	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	22.7	27.1	20.2	NA	26.5	NA	NS	25.5 J	17.7	NS
	Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS		
	MW OB-21	Shallow	Arsenic	10	6	48.6	< 2	< 2	<2.0	<2.0	2.59 J	7.46	<10 I	<100 U***
			Barium	2,000	171	1,690	79.6 J	71.1 J	70.1 J	72.5 J	53.8	57.2	33.2	52.2
			Cadmium	5	0.4	< 0.2	< 1	< 1	<1.0	<1.0	<0.1	<0.1	<10 U	<20 U
			Chromium	100	17.6	233	< 1 U	< 1 U	<1.0	<1.0	0.42 J	1.1	<20 U	<20 U
			Lead	15	10	107	1.5 J	< 1	<1.0	<1.0	0.043 J	0.65 J	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U
Selenium			50	24.9	21.6	31.8	29.1	21.3	19.8	10.3 J	8.36	10.7	8.29	
ST-08	MW 08-05	Shallow	Arsenic	10	4.7	< 2.5	< 2	NA	<2.0	NA	NS	2.85 J	<10 U	NS
			Barium	2,000	204	178	115 J	NA	104 J	NA	NS	199 J	103	NS
			Cadmium	5	0.3	< 0.2	< 1	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Chromium	100	11.4	7.8	< 1	NA	<1.0	NA	NS	<0.3	<20 U	NS
			Lead	15	5.1	3.4	3 J	NA	<1.0	NA	NS	<0.13	<10 U	NS
			Mercury	2	< 0.1	0.3	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
	MW 08-09	Shallow	Selenium	50	< 1.3	3.3	< 2 U	NA	<2.0	NA	NS	2.53 J	14.9	NS
			Arsenic	10	4	7.1	< 2 U	NA	<2.0	NA	NS	11.6	<10 U	NS
			Barium	2,000	510	570	387	NA	385	NA	NS	401	408	NS
			Chromium	100	23.3	14	< 1	NA	<1.0	NA	NS	<0.1	<20 U	NS
			Lead	15	10.3	9.2	2.6 J	NA	<1.0	NA	NS	<0.23	<10 U	NS
			Mercury	2	< 0.1	< 0.1	0.1 J	NA	<0.05	NA	NS	<0.15	<0.2 U	NS
			Selenium	50	1.6	< 1.3	< 2	NA	<2.0	NA	NS	<0.2	4.83	NS
	Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	0.97 J	<10 U	NS		
	MW 08-12	Shallow	Arsenic	10	4.1	9.1	< 2	NA	<2.0	NA	NS	5.98	<10 U	NS
			Barium	2,000	523	574	225	NA	232	NA	NS	232	210	NS
			Cadmium	5	0.3	< 0.2	< 1	NA	<1.0	NA	NS	0.1 U	<10 U	NS
			Chromium	100	30.8	47.6	< 1	NA	<10	NA	NS	0.21 U	<20 U	NS
			Lead	15	16.8	24.8	2.5 J	NA	<1.0	NA	NS	0.17 U	<10 U	NS
			Mercury	2	0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	0.2 U	<0.2 U	NS
			Selenium	50	4.8	< 1.3	< 2 U	NA	<2.0	NA	NS	1.3 J	5.27	NS
Silver	180	1.9	2.2	< 1	NA	<1.0	NA	NS	0.06 U	<10 U	NS			
MW 08-16	Shallow	Arsenic	10	< 2.5	10.8	< 2	NA	<2.0	NA	NS	3.45 J	<10 U	NS	
		Barium	2,000	518	668	202	NA	215	NA	NS	151	115	NS	

**Industrial Zone Area
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
ST-08 (Cont'd)			Cadmium	5	10.6	10	< 1	NA	<1.0	NA	NS	0.11 J	<10 U	NS
			Chromium	100	24.3	66.2	< 1	NA	<1.0	NA	NS	0.29 J	<20 U	NS
			Lead	15	16.1	47.8	< 1	NA	<1.0	NA	NS	0.19 J	<10 U	NS
			Mercury	2	0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	2.1	< 1.3	< 2 U	NA	<2.0	NA	NS	1.23 J	2.76	NS

Notes:

*** Elevated laboratory Method Detection Limit (MDL) > screening criteria.

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others

**Industrial Zone Area
Detected Metal Concentrations in the
Intermediate Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-07	MW N7-38	Intermediate	Arsenic	10	6.4	16.8	< 2 U	11.4	<10	14.6	8.52 J	9.27	<10 U	<100 U***
			Barium	2,000	257	513	152 J	618	305	728	594	82.2	59.4	79.4
			Chromium	100	39	82.5	< 1 U	40.2	21.8	45.7	23.8	3.17	<20 U	<20 U
			Lead	15	14.8	34.8	11.6	39.7	20.4 J+	57.7 J	39.8	2.97	<10 U	5.24
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U
			Selenium	50	5.6	< 1.3	< 2 U	< 2 U	<10	2.9 J	4.08 J	5.18	11.3	8.02
			Silver	180	< 1.2	3	< 1	< 1	<1.0	>1.0	0.5 J	<0.06	<10 U	<10 U
	MW N7-48	Intermediate	Arsenic	10	13.1	7.6	< 2	NA	<2.0	NA	NS	11.3*	<10 U	NS
			Barium	2,000	799	30.6	35.8 J	NA	44.4 J	NA	NS	43.1*	21.6	NS
			Chromium	100	157	5.6	2.6 J	NA	16.1	NA	NS	7.25*	<20 U	NS
			Lead	15	34.7	< 2.2	< 1	NA	<1.0	NA	NS	0.51 J*	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2*	<0.2 U	NS
			Selenium	50	17.7	29.4	7.5 J	NA	18.6	NA	NS	16.5*	20.4	NS
	MW N7-50	Intermediate	Silver	180	3.7	< 1.2	< 1	NA	<1.0	NA	NS	<0.06*	<10 U	NS
			Arsenic	10	3.8	8.6	7.1 J	NA	<10	NA	NS	17.8	<10 U	NS
			Barium	2,000	27.5	26.7	34.6 J	NA	35.9 J	NA	NS	29.6	30.2	NS
			Chromium	100	2.9	3.8	< 1 U	NA	37.4	NA	NS	3.3	13.1 F	NS
			Lead	15	< 2.2	< 2.2	2.1 J	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	28.6	28	33	NA	26.7	NA	NS	27.3	41.9	NS
	MW N7-52	Intermediate	Silver	180	< 1.2	1.9	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS
Arsenic			10	2.7	< 2.5	< 2 U	< 2 U	<10	7.9 J	7.16 J	6.89 J	<10 U	<100 U***	
Barium			2,000	107	74	91.2 J	86 J	429	250	226 J	77.6 J	57.3	57.2	
Cadmium			5	0.5	< 0.2	< 1	< 1	<1.0	<1.0	0.076 J	<0.1	<10 U	<20 U	
Chromium			100	27.4	1.6	< 1 U	8.2 J	49.6	43	27.9 J	1.61 J	<20 U	<20 U	
Lead			15	< 2.2	< 2.2	< 1 U	< 1	27.2	15.6 J	10.6 J	<0.12	<10 U	<10 U	
Mercury			2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U	
ST-08	MW 08-18	Intermediate	Selenium	50	18.2	21.1	19.5	20.4	17.1	17.8	11.4 J	14.6 J	23.7	16.0
			Silver	180	2.4	< 1.2	< 1	< 1	<1.0	<1.0	0.047 J	<0.06	<10 U	<10 U
			Arsenic	10	8	9.4	< 2 U	NA	<2.0	NA	1.42 J	5.06 J	<10 U	NS
			Barium	2,000	267	406	36.5 J	NA	132 J	NA	17.9	57.8 J	42	NS
			Chromium	100	69.3	112	< 1 U	NA	10.1 J-	NA	0.32 J	3.82 J	<20 U	NS
			Lead	15	12.7	26.2	1.4 J	NA	<5	NA	0.027 J	0.26 J	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	<0.2	<0.2	<0.2 U	NS

Notes:

* Well resampled on November 2012.

*** Elevated laboratory Method Detection Limit (MDL) > screening criteria.

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Industrial Zone Area
Detected Metal Concentrations in the Deep Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
LF-03	MW 03-07	Deep	Arsenic	10	< 2.5	5.4	< 2 U	NA	<2.0	NA	NS	12.1	<10 U	NS
			Barium	2,000	29.6	29.4	39.7 J	NA	30.8 J	NA	NS	27.1	27.8	NS
			Chromium	100	2.6	3.8	< 1 U	NA	4.1 J	NA	NS	3.47	<20 U	NS
			Lead	15	< 2.2	< 2.2	3.3 J	NA	<1.0	NA	NS	<0.1	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	15.6	19.6	21.8	NA	19.7	NA	NS	15	22.7	NS
SS-07	MW 7-07	Deep	Arsenic	10	4.8	7.4	< 2 U	NA	<2.0	NA	NS	19.5	13.1	NS
			Barium	2,000	31.7	95	41.8 J	NA	42.2 J	NA	NS	18	25.1	NS
			Chromium	100	2.4	26.3	< 1 U	NA	7.5 J	NA	NS	<0.89	<20 U	NS
			Lead	15	< 2.2	5.8	3.3 J	NA	<5	NA	NS	0.073 J	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	121	130	183	NA	158	NA	NS	150 J	66.4	NS
	MW N7-51	Deep	Arsenic	10	5.9	8.5	6.1 J	NA	4.2 J	NA	NS	21.6	8.25 F	NS
			Barium	2,000	45.1	31	43.3 J	NA	89 J	NA	NS	18.1	22.7	NS
			Chromium	100	8.3	20.9	< 1 U	NA	15.2	NA	NS	3.12	<20 U	NS
			Lead	15	< 2.2	< 2.2	4.5 J	NA	7.4	NA	NS	<0.24	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	27.9	30.5	35	NA	29.6	NA	NS	24.9 J	42.7	NS
	MW N7-53	Deep	Silver	180	< 1.2	2.7	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS
			Arsenic	10	3	7.9	< 2 U	< 2 U	<2.0	3.2 J	5.7 J	20.8	10.4	<100 U***
			Barium	2,000	19.9	90.9	59.6 J	20 J	22.8 J	18.4 J	63	19.4	46.3	110
			Chromium	100	3.4	20	< 1 U	4.1 J	3.3 J	2.9 J	3.13	3.03	<20 U	<20 U
			Lead	15	< 2.2	2.4	< 1	< 1	<1.0	<1.0	0.48 J	<0.1	<10 U	<10 U
			Mercury	2	< 0.1	< 0.1	< 0.071	< 0.071	<0.05	<0.1	<0.2	<0.2	<0.2 U	<0.2 U
Selenium	50	13.8	14.8	15.3 J	18.6	12.1	15.7	10.5 J	16.1	24.1	16.4			
Silver	180	< 1.2	< 1.2	< 1	< 1	<1.0	< 1	<0.06	<0.06	<10 U	<10 U			

Notes:

*** Elevated laboratory Method Detection Limit (MDL) > screening criteria.

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site FT-02
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
FT-02	MW 2-04	Shallow	Acetone	12,000 ¹	< 0.819	< 0.819	< 10	NA	<10	NA	NS	<1	<5 U	NS
			Chloromethane	190	< 0.482	< 0.482	< 0.5	NA	<0.5	NA	NS	<0.2	<1 U	NS
			cis-1,2-Dichloroethene	70	0.816	0.805	1.3	NA	1.7 J-	NA	NS	3.52	2.05	NS
			Trichloroethene (TCE)	5	9.09	8.02	8.5	NA	5.9 J-	NA	NS	8.77	6.73	NS
	MW 2-05	Shallow	2-Butanone (MEK)	4,900 ¹	< 0.841	< 0.841	< 2	NA	<2	NA	NS	<0.5	<5 U	NS
			Acetone	12,000 ¹	< 0.819	3.24	< 10	NA	<10	NA	NS	1.09 J	<5 U	NS
			Benzene	5	< 0.392	< 0.392	0.65 J	NA	0.44 J	NA	NS	0.557 J	<2 U	NS
			cis-1,2-Dichloroethene	70	1.06	0.778	1.7	NA	1.3	NA	NS	2.00	0.321 F	NS
			Ethylbenzene	700	< 0.416	< 0.416	0.46 J	NA	0.31 J	NA	NS	<0.2	<2 U	NS
			Tetrachloroethene (PCE)	5	4.46	5.48	2.9	NA	1.7	NA	NS	1.97	0.901 F	NS
Trichloroethene (TCE)	5	< 0.449	< 0.449	0.39 J	NA	<0.26	NA	NS	<0.2	<0.5 U	NS			

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site FT-02
Detected SVOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
FT-02	MW 2-04	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.63	2.86	< 1.9	NA	<1.0	NA	NS	<0.505	<5 UR	NS
	MW 2-05	Shallow	2-Methylnaphthalene	27 ¹	< 0.932	< 0.932	< 0.95	NA	0.57	NA	NS	0.567 J	<5.1 UR	NS
			Benzo(g,h,i)perylene	NL	< 0.733	< 0.733	< 0.95	NA	<0.48	NA	NS	<0.5	<5.1 UR	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.63	5.29	< 1.9	NA	<1.0	NA	NS	<0.5	<5.1 UR	NS
			Naphthalene	0.14 ¹	< 0.842	< 0.842	< 0.95	NA	<0.76	NA	NS	0.925 J	<5.1 UR	NS

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

NL = not listed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site FT-02
Detected TPH Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (mg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
FT-02	MW 2-04	Shallow	TPH-DRO	1	0.431	0.397	1.13	NA	1.25	NA	NS	1.34 J	0.425 J	NS
			TPH-GRO	1	NA	NA	< 0.05 J	NA	<0.1	NA	NS	0.004 J	<0.160 U	NS
	MW 2-05	Shallow	Gasoline Components	1	0.0342	NA	NA	NA	NA	NA	NS	NA	NS	NS
			TPH-DRO	1	0.637	0.297	0.521	NA	0.209	NA	NS	0.845	0.353 J	NS
			TPH GRO	1	NA	NA	0.256	NA	0.485	NA	NS	0.160	<0.160 U	NS

Notes:

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others

Site FT-02
Detected Pesticide Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Pesticide Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
FT-02	MW 2-04	Shallow	Heptachlor Epoxide	0.2	NS	NS	< 0.0095	NA	<0.0048	NS	NS	<0.01	<0.02 UJ	NS
	MW 2-05	Shallow	Aldrin	0.004	NS	NS	< 0.015	NA	0.021 J	NS	NS	<0.01	<0.02 UJ	NS
			beta-BHC (beta-Hexachlorocyclohexane)	0.037	NS	NS	< 0.0096	NA	0.02 J	NS	NS	<0.01	<0.02 UJ	NS
			delta-BHC (delta-Hexachlorocyclohexane)	NL	NS	NS	< 0.0096	NA	<0.0048	NS	NS	<0.01	<0.02 UJ	NS
			gamma-BHC (Lindane)	0.061	NS	NS	< 0.0096	NA	<0.0048	NS	NS	<0.01	<0.02 UJ	NS

Notes:

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

NL = not listed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site FT-02
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
FT-02	MW 2-04	Shallow	Arsenic	10	8.4	12.1	12.9 J	NS	<2	NS	NS	10.4 J	<100 U***	NS
			Barium	2,000	247	325	321	NS	155 J	NS	NS	166 J	135	NS
			Cadmium	5	< 0.2	< 0.2	4.7 J	NS	<1	NS	NS	0.22 J	<20 U	NS
			Chromium	100	26.2	49.8	25.3 J	NS	<1	NS	NS	4.27 J	<20 U	NS
			Lead	15	10.5	23.7	34.8 J	NS	<1	NS	NS	1.89	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NS	<0.05	NS	NS	<0.2	<0.2 U	NS
			Selenium	50	6.1	5.6	< 2 U	NS	<2	NS	NS	13.7 J	48.7	NS
	MW 2-05	Shallow	Arsenic	10	2.7	5.5	< 2	NS	<2	NS	NS	10.5	<100 U***	NS
			Barium	2,000	322	193	255	NS	336	NS	NS	460	281	NS
			Cadmium	5	0.3	< 0.2	< 1	NS	<1	NS	NS	0.13 J	<20 U	NS
			Chromium	100	6.7	7.1	< 1 U	NS	<1	NS	NS	0.73 J	<20 U	NS
			Lead	15	< 2.2	< 2.2	2.36 J	NS	<1	NS	NS	0.2 J	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NS	<0.05	NS	NS	<0.2	<0.2 U	NS
			Selenium	50	4.3	5.3	< 2 U	NS	<2	NS	NS	15.3 J	52.8	NS
Silver	180	1.4	< 1.2	< 1	NS	<1	NS	NS	<0.06	<10 U	NS			

Notes:

*** Elevated laboratory Method Detection Limit (MDL) > screening criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

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NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site DP-05
Detected VOC Concentrations in Groundwater
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05 (Cont'd)			trans-1,2-Dichloroethene	100	< 1.86	< 1.86	0.77 J+	NA	2.5 J	NA	NS	4.31 J	1.04	NS
			Trichloroethene (TCE)	5	53	46.2	41.2 J+	NA	267	NA	NS	948 J	207	NS
			Vinyl Chloride	2	3.69	< 2.01	60.6	NA	58.5	NA	NS	30.9 J	15	NS
	MW 05-08	Shallow	1,1-Dichloroethene	7	< 4.27	< 4.27	< 2.9	NA	<12	NA	NS	4.06 J	<10 U	NS
			Benzene	5	< 3.92	< 3.92	< 2.1	NA	<10	NA	NS	<2	<2.5 U	NS
			Chloroform	80	< 3.49	5.84	< 2.5	NA	<11	NA	NS	4.66 J	3.61 F	NS
			cis-1,2-Dichloroethene	70	196	2,030	161	NA	1,040 J+	NA	NS	1,770 J	1140	NS
			Methylene Chloride	5	< 4.22	< 4.22	< 20	NA	132 J	NA	NS	<.5 J	<5 U	NS
			trans-1,2-Dichloroethene	100	< 3.72	42.9	< 3.4	NA	<18	NA	NS	10.1 J	3.69 F	NS
			Trichloroethene (TCE)	5	594	5,730	690	NA	3,610 J+	NA	NS	4,890 J	3,510	NS
			Vinyl Chloride	2	< 4.02	< 4.02	< 2.8	NA	<11	NA	NS	<2	<5 U	NS
			1,1,1-Trichloroethane	200	2.95	< 1.8	< 2.2	NA	<1.0	NA	NS	<0.2	<0.5 U	NS
	MW 05-19	Shallow	1,1-Dichloroethane	2.4 ¹	6.96	6.77	< 2.2	NA	2.3 J+	NA	NS	<0.2	1.35 F	NS
			1,1-Dichloroethene	7	2.27	< 2.13	< 2.9	NA	<1.2	NA	NS	<0.5	0.644 F	NS
			1,2-Dichlorobenzene	600	< 2.17	< 2.17	< 2.6	NA	<1.3	NA	NS	<0.2	<5.38 U	NS
			1,3-Dichlorobenzene	14	< 1.93	2.14	< 2.9	NA	<1.0	NA	NS	<0.2	<5.38 U	NS
			1,4-Dichlorobenzene	75	< 1.88	< 1.88	< 2.2	NA	<1.2	NA	NS	<0.2	<5.38 U	NS
			4-Methyl-2-pentanone (MIBK)	2,000	< 2.08	< 2.08	< 20	NA	<10	NA	NS	<0.5	<5 U	NS
			Acetone	12,000 ¹	< 4.1	< 4.1	2,020	NA	63.7 J+	NA	NS	159 J	<5 U	NS
			Benzene	5	2.44	3.14	3.8 J	NA	5.9 J+	NA	NS	4.3 J	6.02	NS
			Chloroform	80	< 1.74	< 1.74	< 2.5	NA	1.4 J+	NA	NS	<0.2	<0.25 U	NS
			cis-1,2-Dichloroethene	70	267	468	210	NA	341 J+	NA	NS	83.5 J	59.3	NS
			Ethylbenzene	700	5.26	4.94	< 2	NA	6.1 J+	NA	NS	4.38 J	1.29 F	NS
			m,p-Xylene	380 ¹	< 4.13	< 4.13	< 3.4	NA	2.9 J+	NA	NS	6.72 J	1.72 F	NS
			o-Xylene	190 ¹	3.39	3.78	< 2	NA	7.3 J+	NA	NS	6.61 J	1.63 F	NS
			Toluene	1,000	6.24	3.74	4.5 J	NA	9.9 J+	NA	NS	7.59 J	2.82 F	NS
			trans-1,2-Dichloroethene	100	< 1.86	< 1.86	< 3.4	NA	2.6 J+	NA	NS	4.26 J	1.7	NS
			Trichloroethene (TCE)	5	364	211	895	NA	535 J+	NA	NS	188 J	83.2	NS
			Vinyl Chloride	2	95.5	73.2	43.5	NA	157 J+	NA	NS	115 J	150	NS
			MW 05-18	Intermediate	Chloroform	80	< 1.74	< 1.74	< 1.3	NA	<1.1	NA	NS	0.231 J
	cis-1,2-Dichloroethene	70			3.48	2.75	1.8 J+	NA	<1.3	NA	NS	2.16	2.2	NS
	Tetrachloroethene (PCE)	5			< 1.99	< 1.99	< 2.2	NA	<1.3	NA	NS	<0.5	<0.5 U	NS
	Toluene	1,000			<1.96	<1.96	<1.0	NA	1.2 J	NA	NS	<0.2	<2 U	NS
	Trichloroethene (TCE)	5			235	217	284 J+	NA	112	NA	NS	338	241	NS
	MW 05-09	Deep	1,1,1-Trichloroethane	200	< 0.36	< 0.36	< 0.22	NA	<0.2	NA	NS	<0.2	<0.5 U	NS
			1,1-Dichloroethane	2.4 ¹	< 0.374	< 0.374	< 0.22	NA	<0.25	NA	NS	<0.2	<0.25 U	NS
			Acetone	12,000 ¹	3.94	< 0.819	< 10	NA	<10	NA	NS	<1	<5 U	NS
			Benzene	5	< 0.392	< 0.392	< 0.21	NA	<0.2	NA	NS	<0.2	<2 U	NS
			Chloroform	80	< 0.349	< 0.349	< 0.25	NA	<0.22	NA	NS	<0.2	<0.25 U	NS
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	< 0.32	NA	<0.26	NA	NS	<0.2	3.64	NS

Site DP-05
Detected VOC Concentrations in Groundwater
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05 (Cont'd)			m,p-Xylene	380 ¹	< 0.826	< 0.826	< 0.34	NA	<0.32	NA	NS	0.863 J	<2 U	NS
			Methylene Chloride	5	< 0.422	< 0.422	< 2	NA	<2.0	NA	NS	<0.5	<0.5 U	NS
			o-Xylene	190 ¹	< 0.386	< 0.386	< 0.2	NA	<0.2	NA	NS	<0.2	<2 U	NS
			Tetrachloroethene (PCE)	5	< 0.398	< 0.398	< 0.44	NA	<0.25	NA	NS	<0.5	<0.5 U	NS
			Toluene	1,000	< 0.391	< 0.391	< 0.2	NA	<0.2	NA	NS	0.82 J	<2 U	NS
			trans-1,2-Dichloroethene	100	< 0.372	< 0.372	< 0.34	NA	<0.35	NA	NS	<0.2	<0.5 U	NS
			Trichloroethene (TCE)	5	< 0.449	< 0.449	< 0.24	NA	<0.26	NA	NS	<0.2	0.291 F	NS

Notes:

* Well resampled on November 2012.

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site DP-05
Detected SVOCs Concentrations in Groundwater
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05	MW 05-01	Shallow	1,2-Dichlorobenzene	600	NA	NA	2.2 J	NA	3 J	NA	NS	<10*	<5.38 UR	NS
			1,3-Dichlorobenzene	14	NA	NA	3.2 J	NA	3.3 J	NA	NS	<10*	<5.38 UR	NS
			1,4-Dichlorobenzene	75	NA	NA	1.6 J	NA	1.7 J	NA	NS	<10*	<5.38 UR	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.88	< 2.63	< 1.9	NA	<1.1	NA	NS	NA	6.6 F	NS
	MW 05-03	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.68	< 2.63	< 1.9	NA	<1.0	NA	NS	NS	<5.1 UR	NS
			1,2-Dichlorobenzene	600	NA	NA	8.9 J	NA	NA	NA	NS	NS	NS	NS
	MW 05-04	Shallow	1,4-Dioxane	0.67 ^{1,2}	NA	NA	NA	NA	NA	NA	NS	6.87 J	NS	NS
			2,4-Dimethylphenol	270 ¹	< 1.83	< 1.9	8.2 J-	NA	NA	NA	NS	44.3 J	NS	NS
			2-Methylnaphthalene	27 ¹	< 0.932	29.7	11.3 J	NA	NA	NA	NS	34.5 J	NS	NS
			2-Methylphenol (o-Cresol)	720	< 1.75	20.7	< 3.8 UJ-	NA	NA	NA	NS	52.3 J	NS	NS
			Benzo(a)anthracene	0.029	< 1.08	< 1.12	< 3.8	NA	NA	NA	NS	<0.515	NS	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.63	3.61	< 7.6	NA	NA	NA	NS	17.3 J	NS	NS
			Chrysene	20	< 1.03	< 1.07	< 3.8	NA	NA	NA	NS	<0.515	NS	NS
			Cresols, m & p	1,100 ¹	< 2.48	324	40 J-	NA	NA	NA	NS	396 J	NS	NS
			Naphthalene	0.14 ¹	5.24	71.5	25.4	NA	NA	NA	NS	46.7 J	NS	NS
			Phenol	4,500 ¹	< 2.05	123	< 3.8 UJ-	NA	NA	NA	NS	55.8 J	NS	NS
	MW 05-06	Shallow	bis(2-Ethylhexyl)phthalate	6	< 2.61	17.7	< 1.9	NA	<1.0	NA	NS	<0.5	<5 UR	NS
	MW 05-07	Shallow	1,2-Dichlorobenzene	600	NA	NA	< 0.95	NA	<0.96	NA	NS	0.486 J	<5.1 UR	NS
			1,3-Dichlorobenzene	14	NA	NA	< 0.95	NA	<0.96	NA	NS	1.18 J	<5.1 UR	NS
			1,4-Dichlorobenzene	75	NA	NA	< 0.95	NA	<0.96	NA	NS	0.554 J	<5.1 UR	NS
			bis(2-Ethylhexyl)phthalate	6	2.93	< 2.63	< 1.9	NA	<1.1	NA	<0.5	<0.5	<5.1 UR	NS
	MW 05-08	Shallow	1,2-Dichlorobenzene	600	NA	NA	< 0.95	NA	<0.96	NA	NS	<2	<5 UR	NS
			1,3-Dichlorobenzene	14	NA	NA	< 0.95	NA	<0.96	NA	NS	<2	<5 UR	NS
			bis(2-Ethylhexyl)phthalate	6	< 2.61	< 2.66	< 1.9	NA	<1.1	NA	<0.5	<0.5	<5 UR	NS
	MW 05-19	Shallow	1,2-Dichlorobenzene	600	NA	NA	< 0.95	NA	<0.97	NA	NS	<0.2	<5.38 U	NS
			1,3-Dichlorobenzene	14	NA	NA	< 0.95	NA	<0.97	NA	NS	<0.2	<5.38 U	NS
			1,4-Dichlorobenzene	75	NA	NA	< 0.95	NA	<0.97	NA	NS	<0.2	<5.38 U	NS
			2,4-Dimethylphenol	270 ¹	< 1.85	< 1.85	2.6 J	NA	1.2 J	NA	<1.2	<1.2	<5.38 U	NS
			2-Methylnaphthalene	27 ¹	< 0.941	< 0.941	< 0.95	NA	<0.55	NA	0.386 J	0.386 J	<5.38 U	NS
			bis(2-Ethylhexyl)phthalate	6	3.56	7.06	< 1.9	NA	27.5	NA	103 J	103 J	157	NS
			Cresols, m & p	1,100 ¹	< 2.51	< 2.51	23.8	NA	<1.1	NA	<0.5	<0.5	NS	NS
			di-n-Butyl phthalate	67	<1.1	<1.1	<0.95	NA	2.2 J	NA	<0.5	<0.5	2.91 F	NS
			di-n-Octyl phthalate	16	< 1.08	< 1.08	< 0.95	NA	<1.1	NA	<0.5	<0.5	29.2	NS
Fluorene			1,500	1.07	1.4	< 0.95	NA	<0.49	NA	<0.5	<0.5	<5.38 U	NS	
Naphthalene			0.14 ¹	< 0.85	< 0.85	< 0.95	NA	<0.78	NA	0.86 J	0.86 J	1.46 F	NS	
Phenanthrene	NL	3.2	2.39	< 0.95	NA	<0.49	NA	<0.5 J	<0.5 J	<5.38 U	NS			
MW 05-18	Intermediate	bis(2-Ethylhexyl)phthalate	6	< 2.71	< 2.71	< 1.9	NA	<1.0	NA	<0.5	<0.5	<5 UR	NS	
MW05-09	Deep	bis(2-Ethylhexyl)phthalate	6	< 2.66	5.3	< 1.9	NA	<1.0	NA	<0.5	<0.5	19.3	NS	

Notes:
* Well resampled on November 2012.
¹2013 EPA Regional Screening Level for tap water
²6.1 µg/L Concentration specified in the RCRA Permit (EPA Screening Level for tap water).
F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).
J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.
R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.
U – Not detected. The associated number indicates the analyte limit of detection (LOD).
NS = not sampled
NA = not analyzed
NL = not listed
MCL = Maximum Contaminant Level
HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site DP-05
Detected TPH Concentrations in Groundwater
April 2009 through October 2013

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (mg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05	MW 05-01	Shallow	gasoline componenets	1	5.4	6.68	NA	NA	NA	NA	NS	NA ¹	NA	NS
			TPH-DRO	1	0.835	0.174	< 0.095	0.114 J	<0.096	NA	NS	0.0859 J ^{1*}	0.0723 F	NS
			TPH_GRO	1	NA	NA	NA	5.62	5.09	NA	NS	4.08 ^{1*}	0.696	NS
	MW 05-03	Shallow	gasoline componenets	1	0.0591	0.0922	NA	NA	NA	NA	NS	NS	NA	NS
			TPH-DRO	1	1.38	0.0453	0.101 J	NA	<0.095	NA	NS	NS	0.418 J	NS
			TPH_GRO	1	NA	NA	0.146	NA	0.0869 J	NA	NS	NS	<0.160 U	NS
	MW 05-04	Shallow	gasoline componenets	1	17.7	117	NA	NA	NA	NA	NS	NA	NS	NS
			TPH-DRO	1	16.4	6.07	4.14	19.7	NA	NA	NS	NA	NS	NS
			TPH_GRO	1	NA	NA	NA	86.4	NA	NA	NS	NA	NS	NS
	MW 05-06	Shallow	gasoline componenets	1	0.101	0.152	NA	NA	NA	NA	NS	NA	NA	NS
			TPH-DRO	1	0.308	0.296	< 0.095	NA	<0.096	NA	NS	0.102 J	0.120 FJ	NS
			TPH_GRO	1	NA	NA	0.105	NA	0.149	NA	NS	0.037 J	<0.160 U	NS
	MW 05-07	Shallow	gasoline componenets	1	0.157	0.244	NA	NA	NA	NA	NS	NA	NA	NS
			TPH-DRO	1	0.0928	0.103	< 0.095	NA	<0.095	NA	NS	0.042 J	<0.1112 U	NS
			TPH_GRO	1	NA	NA	0.209	NA	0.424	NA	NS	0.458J	0.122 F	NS
	MW 05-08	Shallow	gasoline componenets	1	0.418	4.68	NA	NA	NA	NA	NS	NA	NA	NS
			TPH-DRO	1	0.471	0.315	< 0.095	NA	<0.095	NA	NS	0.043 J	0.0582 F	NS
			TPH_GRO	1	NA	NA	0.347	NA	1.81	NA	NS	1.83 J	1.100	NS
	MW 05-19	Shallow	gasoline componenets	1	1.18	1.31	NA	NA	NA	NA	NS	NA	NA	NS
			TPH-DRO	1	15.6	21.2	3.41	0.446	0.687	NA	NS	1.97 J	0.968 J	NS
			TPH_GRO	1	NA	NA	NA	0.675	0.603	NA	NS	0.197 J	0.130 F	NS
	MW 05-18	Intermediate	gasoline componenets	1	0.171	0.139	NA	NA	NA	NA	NS	NA	NA	NS
			TPH-DRO	1	0.0104	< 0.0098	< 0.095	NA	<0.096	NA	NS	0.047 J	0.0543 FJ	NS
			TPH_GRO	1	NA	NA	0.143	NA	0.126	NA	NS	0.005 J	<0.160 U	NS
MW 05-09	Deep	TPH-DRO	1	NA	NA	NA	NA	<0.096	NA	NS	0.046 J	0.0516 FJ	NS	
		TPH_GRO	1	NA	NA	< 0.05	NA	<0.5	NA	NS	0.005 J	<0.160 U	NS	

Notes:

* Well resampled on November 2012.

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

J – The analyte was detected above the LOQ at the reported concentration; the quantitation is an estimate due to an associated QC discrepancy.

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site DP-05
Detected Metals Concentrations in Groundwater
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05	MW 05-01	Shallow	Arsenic	10	5.5	8.2	< 2 U	NA	<2.0	NA	NS	11.8^{1*}	<10 U	NS
			Barium	2,000	107	210	149 J	NA	39 J	NA	NS	49.3 ^{1*}	26.1	NS
			Cadmium	5	0.4	<0.2	< 1	NA	<1.0	NA	NS	0.29 J ^{1*}	<10 U	NS
			Chromium	100	11.8	47.8	3.3 J	NA	<1.0	NA	NS	2.04 ^{1*}	<20 U	NS
			Lead	15	14	28.8	7.2	NA	<1.0	NA	NS	1.97 ^{1*}	<10 U	NS
			Mercury	2	<0.1	<0.1	<0.071	NA	<0.05	NA	NS	<0.2 ^{1*}	<0.2 U	NS
			Selenium	50	1.7	2.4	5.4 J	NA	<10	NA	NS	3.36 ^{1*}	12.2	NS
			Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	0.024 J ^{1*}	<10 U	NS
	MW 05-03	Shallow	Arsenic	10	6.2	<2.5	< 2 U	NA	<10.0	NA	NS	NS	IW	NS
			Barium	2,000	277	153	244	NA	161 J	NA	NS	NS	IW	NS
			Cadmium	5	0.5	0.7	< 1	NA	<1	NA	NS	NS	IW	NS
			Chromium	100	22	<0.8	26.1	NA	<10.0	NA	NS	NS	IW	NS
			Lead	15	42.3	12.5	116	NA	63.5	NA	NS	NS	IW	NS
			Mercury	2	<0.1	<0.1	<0.071	NA	<0.05	NA	NS	NS	IW	NS
			Selenium	50	2.9	3.2	< 2 U	NA	<2	NA	NS	NS	IW	NS
	MW 05-04	Shallow	Silver	180	< 1.2	< 1.2	< 1	NA	<1	NA	NS	NS	IW	NS
			Arsenic	10	44.4	<2.5	10.5	NA	NA	NA	NS	NA	NS	NS
			Barium	2,000	101	55.7	166 J	NA	NA	NA	NS	NA	NS	NS
			Cadmium	5	0.4	<0.2	< 1	NA	NA	NA	NS	NA	NS	NS
			Chromium	100	<0.8	<0.8	< 1	NA	NA	NA	NS	NA	NS	NS
			Lead	15	<2.2	<2.2	2.4 J	NA	NA	NA	NS	NA	NS	NS
			Mercury	2	<0.1	<0.1	<0.071	NA	NA	NA	NS	NA	NS	NS
	MW 05-06	Shallow	Selenium	50	<1.3	1.4	2.3 J	NA	NA	NA	NS	NA	NS	NS
			Silver	180	< 1.2	< 1.2	< 1	NA	NA	NA	NS	NA	NS	NS
			Arsenic	10	14.8	30.7	< 2 U	NA	<2.0	NA	NS	4.84 J	<100 U***	NS
			Barium	2,000	650	1,320	320	NA	62.7 J	NA	NS	59 J	48.2	NS
			Cadmium	5	1.3	<0.2	< 1	NA	<1.0	NA	NS	0.1 UJ	<20 U	NS
			Chromium	100	110	247	33.6	NA	<10	NA	NS	1.41 J	<20 U	NS
Lead			15	41	97.6	30.1	NA	<1.0	NA	NS	0.3 J	<10 U	NS	
MW 05-07	Shallow	Mercury	2	<0.1	<0.1	<0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS	
		Selenium	50	<1.3	9.8	< 2 U	NA	<10	NA	NS	1.71 J	3.43	NS	
		Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS	
		Arsenic	10	2.7	4.8	< 2	NA	<2	NA	NS	3.21 J	<100 U***	NS	
		Barium	2,000	290	383	266	NA	248	NA	NS	238 J	202	NS	
		Cadmium	5	0.3	<0.2	< 1	NA	<1.0	NA	NS	0.31 J	<20 U	NS	
		Chromium	100	11.3	28.9	4.8 J	NA	<10	NA	NS	0.48 J	<20 U	NS	
		Lead	15	2.8	9.1	6.7	NA	<1.0	NA	NS	<0.1	<10 U	NS	

Site DP-05
Detected Metals Concentrations in Groundwater
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
DP-05 (Cont'd)	MW 05-08	Shallow	Arsenic	10	14.8	12.8	< 2 U	NA	<2.0	NA	NS	5.27 J	<10 U	NS
			Barium	2,000	476	421	71.3 J	NA	67.3 J	NA	NS	58.5 J	46.5	NS
			Chromium	100	42.5	56.7	< 1 U	NA	<10	NA	NS	1.49 J	<20 U	NS
			Lead	15	16.6	21.9	3.7 J	NA	<5	NA	NS	<0.11	<10 U	NS
			Selenium	50	3.7	3	< 2 U	NA	<10	NA	NS	1.99 J	3.97	NS
			Silver	180	< 1.2	< 1.2	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS
	MW 05-19	Shallow	Arsenic	10	10.7	203	< 2 U	NA	<2.0	NA	NS	10.7 J	<100 U***	NS
			Barium	2,000	248	1,600	131 J	NA	106 J	NA	NS	65.7 J	81.1	NS
			Cadmium	5	1.3	2.4	< 1	NA	<1.0	NA	NS	<0.23	<20 U	NS
			Chromium	100	18.7	543	3.1 J	NA	<10	NA	NS	2.79 J	<20 U	NS
			Lead	15	7.9	250	3.3 J	NA	<1.0	NA	NS	<0.18	<10 U	NS
			Mercury	2	< 0.1	0.1	< 0.071	NA	0.057 J	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	< 1.3	62.6	17.7	NA	19.7 J-	NA	NS	20.1 J	11.8	NS
	MW 05-18	Intermediate	Silver	180	< 1.2	1.9	< 1	NA	<1.0	NA	NS	<0.06	<10 U	NS
			Arsenic	10	6.1	10.6	< 2 U	NA	10.2 J-	NA	NS	13	<100 U***	NS
			Barium	2,000	27.8	116	19 J	NA	108 J	NA	NS	23	23	NS
			Cadmium	5	< 0.2	0.3	< 1	NA	<1.0	NA	NS	<0.1	<20 U	NS
			Chromium	100	7.5	31.2	6 J	NA	20.4 J+	NA	NS	4.9	<20 U	NS
			Lead	15	< 2.2	9.5	5.4	NA	6.5 J+	NA	NS	<0.13	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
			Selenium	50	19.3	22.4	23.8	NA	18.7 J	NA	NS	19.5	27.1	NS
	MW 05-09	Deep	Silver	180	< 1.2	< 1.2	< 1	NA	<1	NA	NS	<0.06	<10 U	NS
			Arsenic	10	2.6	3.6	< 2	NA	<2.0	NA	NS	12.1	<100 U***	NS
			Barium	2,000	21.8	54.3	48.4 J	NA	29.8 J	NA	NS	11.4	10.6 F	NS
			Cadmium	5	< 0.2	0.9	< 1	NA	<1.0	NA	NS	<0.1	<20 U	NS
			Chromium	100	8.4	13.6	8 J	NA	6.2 J	NA	NS	3.81	<20 U	NS
			Lead	15	< 2.2	3	4.7 J	NA	<5	NA	NS	<0.13	<10 U	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	<0.2 U	NS
Selenium			50	38.3	43.2	56.6	NA	41.8	NA	NS	43.7 J	45.6	NS	

Notes:

* Well resampled on November 2012.

*** Elevated laboratory Method Detection Limit (MDL) > screening criteria.

¹2012 EPA Regional Screening Level for tap water

IW = an insufficient volume of groundwater was present in the well for sample collection and analysis (May 2013 sampling event).

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

**Site SS-26
Detected VOC Concentrations in the Shallow Zone
April 2009 through November 2013**

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-01	Shallow	1,2-Dichlorobenzene	600	< 0.434	0.44	0.59 J	1	0.58 J	0.84 J	NS	<0.2	<5 UR	NS
			1,4-Dichlorobenzene	75	0.991	1.4	2	3.1	1.8	2.6	NS	2.5	<5 UR	NS
			2-Butanone (MEK)	4,900 ¹	< 0.841	< 0.841	< 2	13.2 J	<2.0	<4.0	NS	<0.5	<5 U	NS
			Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10	248 J	NS	<1	<5 UJ	NS
			Benzene	5	< 0.392	< 0.392	0.45 J	0.75 J	0.35 J	0.52 J	NS	0.679 J	0.253 F	NS
			Chlorobenzene	100	0.649	0.86	1.3	2.2	1.3	1.9	NS	<0.2	1.6 F	NS
			cis-1,2-Dichloroethene	70	15.4	21.6	34.8	60.7	29.7	38.2	NS	28	19.1	NS
			Trichloroethene (TCE)	5	< 0.449	< 0.449	0.41 J	< 0.24	<0.26	<0.5	NS	0.51 J	0.854 F	NS
	Vinyl Chloride	2	1.68	2.75	3.7	4.8	3.5	3.6	NS	<0.2	2.42	NS		
	MW 26-03	Shallow	1,1,2,2-Tetrachloroethane	0.067	< 0.31	< 0.31	< 0.29	< 0.29	<0.23	<0.5	NS	<0.2	<0.4 U	NS
			1,1,2-Trichloroethane	5	< 0.352	< 0.352	< 0.29	< 0.29	<0.22	<0.5	NS	<0.2	<0.5 U	NS
			1,4-Dichlorobenzene	75	< 0.376	0.767	0.34 J	< 0.22	0.35 J	<0.5	NS	<0.2	<5.38 UR	NS
			2-Butanone (MEK)	4,900 ¹	< 0.841	< 0.841	< 2	28.3 J	<2.0	<4.0	NS	<0.5	<5 U	NS
			Benzene	5	< 0.392	< 0.392	0.4 J	0.26 J	0.59 J	0.87 J	NS	<0.2	<0.25 U	NS
			cis-1,2-Dichloroethene	70	< 0.367	< 0.367	< 0.32	< 0.32	0.54 J	0.82 J	NS	0.913 J	<0.5 U	NS
			Chlorobenzene	100	0.569	2.14	0.77 J	0.36 J	0.89 J	<0.5	NS	<0.2	0.711 F	NS
			Chloromethane	190	< 0.482	< 0.482	< 0.5	< 0.5	<0.5	<1.0	NS	<0.2	<1 U	NS
	Trichloroethene (TCE)	5	< 0.449	< 0.449	< 0.24	< 0.24	<0.26	<0.5	NS	<0.2	<0.5 U	NS		
	MW 26-04	Shallow	1,1-Dichloroethane	2.4 ¹	0.599	0.452	1.2	1.2 J	1.2	1.1	NS	<0.2	0.49 F	NS
			2-Butanone (MEK)	4,900 ¹	< 0.841	< 0.841	< 2	16.8 J	<2.0	<4.0	NS	<0.5	<5 U	NS
			4-Methyl-2-pentanone (MIBK)	2,000	< 0.416	< 0.416	< 2	< 2 UJ	<2.0	<4.0	NS	<0.5	<5 U	NS
			Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10 UJ	<10.0	<20	NS	<1	<5 UJ	NS
			Benzene	5	6.59	5.21	16	12.7 J	8.6	11	NS	7.67	2.28 F	NS
			Chloromethane	190	2.37	< 0.482	< 0.5	< 0.5 UJ	<0.5	<1.0	NS	<0.2	<1 U	NS
			Ethylbenzene	700	< 0.416	< 0.416	1.2	1.2 J	0.72 J	0.83 J	NS	<0.2	<0.5 U	NS
			m,p-Xylenes	380 ¹	< 0.826	< 0.826	0.4 J	0.53 J	<0.32	<0.5	NS	<0.4	<1 U**	NS
	Toluene	1,000	< 0.391	< 0.391	0.24 J	0.21 J	0.23 J	<0.5	NS	<0.2	<0.5 U	NS		

Notes:

¹2013 EPA Regional Screening Level for tap water

** = May 2013 value is total xylenes

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site SS-26
Detected VOC Concentrations in the
Intermediate Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Volatile Organic Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-02	Intermediate	1,2-Dichloroethane	5	< 0.392	0.645	< 0.33	0.38 J	0.5 J	<0.5	NS	<0.2	<0.5 U	NS
			Acetone	12,000 ¹	< 0.819	< 0.819	< 10	< 10	<10	<20	NS	<1	<5 UJ	NS
			Chloroform	80	0.449	0.91	0.45 J	0.54 J	0.7 J	<0.5	NS	<0.2	0.319 F	NS
			Trichloroethene (TCE)	5	< 0.449	< 0.449	0.25 J	0.3 J	0.33 J	<0.5	NS	<0.2	<0.5 U	NS

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

U – Not detected. The associated number indicates the analyte limit of detection (LOD).

UJ – Not detected. The associated number indicates the analyte LOD, which may be inaccurate due to associated QC discrepancies.

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site SS-26
Detected TPH Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Total Petroleum Hydrocarbon Compound Concentrations (mg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-01	Shallow	TPH-GRO	1	NA	NA	NA	1.13	0.846 J+	1.07	NS	NA	NS	NS
			TPH-DRO	1	NA	NA	NA	0.137 J	0.181 J	0.197 J	NS	NA	NS	NS
	MW 26-03	Shallow	TPH-GRO	1	NA	NA	NA	1.77	1.24 J-	3.29 J+	NS	NA	NS	NS
			TPH-DRO	1	NA	NA	NA	0.338	0.305	0.639	NS	NA	NS	NS
	MW 26-04	Shallow	TPH-GRO	1	NA	NA	NA	1.53	1.18	1.01	NS	NA	NS	NS
			TPH-DRO	1	NA	NA	NA	0.819	0.611	0.66	NS	NA	NS	NS

Notes:

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site SS-26
Detected Metal Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-01	Shallow	Arsenic	10	3.9	6.1	< 2	NA	<2.0	NA	NS	7.18	NS	NS
			Barium	2,000	382	343	199 J	NA	291	NA	NS	322	NS	NS
			Chromium	100	25.8	17.9	< 1 U	NA	<1.0	NA	NS	3.56	NS	NS
			Lead	15	7.7	4.5	3.4 J	NA	<1.0	NA	NS	1.92	NS	NS
			Selenium	50	< 1.3	2.2	< 2 U	NA	<2.0	NA	NS	3.43 J	NS	NS
	MW 26-03	Shallow	Arsenic	10	7.8	8.5	< 2 U	NA	<2.0	NA	NS	7.25	NS	NS
			Barium	2,000	400	298	326	NA	319	NA	NS	55.8	NS	NS
			Chromium	100	8	11.6	< 1 U	NA	1.2 J	NA	NS	1.46	NS	NS
			Lead	15	25.7	16.4	6.2 J	NA	<1.0	NA	NS	0.73 J	NS	NS
			Selenium	50	1.7	< 1.3	< 2 U	NA	<2.0	NA	NS	4.8 J	NS	NS
	MW 26-04	Shallow	Arsenic	10	4	3.5	< 2 U	NA	<2.0	NA	NS	5.6	NS	NS
			Barium	2,000	287	171	269	NA	246	NA	NS	246	NS	NS
			Chromium	100	10.8	5.2	< 1	NA	<1.0	NA	NS	<0.86	NS	NS
			Lead	15	< 2.2	< 2.2	4.4 J	NA	<1.0	NA	NS	0.38 J	NS	NS
			Mercury	2	< 0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	NS	NS
Selenium			50	< 1.3	< 1.3	< 2 U	NA	<2.0	NA	NS	1.32 J	NS	NS	

Notes:

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site SS-26
Detected Metal Concentrations in the Intermediate Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Metal Compound Concentrations (µg/L)											
			Parameter	MCL	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-02	Intermediate	Arsenic	10	20.7	5	< 2 U	NA	<2.0	NA	NS	7.25	NS	NS
			Barium	2,000	546	152	92.8 J	NA	76 J	NA	NS	55.8	NS	NS
			Chromium	100	128	13.6	< 1 U	NA	<10	NA	NS	1.46	NS	NS
			Lead	15	67.8	6.9	5.4 J	NA	<1.0	NA	NS	0.73 J	NS	NS
			Mercury	2	0.1	< 0.1	< 0.071	NA	<0.05	NA	NS	<0.2	NS	NS
			Selenium	50	8.8	4.8	< 2 U	NA	<10	NA	NS	4.8 J	NS	NS

Notes:

NS = not sampled

NA = not analyzed

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

Site SS-26
Detected SVOC Concentrations in the Shallow Zone
April 2009 through November 2013

Site	Sample Location	Water Bearing Zone	Semi-Volatile Organic Compound Concentrations (µg/L)												
			Parameter	MCL	Note	April 2009	October 2009	May 2010	October 2010	May 2011	October 2011	May 2012	October 2012	May 2013	November 2013
SS-26	MW 26-04	Shallow	di-n-Octyl phthalate	16	1	NE	NE	NE	NE	NE	NE	NE	NE	21.4	NS

Notes:

¹2013 EPA Regional Screening Level for tap water

F – The analyte was detected at the reported concentration; the quantitation is an estimated value below the limit of quantification (LOQ) (equivalent to J for 2009-2012).

R – The result is rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria.

NS = not sampled

NA = not analyzed

NE = no exceedance

MCL = Maximum Contaminant Level

HGL/AECOM did not validate or review results prior to May 2013. Data prior to May 2013 was taken from previous compliance monitoring reports generated by others.

APPENDIX E

Sediment and Surface Water Analytical Tables (2009-Present)

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Sediment SD05-13**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	2.49	3.21	2	2.6	2.9	2.5	3.57	1.59	2.55	1.35	2.93	1.67	2.40	2.17
barium	15000*	MG/KG	117	126	109	88.5	98.7	140 J	132	86.3	102	105	84.8	87.7	87.9	79
cadmium	71*	MG/KG	0.432 J	<0.688	0.26	0.2	0.48	0.6	0.45	<0.486	0.372 F	0.388 F	0.391 F	<0.536	<0.516	<0.422
chromium, total		MG/KG	13.3	13.9	22.2	18.6	14.5	15.1 J	16.9	8.5	14.6	469	19.1	17	11.1	10.3
lead	400*	MG/KG	14.5	18.2	12.3	16.1	18.4	20.9	27 J	8.59 F	28.5	9.08 F	14.4	10.4 J	10.7	7.97 J
mercury	11*	MG/KG	0.0193 J	0.02357 J	<0.014	0.014	0.033	<0.023	0.017	<0.0258	0.0233 F	<0.0246	<0.0292	<0.0286	<0.0250	<0.0248
selenium	390*	MG/KG	<0.631	0.454 J	<0.26	<0.52	0.57	0.26 J	0.26 J	0.292 F	0.367 F	0.256 F	0.72	0.398 J	0.372 J	0.321 J
silver		MG/KG	--	--	<0.066	<0.065	<0.059	<0.065	<0.12	<1.944	<2.08	<1.824	<2.24	<2.14	<2.06	<1.77

Petroleum Hydrocarbons

	OK RBCL	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
TPH-DRO (petroleum hydrocarbons C	50	MG/KG	225 B	374	<7	7.1	4.73	17.2	--	--	--	--	--	--	--	--
TPH-DRO (petroleum hydrocarbons C	50,000	UG/KG	--	--	--	--	--	--	<6600	<9940	19400 F	21000	<11200	<29200	<9,760	<9,560
TPH-GRO (PHC as gasoline)	50	MG/KG	<0.300	0.0013 B	<4.6	<4.3	<4	<4.7	--	--	--	--	--	--	--	--
TPH-GRO (PHC as gasoline)	50,000	UG/KG	--	--	--	--	--	--	<66000	<137.8	<159.2	<118.6	<159.8	<134.4	<140	<126

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Sediment SD05-13**

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acenaphthene	3600000	UG/KG	<491	190 J	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
acenaphthylene		UG/KG	<48.8	50.7 J	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
anthracene	18000000	UG/KG	<491	351 J	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
benzo(a)anthracene	11000*	UG/KG	301 J	3160	<47	<46	22.8	90.2 J	<44.2	<218	<286	<372	<246	< 234	<224	<232
benzo(b)fluoranthene	11000*	UG/KG	976	5680	<47	<46	86.7	331	<44.2	<218	<286	<372	<246	< 234	172 J	<232
benzo(k)fluoranthene	110000*	UG/KG	624	5450	<47	<46	24	200 J	<44.2	<218	<286	<372	<246	< 234	<224	<232
benzo(g,h,i)perylene		UG/KG	631	2760	<47	<46	54.7	178 J	<22.2	<218	<286	<372	<246	< 234	<224	<232
benzyl alcohol	6300000	UG/KG	--	--	<47	<46	<44	<96	<222	<218	<286	<372	<246	< 234	<224	<232
bis(2-chloroethyl)ether	2300	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
bis(2-chloroisopropyl)ether	3100000	UG/KG	--	--	<47	<46	<22	<48	--	--	--	--	--	--	<224	<232
bis(2-chloroethoxy)methane	190000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
bis(2-ethylhexyl)phthalate	390000	UG/KG	125 J	972	<230	<230	<87	466 J	<44.2	<218	140 F	<372	<246	< 234	<224	<232
4-bromophenyl phenyl ether		UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
butyl benzyl phthalate	2900000	UG/KG	--	--	<93	<91	<44	<96	<22.2	<218	<286	<372	<246	< 234	<224	<232
carbazole		UG/KG	99.2 J	906	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
4-chloro-3-methylphenol	6300000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
4-chloroaniline	27000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-chloronaphthalene	4800000	UG/KG	--	--	<47	<46	<44	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-chlorophenol	390000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
4-chlorophenyl phenyl ether		UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
chrysene	1100000*	UG/KG	812	6150	<47	<46	32	322	<44.2	<218	<286	<372	<246	< 234	<224	<232
dibenz(a,h)anthracene	160	UG/KG	222 J	1050	<47	<46	<22	<48	<22.2	<218	<286	<372	<246	< 234	<224	<232
dibenzofuran	73000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
1,2-dichlorobenzene	1800000	UG/KG	--	--	<93	<91	<44	<96	<0.647	<218	4680	<372	<246	< 234	<224	<232
1,3-dichlorobenzene		UG/KG	--	--	<93	<91	<44	<96	<0.647	<218	<286	<372	<246	< 234	<224	<232
1,4-dichlorobenzene	26000	UG/KG	--	--	<93	<91	<44	<96	<0.647	<218	14000	<372	<246	< 234	<224	<232
3,3'-dichlorobenzidine	12000	UG/KG	--	--	<93	<91	<44	<96	<442	<436	<572	<744	<490	< 468	<224	<466
2,4-dichlorophenol	190000	UG/KG	--	--	<47	<46	<22	<48	<88.6	<218	<286	<372	<246	< 234	<224	<232
diethyl phthalate	51000000	UG/KG	--	--	<230	<230	<87	<190	<44.2	<218	<286	<372	<246	< 234	<224	<232
dimethyl phthalate		UG/KG	--	--	<93	<91	<44	<96	<22.2	<218	<286	<372	<246	< 234	<224	<232
2,4-dimethylphenol	1300000	UG/KG	--	--	<51	<50	<27	<96	<438	<218	<286	<372	<246	< 234	<224	<232
di-n-butyl phthalate	6300000	UG/KG	<491	182 J	<93	<91	<87	<190	<22.2	<218	<286	<372	<246	< 234	<224	<232
4,6-dinitro-2-methylphenol	5100	UG/KG	--	--	<47	<46	<87	<190	<438	<1086	<1430	<1858	<1224	< 1170	<1120	<1160
2,4-dinitrophenol	130000	UG/KG	--	--	<470	<460	<440	<960	<438	<1086	<1430	<1858	<1224	< 1170	<224	<1160
2,4-dinitrotoluene	17000	UG/KG	--	--	<47	<46	<22	<48	<88.6	<218	<286	<372	<246	< 234	<1120	<232
2,6-dinitrotoluene	3600	UG/KG	--	--	<47	<46	<26	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
di-n-octyl phthalate	630000	UG/KG	--	--	<93	<91	<44	531 J	<22.2	<218	<286	<372	<246	< 234	<224	<232

Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base

DP005 - Tank Sludge Disposal Area
Sediment SD05-13

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<135.8	--	--	--	--	<224	<232
fluoranthene	2400000*	UG/KG	1480	11500	<47	47.4	32.6	265	<22.2	<218	<286	<372	<246	< 234	<224	<232
fluorene	2400000	UG/KG	<491	189 J	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
hexachlorobenzene	2100	UG/KG	--	--	<47	<46	<22	<48	<88.6	<218	<286	<372	<246	< 234	<224	<232
hexachlorobutadiene	12000	UG/KG	--	--	<47	<46	<44	<96	<44.2	<218	<286	<372	<246	< 234	<224	<232
hexachlorocyclopentadiene	1800	UG/KG	--	--	<47	<46	<96	<120	<222	<218	<286	--	--	< 234	<224	<232
hexachloroethane	18000	UG/KG	--	--	<120	<110	<44	<96	<44.2	<218	<286	<372	<246	< 234	<224	<232
indeno(1,2,3-cd)pyrene	11000*	UG/KG	595	2970	<47	<46	57.1	210 J	<44.2	<218	<286	<372	<246	< 234	<224	<232
isophorone	5700000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-methylnaphthalene	240000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-methylphenol	3200000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
3- & 4-methylphenol		UG/KG	537	518	<47	<46	<31	<96	<222	<218	<286	<372	<246	< 234	<224	<232
naphthalene	38000	UG/KG	--	--	<47	<46	<35	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-nitroaniline	630000	UG/KG	--	--	<93	<91	<44	<96	<88.6	<1086	<1430	<1858	<1224	< 1170	<1120	<1160
3-nitroaniline		UG/KG	--	--	<93	<91	<44	<96	<88.6	<1086	<1430	<1858	<1224	< 1170	<1120	<1160
4-nitroaniline	250000	UG/KG	--	--	<93	<91	<44	<96	<222	<1086	<1430	<1858	<1224	< 1170	<1120	<1160
nitrobenzene	51000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
2-nitrophenol		UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
4-nitrophenol		UG/KG	--	--	<470	<460	<170	<480	<222	<1086	<1430	--	--	< 1170	<1120	<1160
n-nitrosodiphenylamine	1100000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
n-nitrosodipropylamine	780	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
pentachlorophenol	10000	UG/KG	<75	344 J	<470	<460	<260	<480	<222	<1086	<1430	<1858	<1224	< 1170	<1120	<1160
phenanthrene		UG/KG	523	4460	<47	<46	22	<48	<44.2	<218	<286	<372	<246	< 234	<224	<232
phenol	19000000*	UG/KG	<491	112 J	<47	<46	<22	<48	<44.2	<218	<286	--	--	< 234	<224	<232
pyrene	1800000*	UG/KG	1080	9230	<47	44.9	35.2	237 J	<44.2	<218	<286	<372	<246	< 234	<224	<232
pyridine	78000	UG/KG	--	--	<120	<110	<87	<190	<222	<1086	<1430	--	--	< 1170	<1120	<232
1,2,4-trichlorobenzene	58000	UG/KG	--	--	<47	<46	<22	<48	<44.2	<218	2280	<372	<246	< 234	<224	<232
2,4,5-trichlorophenol	6300000	UG/KG	--	--	<47	<46	<22	<48	<88.6	<218	<286	<372	<246	< 234	<224	<232
2,4,6-trichlorophenol	63000	UG/KG	--	--	<47	<46	<22	<48	<222	<218	<286	<372	<246	< 234	<224	<232

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Sediment SD05-13**

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	<0.0737	24.9 J	<28	<29	<26	<36	<2.59	<13.58	<16.54	<12.04	<15.62	< 13.36	<13.4	<11.9
benzene	12000	UG/KG	--	--	2.6	<1.4	<1.9	<2.9	<0.647	<13.78	<15.92	<11.86	<15.98	< 1.336	<1.34	<1.19
bromodichloromethane	2900	UG/KG	--	--	<1.3	<1.4	<1.4	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
bromoform	190000	UG/KG	--	--	<2.4	<2.5	<1.9	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
bromomethane	6800	UG/KG	--	--	<2.6	<2.8	<2.6	<5.8	<2.59	<2.72	<3.3	<2.4	<3.12	< 2.68	<2.68	2.38 Q
2-butanone (MEK)	27000000	UG/KG	<0.0147	5.82 J	<9.8	<9.3	<7.9	<14	<2.59	<6.8	<8.28	<6.02	<7.8	< 6.68	<6.72	<5.96
carbon tetrachloride	6500	UG/KG	--	--	<2.1	<2.2	<2.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
chlorobenzene	280000	UG/KG	--	--	<1.3	<1.4	<1.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
chloroethane	14000000	UG/KG	--	--	<2.6	<2.8	<2.6	<5.8	<0.647	<2.72	<3.3	<2.4	<3.12	< 2.68	<2.68	<2.38
2-chloroethyl vinyl ether		UG/KG	--	--	<13	--	--	--	<1.55	--	<6.62	--	--	< 5.34	<5.38	<4.78
chloroform	3200	UG/KG	--	--	<1.3	<1.4	<1.5	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
chloromethane	110000	UG/KG	--	--	<3.3	<3.4	<2.6	<5.8	<2.59	<5.44	<6.62	<4.82	<6.24	< 5.34	<5.38	<4.78
dibromochloromethane	83000	UG/KG	--	--	<2.2	<2.3	<1.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	--	--
1,1-dichloroethane	36000	UG/KG	--	--	<2	<2.1	<1.4	<2.9	<0.647	<2.72	<3.3	<2.4	<3.12	< 2.68	<2.68	<2.38
1,2-dichloroethane	4600	UG/KG	--	--	<1.6	<1.7	<1.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
1,1-dichloroethene	230000	UG/KG	--	--	<3	<3.2	<1.8	3.5 J	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
cis-1,2-dichloroethene	160000	UG/KG	--	--	<1.3	<1.4	<1.9	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<2.5	<2.6	<1.9	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
1,2-dichloropropane	10000	UG/KG	--	--	<1.3	<1.4	<1.5	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
cis-1,3-dichloropropene		UG/KG	--	--	<1.3	<1.4	<1.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
trans-1,3-dichloropropene		UG/KG	--	--	<1.4	<1.5	<1.4	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
ethylbenzene	58000	UG/KG	--	--	<1.4	<1.5	<1.3	<2.9	<0.647	<13.78	<15.92	<11.86	<15.98	< 1.336	<1.34	<1.19
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<11	<11	<7.1	<14	<0.647	<6.8	<8.28	<6.02	<7.8	< 6.68	<6.72	<5.96
methylene chloride	350000	UG/KG	--	--	9.4	<6.9	<5.9	96.6 J	<0.647	<2.72	<3.3	<2.4	2.18 B	< 2.68	<2.86	<2.38
1,1,2,2-tetrachloroethane	6000	UG/KG	--	--	<1.7	<1.8	<1.5	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	--	<1.34	<1.19
tetrachloroethene (PCE)	81000	UG/KG	--	--	<2.4	<2.5	<1.3	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
toluene	4900000	UG/KG	<1.19	1.19 J	<1.6	<1.7	<1.5	<2.9	<0.647	<13.78	<15.92	<11.86	<15.98	< 1.336	<1.34	<1.19
1,1,1-trichloroethane	8100000	UG/KG	--	--	<2.4	<2.5	<1.4	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
1,1,2-trichloroethane	1500	UG/KG	--	--	<1.7	<1.8	<1.4	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
trichloroethene (TCE)	9,400*	UG/KG	--	--	<2.1	<2.2	<1.5	<2.9	<0.647	<1.358	<1.654	<1.204	<1.562	< 1.336	<1.34	<1.19
trichlorofluoromethane	23000000	UG/KG	--	--	<3.4	<3.6	<2.6	<5.8	<0.647	<2.72	<3.3	<2.4	<3.12	< 2.68	<2.68	<2.38
vinyl chloride	590	UG/KG	--	--	<2.6	<2.8	<1.9	<2.9	<0.647	<2.72	<3.3	<2.4	<3.12	< 2.68	<2.68	<2.38
m- & p-xylene	550000	UG/KG	--	--	<1.6	<1.7	<2.8	<5.8	<1.29	<13.78	<15.92	<11.86	<15.98	< 1.336	<1.34	<1.19
o-xylene	650000	UG/KG	<0.841	1.44 J	<1.3	<1.4	<1.3	<2.9	<0.647	<13.78	<15.92	<11.86	<15.98	< 1.336	<1.34	<1.19
xylene, total	580000	UG/KG	--	--	--	--	--	--	--	<1.358	--	--	--	--	--	--

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**DP005 - Tank Sludge Disposal Area
Sediment SD05-14**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	1.76	3.35	2.2	3	1.9	1.5	1.8 J	1.81	2.18	1.4	2.57	3.03	2.73	2.06
barium	15000*	MG/KG	222	126	108	137	80.5	71.6 J	93.1	45.7	95.3	58.4	229	109	92.9	104
cadmium	71*	MG/KG	--	--	0.53	0.49	0.57	0.26	0.5	0.408 F	1.22 F	0.709 F	1.35 F	0.509 J	1.34 J	0.933 F
chromium, total		MG/KG	14.8	22.1	5.1	11.2	8.9	5.6 J	9.24	2.4	11.2	6.73	12.9	15.2	11.2	12.8
lead	400*	MG/KG	5.39	10.4	16.1	20.7	23.9	12	13.4 J	7.82 F	26.4	9.6	33.5	22	20.3	27.6
mercury	11*	MG/KG	<0.117	0.00943 J	<0.013	0.015	0.024	<0.02	<0.015	0.0227 F	0.0395 F	0.0231 F	0.0607 F	0.019 J	0.0362 J	0.0669 F
selenium	390*	MG/KG	<0.631	0.288 J	<0.21	<0.44	0.74	<0.9	0.56 J	0.596	0.697	0.265 F	0.898	0.61	0.885	0.831
silver		MG/KG	--	--	<0.053	<0.055	<0.046	<0.056	<0.12	<1.754	<2.58	<1.732	<2.9	<1.97	<2.90	<2.44

Petroleum Hydrocarbons

	OK RBCL	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
TPH-DRO (petroleum hydrocarbons C	50	MG/KG	4.13 B	10.3	539	65.5	150	43.4	--	--	--	--	--	--	--	--
TPH-DRO (petroleum hydrocarbons C	50,000	UG/KG	--	--	--	--	--	--	81100 J	48000 F	90600 F	<94800	58400 F	< 95600	88500 J	85,800 J
TPH-GRO (PHC as gasoline)	50	MG/KG	<0.140	0.00073 J,B	<2.5	<4.8	<3.9	<3.7	--	--	--	--	--	--	--	--
TPH-GRO (PHC as gasoline)	50,000	UG/KG	--	--	--	--	--	--	<65600	<122	244 F	<117.8	<214	< 130.6	152 J	<156

**Sediment Analytical Data Summary – 2009 to Present
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**DP005 - Tank Sludge Disposal Area
Sediment SD05-14**

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acenaphthene	3600000	UG/KG	--	--	294	<240	166	<170	110 J	<968	<300	<960	<7000	< 2200	<1680	1280 Q
acenaphthylene		UG/KG	--	--	92.6	<240	<86	<170	45.4 J	<968	<300	<960	<7000	< 2200	<1680	1280 Q
anthracene	18000000	UG/KG	--	--	815	346	402	329 J	253 J	<968	<300	<960	<7000	< 2200	<1680	1280 Q
benzo(a)anthracene	11000*	UG/KG	--	--	7370	3090	3760	2810	2090	2260	3590	1480 F	<7000	< 2200	4450	2,270 J
benzo(b)fluoranthene	11000*	UG/KG	--	--	15500	5830	9320	4770	3330	3860	5690	2770	4890 F	1810 J	7090	3,270 J
benzo(k)fluoranthene	110000*	UG/KG	--	--	4640	3480	2990	2960 J	1130	3500	5620	2450	4710 F	1480 J	7510	3,230 J
benzo(g,h,i)perylene		UG/KG	--	--	8090	3590	3600	2810	2680	2500	3870	1120 F	<7000	1320 J	5830	2,410 J
benzo(a)pyrene	1100*	UG/KG	--	--	--	--	--	--	--	--	--	--	--	--	6050	2,880 J
benzyl alcohol	6300000	UG/KG	--	--	<41	<240	<170	<330	<223	<968	<300	<960	<7000	< 2200	<1680	1280 Q
bis(2-chloroethyl)ether	2300	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
bis(2-chloroisopropyl)ether	3100000	UG/KG	--	--	<41	<240	<86	<170	--	--	--	--	--	--	<1680	1280 Q
bis(2-chloroethoxy)methane	190000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
bis(2-ethylhexyl)phthalate	390000	UG/KG	<425	71.3 J	<200	2670	<340	<670	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
4-bromophenyl phenyl ether		UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
butyl benzyl phthalate	2900000	UG/KG	--	--	103	<490	<170	<330	<22.3	<968	<300	<960	<7000	< 2200	<1680	1280 Q
carbazole		UG/KG	--	--	2010	728	818	679 J	577	647 F	959 F	<960	<7000	< 2200	1250 J	4,120 J
4-chloro-3-methylphenol	6300000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
4-chloroaniline	27000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-chloronaphthalene	4800000	UG/KG	--	--	<41	<240	<170	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-chlorophenol	390000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
4-chlorophenyl phenyl ether		UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
chrysene	1100000*	UG/KG	--	--	11900	5300	6380	4870	3120	4340	6830	2770	5290 F	1920 J	9570	4,120 J
dibenz(a,h)anthracene	160	UG/KG	--	--	1650	645	945	897	<22.3	838 F	1260 F	<960	<7000	< 2200	<1680	1280 Q
dibenzofuran	73000	UG/KG	--	--	211	<240	99.2	<170	59.8 J	<968	<300	<960	<7000	< 2200	<1680	1280 Q
1,2-dichlorobenzene	1800000	UG/KG	--	--	<82	<490	<170	<330	<0.653	<968	3670	<960	<7000	< 2200	<1680	1280 Q
1,3-dichlorobenzene		UG/KG	--	--	<82	<490	<170	<330	<0.653	<968	197 F	<960	<7000	< 2200	<1680	1280 Q
1,4-dichlorobenzene	26000	UG/KG	--	--	<82	<490	<170	<330	<0.653	<968	1580	<960	<7000	< 2200	<1680	1280 Q
3,3'-dichlorobenzidine	12000	UG/KG	--	--	<82	<490	<170	<330	<444	<1938	<598	<1920	<14000	< 4380	<3360	2560 Q
2,4-dichlorophenol	190000	UG/KG	--	--	<41	<240	<86	<170	<88.9	<968	<300	<960	<7000	< 2200	<8380	6380 Q
diethyl phthalate	51000000	UG/KG	--	--	<200	<1200	<340	<670	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
dimethyl phthalate		UG/KG	--	--	<82	<490	<170	<330	<22.3	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2,4-dimethylphenol	1300000	UG/KG	--	--	<45	<270	<110	<330	<440	<968	<300	<960	<7000	< 2200	<1680	1280 Q
di-n-butyl phthalate	6300000	UG/KG	<425	67.2 J	<82	<490	<340	<670	<22.3	<968	<300	<960	<7000	< 2200	<1680	1280 Q
4,6-dinitro-2-methylphenol	5100	UG/KG	--	--	<41	<240	<340	<670	<440	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
2,4-dinitrophenol	130000	UG/KG	--	--	<410	<2400	<1700	<3300	<440	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
2,4-dinitrotoluene	17000	UG/KG	--	--	<41	<240	<86	<170	<88.9	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2,6-dinitrotoluene	3600	UG/KG	--	--	<41	<240	<100	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q

**Sediment Analytical Data Summary – 2009 to Present
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**DP005 - Tank Sludge Disposal Area
Sediment SD05-14**

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
di-n-octyl phthalate	630000	UG/KG	--	--	<82	<490	<170	<330	<22.3	<968	<300	<960	<7000	< 2200	<1680	1280 Q
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<135.8	--	--	--	--	<1680	1280 Q
fluoranthene	2400000*	UG/KG	--	--	24200	10000	10400	9030	6290	7710	11700	4430	9190 F	3280 J	15100	6,980 J
fluorene	2400000	UG/KG	--	--	304	<240	163	<170	93.1 J	<968	<300	<960	<7000	< 2200	<1680	1280 Q
hexachlorobenzene	2100	UG/KG	--	--	<41	<240	<86	<170	<88.9	<968	<300	<960	<7000	< 2200	<1680	1280 Q
hexachlorobutadiene	12000	UG/KG	--	--	<41	<240	<170	<330	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
hexachlorocyclopentadiene	1800	UG/KG	--	--	<41	<240	<380	<420	<223	<968	<300	--	--	< 2200	<1680	1280 Q
hexachloroethane	18000	UG/KG	--	--	<100	<610	<170	<330	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
indeno(1,2,3-cd)pyrene	11000*	UG/KG	--	--	9010	4400	4550	3510	2360	2580	3930	1190 F	<7000	1160 J	5490	2,310 J
isophorone	5700000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-methylnaphthalene	240000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-methylphenol	3200000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
3- & 4-methylphenol		UG/KG	--	--	<41	<240	<120	<330	<223	<968	<300	<960	<7000	< 2200	<1680	1280 Q
naphthalene	38000	UG/KG	--	--	<41	<240	<140	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-nitroaniline	630000	UG/KG	--	--	<82	<490	<170	<330	<88.9	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
3-nitroaniline		UG/KG	--	--	<82	<490	<170	<330	<88.9	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
4-nitroaniline	250000	UG/KG	--	--	<82	<490	<170	<330	<223	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
nitrobenzene	51000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2-nitrophenol		UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
4-nitrophenol		UG/KG	--	--	<410	<2400	<680	<1700	<223	<4840	<1494	--	--	< 10960	<8380	6380 Q
n-nitrosodiphenylamine	1100000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
n-nitrosodipropylamine	780	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
pentachlorophenol	10000	UG/KG	--	--	<410	<2400	<1000	<1700	<223	<4840	<1494	<4800	<35000	< 10960	<8380	6380 Q
phenanthrene		UG/KG	--	--	9350	3980	4600	3880	2890	2940	4100	1280 F	<7000	< 2200	5230	2,700 J
phenol	19000000*	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	--	--	< 2200	<1680	921 F
pyrene	1800000*	UG/KG	--	--	19000	8390	10500	6900	4620	5800	9480	3400	7130 F	2590 J	12800	5,880 J
pyridine	78000	UG/KG	--	--	<100	<610	<340	<670	<223	<4840	<1494	--	--	< 10960	<8380	6380 Q
1,2,4-trichlorobenzene	58000	UG/KG	--	--	<41	<240	<86	<170	<44.4	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2,4,5-trichlorophenol	6300000	UG/KG	--	--	<41	<240	<86	<170	<88.9	<968	<300	<960	<7000	< 2200	<1680	1280 Q
2,4,6-trichlorophenol	63000	UG/KG	--	--	<41	<240	<86	<170	<223	<968	<300	<960	<7000	< 2200	<1680	1280 Q

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**DP005 - Tank Sludge Disposal Area
Sediment SD05-14**

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	--	--	<27	<28	<25	<30	<2.61	<13.58	74.2	<11.36	<22.4	< 12.96	11.5 J	<16.7
benzene	12000	UG/KG	--	--	<1.3	<1.3	<1.9	<2.4	<0.653	<12.2	<18.48	<11.78	<21.4	< 1.296	<1.86	<1.67
bromodichloromethane	2900	UG/KG	--	--	<1.3	<1.3	<1.4	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
bromoform	190000	UG/KG	--	--	<2.3	<2.4	<1.9	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
bromomethane	6800	UG/KG	--	--	<2.5	<2.7	<2.5	<4.7	<2.61	<2.72	<3.58	<2.28	<4.48	< 2.6	<3.72	<3.34
2-butanone (MEK)	27000000	UG/KG	--	--	<9.4	<10	<7.5	<12	<2.61	<6.78	20.4	<5.68	<11.2	< 6.48	<9.32	<8.34
carbon tetrachloride	6500	UG/KG	--	--	<2	<2.2	<2.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
chlorobenzene	280000	UG/KG	--	--	<1.3	<1.3	<1.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
chloroethane	14000000	UG/KG	--	--	<2.5	<2.7	<2.5	<4.7	<0.653	<2.72	<3.58	<2.28	<4.48	< 2.6	<3.72	<3.34
2-chloroethyl vinyl ether		UG/KG	--	--	<13	--	--	--	<1.57	--	<7.16	--	--	< 5.18	<7.44	<6.86
chloroform	3200	UG/KG	--	--	<1.3	<1.3	<1.5	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
chloromethane	110000	UG/KG	--	--	<3.1	<3.4	<2.5	<4.7	<2.61	<5.42	<7.16	<4.54	<8.96	< 5.18	<7.44	<6.86
dibromochloromethane	83000	UG/KG	--	--	<2.1	<2.3	<1.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
1,1-dichloroethane	36000	UG/KG	--	--	<1.9	<2	<1.4	<2.4	<0.653	<2.72	<3.58	<2.28	<4.48	< 2.6	<3.72	<3.34
1,2-dichloroethane	4600	UG/KG	--	--	<1.5	<1.6	<1.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
1,1-dichloroethene	230000	UG/KG	--	--	<2.9	<3.1	<1.7	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
cis-1,2-dichloroethene	160000	UG/KG	--	--	<1.3	<1.3	<1.9	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<2.4	<2.6	<1.9	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
1,2-dichloropropane	10000	UG/KG	--	--	<1.3	<1.3	<1.5	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
cis-1,3-dichloropropene		UG/KG	--	--	<1.3	<1.3	<1.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
trans-1,3-dichloropropene		UG/KG	--	--	<1.4	<1.5	<1.4	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
ethylbenzene	58000	UG/KG	--	--	<1.4	<1.5	<1.2	<2.4	<0.653	<12.2	<18.48	<11.78	<21.4	< 1.296	<1.86	<1.67
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<10	<11	<6.8	<12	<0.653	<6.78	<8.96	<5.68	<11.2	< 6.48	<9.32	<8.34
methylene chloride	350000	UG/KG	--	--	<6.3	<6.7	<5.7	55.9 J	<0.653	<2.72	<3.58	<2.28	3.45 B	< 2.6	<3.72	<3.34
1,1,1,2-tetrachloroethane	6000	UG/KG	--	--	<1.6	<1.7	<1.5	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	--	<1.86	<1.67
tetrachloroethene (PCE)	81000	UG/KG	--	--	<2.3	<2.4	<1.2	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
toluene	4900000	UG/KG	--	--	<1.5	<1.6	<1.5	<2.4	<0.653	<12.2	<18.48	<11.78	<21.4	< 1.296	<1.86	<1.67
1,1,1-trichloroethane	8100000	UG/KG	--	--	<2.3	<2.4	<1.4	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
1,1,2-trichloroethane	1500	UG/KG	--	--	<1.6	<1.7	<1.4	<2.4	<0.653	<1.358	<1.79	<1.136	<2.24	< 1.296	<1.86	<1.67
trichloroethene (TCE)	9,400*	UG/KG	--	--	<2	<2.2	<1.5	<2.4	<0.653	<1.358	1.23 F	0.837 F	1.32 F	< 1.296	2.98 J	1.26 J
trichlorofluoromethane	23000000	UG/KG	--	--	<3.3	<3.5	<2.5	<4.7	<0.653	<2.72	<3.58	<2.28	<4.48	< 2.6	<3.72	<3.34
vinyl chloride	590	UG/KG	--	--	<2.5	<2.7	<1.9	<2.4	<0.653	<2.72	<3.58	<2.28	<4.48	< 2.6	<3.72	<3.34
m- & p-xylene	550000	UG/KG	--	--	<1.5	<1.6	<2.7	<4.7	<1.31	<12.2	<18.48	<11.78	<21.4	< 1.296	<1.86	<1.67
o-xylene	650000	UG/KG	--	--	<1.3	<1.3	<1.2	<2.4	<0.653	<12.2	<18.48	<11.78	<21.4	< 1.296	<1.86	<1.67
xylenes, total	580000	UG/KG	--	--	--	--	--	--	--	<1.358	--	--	--	--	--	--

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Sediment SD03-11**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	3.63	3.65	4.1	2.6	2.5	1.8	3.28	3.69	3.64	4.64	1.16 F	3.65	3.07	4.04
barium	15000*	MG/KG	175	173	187	130	129	72.1 J	151	156 M	131 M	122 M	183	170	166	64.7 M
cadmium	71*	MG/KG	2.41	0.531	2.1	1.3	1.6	1.2	1.87	2.06 M	2.54	2.18 M	2.91	2.75	2.52	1.6
chromium, total		MG/KG	17.9	22.2	23.2	12.9	15.1	11.5 J	15.1	14.9 M	17.1 M	17.4 M	17.5	21.4	17.5	10.7
lead	400*	MG/KG	49	45.8	63.6	32.8	62.4	29.5	42.9 J	56.3 F	60 M	47.2 M	67.6	56.6	54.1	33.2 J
mercury	11*	MG/KG	0.0560 J	0.0774 J	0.05	<0.019	0.061	0.025 J	0.086	0.0545 F	0.0515 F	0.0513 F	0.0561 F	0.0616 J	0.0517 J	0.0213 J
selenium	390*	MG/KG	1.18	1.19	1.5	<0.34	0.71	<0.22	0.59 J	1.54	1.56	1.22	0.64 F	1.07	0.885 J	2.44
silver		MG/KG	0.327 J	<1.77	0.18	0.55	<0.081	0.071 J	0.28 J	--	<3.1	<2.36	<3.84	<3.36	<4.18	<3.08

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	1800000	UG/KG	--	--	<2.7	<2.7	<2.2	<2.4	<0.892	--	<2.24	<1.56	<2.54	--	--	--
1,3-dichlorobenzene		UG/KG	--	--	<2.9	<2.9	<2.4	<2.4	<0.892	--	<2.24	<1.56	<2.54	--	--	--
1,4-dichlorobenzene	26000	UG/KG	--	--	<3.7	<3.6	<2.2	<2.4	<0.892	--	<2.24	<1.56	<2.54	--	--	--
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<177	--	--	--	--	--	--
hexachlorobutadiene	12000	UG/KG	--	--	--	--	--	--	--	--	<2.24	<1.56	<2.54	--	--	--
naphthalene	38000	UG/KG	--	--	--	--	--	--	--	--	<2.24	<1.56	<2.54	--	--	--
1,2,4-trichlorobenzene	58000	UG/KG	--	--	--	--	--	--	--	--	<2.24	<1.56	<2.54	--	--	--

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Sediment SD03-11**

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	<3.7	12.9 J	<52	<51	47.2	<30	<1.93	<17.7	<22.4	<15.6	<25.4	23.4 J	26.8 J	19.9 Q
benzene	12000	UG/KG	--	--	<2.4	<2.4	<3	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
bromodichloromethane	2900	UG/KG	--	--	<2.4	<2.4	<2.2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
bromoform	190000	UG/KG	--	--	<4.4	<4.4	<3	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
bromomethane	6800	UG/KG	--	--	<4.9	<4.9	<4	<4.8	<3.57	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
2-butanone (MEK)	27000000	UG/KG	<3.88	4.94 J	<18	<18	14.3	<12	<3.57	<8.84	<11.2	<7.8	9.12 F	9.89 J	12.2 J	9.94 Q
carbon tetrachloride	6500	UG/KG	--	--	<3.9	<3.9	<3.6	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
chlorobenzene	280000	UG/KG	--	--	<2.4	<2.4	<2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
chloroethane	14000000	UG/KG	--	--	<4.9	<4.9	<4	<4.8	<0.892	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
2-chloroethyl vinyl ether		UG/KG	--	--	<24	--	--	--	<2.14	--	<8.96	--	--	< 10.54	<11.3	7.96 Q
chloroform	3200	UG/KG	--	--	<2.4	<2.4	<2.4	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
chloromethane	110000	UG/KG	--	--	<6.1	<6.1	<4	<4.8	<3.57	<7.08	<8.96	<6.24	<10.16	< 10.54	<11.3	7.96 Q
dibromochloromethane	83000	UG/KG	--	--	<4.1	<4.1	6.7	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	--	--
1,1-dichloroethane	36000	UG/KG	--	--	<3.7	<3.6	<2.2	<2.4	<0.892	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
1,2-dichloroethane	4600	UG/KG	--	--	<2.9	<2.9	<2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
1,1-dichloroethene	230000	UG/KG	--	--	<5.6	<5.6	<2.8	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
cis-1,2-dichloroethene	160000	UG/KG	--	--	<2.4	<2.4	<3	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<4.6	<4.6	<3	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
1,2-dichloropropane	10000	UG/KG	--	--	<2.4	<2.4	<2.4	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
cis-1,3-dichloropropene		UG/KG	--	--	<2.4	<2.4	<2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
trans-1,3-dichloropropene		UG/KG	--	--	<2.7	<2.7	<2.2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
ethylbenzene	58000	UG/KG	--	--	<2.7	<2.7	<2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<20	<20	<11	<12	<0.892	<8.84	<11.2	<7.8	<12.72	< 13.18	<14.1	9.94 Q
methylene chloride	350000	UG/KG	--	--	<12	<12	<9.2	49.8 J	<0.892	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
1,1,2,2-tetrachloroethane	6000	UG/KG	--	--	<3.2	<3.2	<2.4	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	--	--	--
tetrachloroethene (PCE)	81000	UG/KG	--	--	<4.4	<4.4	<2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
toluene	4900000	UG/KG	--	--	<2.9	<2.9	<2.4	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	5.73	37.9	1.99 Q
1,1,1-trichloroethane	8100000	UG/KG	--	--	<4.4	<4.4	<2.2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
1,1,2-trichloroethane	1500	UG/KG	--	--	<3.2	<3.2	<2.2	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
trichloroethene (TCE)	9,400*	UG/KG	--	--	<3.9	<3.9	<2.4	<2.4	<0.892	<1.77	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
trichlorofluoromethane	23000000	UG/KG	--	--	<6.3	<6.3	<4	<4.8	<0.892	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
vinyl chloride	590	UG/KG	--	--	<4.9	<4.9	<3	<2.4	<0.892	<3.54	<4.48	<3.12	<5.08	< 5.26	<5.66	3.98 Q
m- & p-xylene	550000	UG/KG	--	--	<2.9	<2.9	4.5	<4.8	<1.78	--	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
o-xylene	650000	UG/KG	--	--	<2.4	<2.4	<2	<2.4	<0.892	--	<2.24	<1.56	<2.54	< 2.64	<2.82	1.99 Q
xylenes, total	580000	UG/KG	--	--	--	--	--	--	--	<1.77	--	--	--	--	--	--

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Sediment SD03-12**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	3.23	3.17	2	1.5	2.5	2.3	2.07 J	2.83	3.1	4.48 J	1.28	5.06	1.87	4.85
barium	15000*	MG/KG	93.6	96.2	39.7	49.7	172	105 J	106	50.6	68.1	80.5	61.4 M	176	44.2	155
cadmium	71*	MG/KG	0.697	<0.555	1.7	0.72	1.9	1.4	1.74	2.35	0.867 F	1.23	1.73	2.13	0.558 J	1.94
chromium, total		MG/KG	30.8	17.6	14.5	6.4	17.9	13.4 J	19.4	7.37	12.8	37.8	6.21 M	20.7	7.69	15.5
lead	400*	MG/KG	38.3	30.9	36.2	15.2	60.5	62.6	44.9 J	37.3	29.1	45.9	82.5 F	53.5	19.5	43.7
mercury	11*	MG/KG	0.0286 J	0.0507 J	<0.012	<0.015	0.066	0.044 J	0.026	0.0444 F	0.0202 F	0.0502 F	<0.0236	0.0441 J	<0.0246	0.0541 F
selenium	390*	MG/KG	0.335 J	0.888	<0.2	<0.24	1.4	0.96 J	0.44 J	0.603	0.271 F	0.443 F	0.273 F	1.35	0.228 J	1.35
silver		MG/KG	0.181 J	<1.11	<0.05	<0.06	0.16	<0.084	0.12 J	--	<1.842	<1.974	<1.83	<3.36	<1.87	<2.90

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	1800000	UG/KG	--	--	<1.4	<1.5	<2.8	<4.7	<0.657	--	<1.436	<1.302	<1.186	--	--	--
1,3-dichlorobenzene		UG/KG	--	--	<1.5	<1.7	<3	<4.7	<0.657	--	<1.436	<1.302	<1.186	--	--	--
1,4-dichlorobenzene	26000	UG/KG	--	--	<1.9	<2.1	<2.8	<4.7	<0.657	--	<1.436	<1.302	<1.186	--	--	--
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<150.2	--	--	--	--	--	--
hexachlorobutadiene	12000	UG/KG	--	--	--	--	--	--	--	--	<1.436	<1.302	<1.186	--	--	--
naphthalene	38000	UG/KG	--	--	--	--	--	--	--	--	<1.436	<1.302	<1.186	--	--	--
1,2,4-trichlorobenzene	58000	UG/KG	--	--	--	--	--	--	--	--	<1.436	<1.302	<1.186	--	--	--

Sediment Analytical Data Summary – 2009 to Present
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IZ - Industrial Zone
Sediment SD03-12

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	--	--	<27	<29	<50	<58	<2.63	<15.02	7.85 F	<13.02	<11.86	147	11.9	33.5 J
benzene	12000	UG/KG	--	--	<1.3	<1.4	<3.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
bromodichloromethane	2900	UG/KG	--	--	<1.3	<1.4	<2.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
bromoform	190000	UG/KG	--	--	<2.3	<2.5	<3.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
bromomethane	6800	UG/KG	--	--	<2.5	<2.8	<5	<9.3	<2.63	<3	<2.88	<2.6	<2.38	< 4.76	<2.38	4.08 Q
2-butanone (MEK)	27000000	UG/KG	--	--	<9.5	<10	<15	<23	<2.63	<7.5	<7.18	<6.52	<5.94	30.2	<5.96	10.2 Q
carbon tetrachloride	6500	UG/KG	--	--	<2	<2.2	<4.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
chlorobenzene	280000	UG/KG	--	--	<1.3	<1.4	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
chloroethane	14000000	UG/KG	--	--	<2.5	<2.8	<5	<9.3	<0.657	<3	<2.88	<2.6	<2.38	< 4.76	<2.38	4.08 Q
2-chloroethyl vinyl ether		UG/KG	--	--	<13	--	--	--	<1.58	--	<5.74	--	--	< 9.54	<4.76	8.18 Q
chloroform	3200	UG/KG	--	--	<1.3	<1.4	<3	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
chloromethane	110000	UG/KG	--	--	<3.2	<3.4	<5	<9.3	<2.63	<6	<5.74	<5.2	<4.74	< 9.54	<4.76	8.18 Q
dibromochloromethane	83000	UG/KG	--	--	<2.1	<2.3	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	--	--
1,1-dichloroethane	36000	UG/KG	--	--	<1.9	<2.1	<2.8	<4.7	<0.657	<3	<2.88	<2.6	<2.38	< 4.76	<2.38	4.08 Q
1,2-dichloroethane	4600	UG/KG	--	--	<1.5	<1.7	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
1,1-dichloroethene	230000	UG/KG	--	--	<2.9	<3.2	<3.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
cis-1,2-dichloroethene	160000	UG/KG	--	--	<1.3	<1.4	<3.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<2.4	<2.6	<3.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
1,2-dichloropropane	10000	UG/KG	--	--	<1.3	<1.4	<3	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
cis-1,3-dichloropropene		UG/KG	--	--	<1.3	<1.4	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
trans-1,3-dichloropropene		UG/KG	--	--	<1.4	<1.5	<2.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
ethylbenzene	58000	UG/KG	--	--	<1.4	<1.5	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<10	<11	<14	<23	<0.657	<7.5	<7.18	<6.52	<5.94	< 11.92	<5.96	10.2 Q
methylene chloride	350000	UG/KG	--	--	<6.3	<6.9	<12	65.8 J	<0.657	<3	<2.88	<2.6	2.62 B	< 4.76	<2.38	4.08 Q
1,1,1,2-tetrachloroethane	6000	UG/KG	--	--	<1.6	<1.8	<3	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	--	<1.19	--
tetrachloroethene (PCE)	81000	UG/KG	--	--	<2.3	<2.5	<2.5	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
toluene	4900000	UG/KG	--	--	<1.5	<1.7	<3	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	13.4	<1.19	2.04 Q
1,1,1-trichloroethane	8100000	UG/KG	--	--	<2.3	<2.5	<2.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
1,1,2-trichloroethane	1500	UG/KG	--	--	<1.6	<1.8	<2.8	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
trichloroethene (TCE)	9,400*	UG/KG	--	--	<2	<2.2	<3	<4.7	<0.657	<1.502	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
trichlorofluoromethane	23000000	UG/KG	--	--	<3.3	<3.6	<5	<9.3	<0.657	<3	<2.88	<2.6	<2.38	< 4.76	<2.38	4.08 Q
vinyl chloride	590	UG/KG	--	--	<2.5	<2.8	<3.8	<4.7	<0.657	<3	<2.88	<2.6	<2.38	< 4.76	<2.38	4.08 Q
m- & p-xylene	550000	UG/KG	--	--	<1.5	<1.7	<5.5	<9.3	<1.31	--	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
o-xylene	650000	UG/KG	--	--	<1.3	<1.4	<2.5	<4.7	<0.657	--	<1.436	<1.302	<1.186	< 2.38	<1.19	2.04 Q
xylenes, total	580000	UG/KG	--	--	--	--	--	--	--	<1.502	--	--	--	--	--	--

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Sediment SD07-09**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	3	2.92	2	2.2	<0.46	1.7	0.97 J	1.88	3.45	2.87	2.04	3.34	2.72	2.95
barium	15000*	MG/KG	131	162	152	109	114	98.2 J	123	133	114	118	123	110	68.9	116
cadmium	71*	MG/KG	1.56	0.858	1.7	1.4	<0.23	0.79	1.87	0.987 F	1.12	0.935	<0.552	1.02	0.796 J	1.36
chromium, total		MG/KG	17.2	27.6	27.3	12.8	14.4	11.2 J	22.2	16.9	11.8	7.03	13.5	15.2	12.3	23.9
lead	400*	MG/KG	38.3	60.3	49	37.1	15.4	23.3	50.6 J	28.9	28.9	18.2	10.6 F	29.8	38.6	41.4
mercury	11*	MG/KG	0.0633 J	0.0706 J	<0.016	<0.016	0.016	0.036 J	0.045	0.0454 F	<0.025	0.0472 F	0.0157 F	0.0406 J	0.0194 J	0.0419 F
selenium	390*	MG/KG	0.347 J	0.707	<0.23	<0.32	<0.92	0.22 J	0.76 J	0.465 F	0.195 F	0.195 F	0.561 F	0.567	0.193 J	0.557 F
silver		MG/KG	0.520 J	0.871 J	0.72	0.52	<0.23	0.3 J	0.68	<2.06	<1.95	<1.598	<2.22	<1.954	<1.94	<2.54

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	1800000	UG/KG	--	--	<1.8	<1.8	<1.4	<2.6	<0.787	--	<1.478	<1.14	<1.484	--	--	--
1,3-dichlorobenzene		UG/KG	--	--	<2	<2	<1.5	<2.6	<0.787	--	<1.478	<1.14	<1.484	--	--	--
1,4-dichlorobenzene	26000	UG/KG	--	--	<2.5	<2.4	<1.4	<2.6	<0.787	--	<1.478	<1.14	<1.484	--	--	--
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<146.8	--	--	--	--	--	--
hexachlorobutadiene	12000	UG/KG	--	--	--	--	--	--	--	--	<1.478	<1.14	<1.484	--	--	--
naphthalene	38000	UG/KG	--	--	--	--	--	--	--	--	<1.478	<1.14	<1.484	--	--	--
1,2,4-trichlorobenzene	58000	UG/KG	--	--	--	--	--	--	--	--	<1.478	<1.14	<1.484	--	--	--

Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base

IZ - Industrial Zone
Sediment SD07-09

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	57.1 J	11.5 J	306	<34	<25	<33	<1.7	<14.68	<14.78	<11.4	<14.84	< 14.44	<12.8	17.0 J
benzene	12000	UG/KG	--	--	<1.7	<1.6	<1.9	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
bromodichloromethane	2900	UG/KG	--	--	<1.7	<1.6	<1.4	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
bromoform	190000	UG/KG	--	--	<3	<2.9	<1.9	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
bromomethane	6800	UG/KG	--	--	<3.3	<3.3	<2.5	<5.2	<3.15	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	3.24 Q
2-butanone (MEK)	27000000	UG/KG	10.8 J	3.64 J	63.6	<12	<7.5	<13	<3.15	<7.34	<7.4	<5.7	<7.42	< 7.22	<6.38	<8.10
carbon tetrachloride	6500	UG/KG	--	--	<2.7	<2.6	<2.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
chlorobenzene	280000	UG/KG	--	--	<1.7	<1.6	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
chloroethane	14000000	UG/KG	--	--	<3.3	<3.3	<2.5	<5.2	<0.787	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	<3.24
2-chloroethyl vinyl ether		UG/KG	--	--	<17	--	--	--	<1.89	--	<5.92	--	--	< 5.78	<5.10	<6.48
chloroform	3200	UG/KG	--	--	<1.7	<1.6	<1.5	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
chloromethane	110000	UG/KG	--	--	<4.2	<4.1	<2.5	<5.2	<3.15	<5.88	<5.92	<4.56	<5.94	< 5.78	<5.10	<6.48
dibromochloromethane	83000	UG/KG	--	--	<2.8	<2.8	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	--	<1.62
1,1-dichloroethane	36000	UG/KG	--	--	<2.5	<2.4	<1.4	<2.6	<0.787	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	<1.62
1,2-dichloroethane	4600	UG/KG	--	--	<2	<2	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<3.24
1,1-dichloroethene	230000	UG/KG	--	--	<3.8	<3.8	<1.7	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
cis-1,2-dichloroethene	160000	UG/KG	--	--	<1.7	<1.6	<1.9	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<3.2	<3.1	<1.9	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
1,2-dichloropropane	10000	UG/KG	--	--	<1.7	<1.6	<1.5	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
cis-1,3-dichloropropene		UG/KG	--	--	<1.7	<1.6	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
trans-1,3-dichloropropene		UG/KG	--	--	<1.8	<1.8	<1.4	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
ethylbenzene	58000	UG/KG	--	--	<1.8	4.4	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<14	<14	<6.8	<13	<0.787	<7.34	<7.4	<5.7	<7.42	< 7.22	<6.38	<8.10
methylene chloride	350000	UG/KG	--	--	<8.4	<8.2	<5.7	22.2 J	<0.787	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	<3.24
1,1,2,2-tetrachloroethane	6000	UG/KG	--	--	<2.2	<2.1	<1.5	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	--	<1.28	<1.62
tetrachloroethene (PCE)	81000	UG/KG	--	--	<3	<2.9	<1.2	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
toluene	4900000	UG/KG	1.72 J	<1.25	5990	<2	<1.5	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	15.4
1,1,1-trichloroethane	8100000	UG/KG	--	--	<3	<2.9	<1.4	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
1,1,2-trichloroethane	1500	UG/KG	--	--	<2.2	<2.1	<1.4	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
trichloroethene (TCE)	9400*	UG/KG	--	--	<2.7	<2.6	<1.5	<2.6	<0.787	<1.468	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
trichlorofluoromethane	23000000	UG/KG	--	--	<4.3	<4.2	<2.5	<5.2	<0.787	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	<1.62
vinyl chloride	590	UG/KG	--	--	<3.3	<3.3	<1.9	<2.6	<0.787	<2.94	<2.96	<2.28	<2.96	< 2.88	<2.56	<1.62
m- & p-xylene	550000	UG/KG	--	--	<2	<2	<2.7	<5.2	<1.57	--	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
o-xylene	650000	UG/KG	--	--	<1.7	<1.6	<1.2	<2.6	<0.787	--	<1.478	<1.14	<1.484	< 1.444	<1.28	<1.62
xylenes, total	580000	UG/KG	--	--	--	--	--	--	--	<1.468	--	--	--	--	--	--

**Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Sediment SD07-10**

Metals

	RSL-Res	Units	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	6.8*	MG/KG	3.47	2.34	2.2	2.1	2.8	1.4	1.86 J	1.24	2.47	2.29	3.59	1.58	1.54	2.43
barium	15000*	MG/KG	105	124	137	110	147	95.1 J	136	95.8	121	128	142	99.4	92.8	106
cadmium	71*	MG/KG	0.79	<0.566	0.3	<0.069	<0.23	0.45	0.4	0.444 F	0.246 F	<0.484	1.38	0.338 J	0.559 J	<0.554
chromium, total		MG/KG	13.2	25.6	11	7.8	15.1	9.7 J	9.96	10.5	7.64	5.6	28.4	12.7	10.8	8.6
lead	400*	MG/KG	24.2	11.9	11.2	11.3	12.6	10.7	12.5 J	11.9	9.88	9.98	40.5	13.9	13.4	10.7 F
mercury	11*	MG/KG	0.0225 J	0.0233 J	<0.015	<0.015	0.013	<0.022	<0.016	0.0294 F	<0.0266	0.0157 F	0.036 F	< 0.0294	<0.0336	<0.0316
selenium	390*	MG/KG	<0.581	0.543 J	<0.26	<0.28	<0.93	0.44 J	0.33 J	0.802	0.305 F	0.216 F	0.484 F	0.466 J	0.492 J	0.563F
silver		MG/KG	--	--	<0.065	<0.069	<0.23	<0.067	<0.13	<2.28	<1.954	<1.936	<2.24	< 2.3	<2.42	<2.22

Semi-Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	1800000	UG/KG	--	--	<1.2	<1.6	<1.6	<2.6	<0.729	--	<1.332	<1.24	<1.538	--	--	--
1,3-dichlorobenzene		UG/KG	--	--	<1.4	<1.7	<1.7	<2.6	<0.729	--	<1.332	<1.24	<1.538	--	--	--
1,4-dichlorobenzene	26000	UG/KG	--	--	<1.7	<2.1	<1.6	<2.6	<0.729	--	<1.332	<1.24	<1.538	--	--	--
1,4-dioxane	53000	UG/KG	--	--	--	--	--	--	--	<169.4	--	--	--	--	--	--
hexachlorobutadiene	12000	UG/KG	--	--	--	--	--	--	--	--	<1.332	<1.24	<1.538	--	--	--
naphthalene	38000	UG/KG	--	--	--	--	--	--	--	--	<1.332	<1.24	<1.538	--	--	--
1,2,4-trichlorobenzene	58000	UG/KG	--	--	--	--	--	--	--	--	<1.332	<1.24	<1.538	--	--	--

Sediment Analytical Data Summary – 2009 to Present
Vance Air Force Base

IZ - Industrial Zone
Sediment SD07-10

Volatile Organic Compound

	RSL-Res	Units	Apr-09	Nov-09	May-10	Oct-10	May-11	Oct-11	May-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	61000000	UG/KG	15.2 J	<1.02	231	<30	<28	<33	<1.57	<16.94	<13.32	<12.4	<15.38	< 15.24	<17.2	11.1 F
benzene	12000	UG/KG	--	--	<1.1	<1.4	<2.1	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
bromodichloromethane	2900	UG/KG	--	--	<1.1	<1.4	<1.6	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
bromoform	190000	UG/KG	--	--	<2	<2.6	<2.1	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
bromomethane	6800	UG/KG	--	--	<2.3	<2.8	<2.8	<5.3	<2.92	<3.38	<2.66	<2.48	<3.08	< 3.04	<3.44	3.32 Q
2-butanone (MEK)	27000000	UG/KG	2.87 J	<0.861	21.3	<11	<8.6	<13	<2.92	<8.46	<6.66	<6.2	<7.7	< 7.62	<8.60	<8.28
carbon tetrachloride	6500	UG/KG	--	--	<1.8	<2.3	<2.5	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
chlorobenzene	280000	UG/KG	--	--	<1.1	<1.4	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
chloroethane	14000000	UG/KG	--	--	<2.3	<2.8	<2.8	<5.3	<0.729	<3.38	<2.66	<2.48	<3.08	< 3.04	<3.44	<3.32
2-chloroethyl vinyl ether		UG/KG	--	--	<11	--	--	--	<1.75	--	<5.32	--	--	< 6.1	<6.88	<6.62
chloroform	3200	UG/KG	--	--	<1.1	<1.4	<1.7	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
chloromethane	110000	UG/KG	--	--	<2.8	<3.6	<2.8	<5.3	<2.92	<6.78	<5.32	<4.96	<6.16	< 6.1	<6.88	<6.62
dibromochloromethane	83000	UG/KG	--	--	<1.9	<2.4	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	--	<1.66
1,1-dichloroethane	36000	UG/KG	--	--	<1.7	<2.1	<1.6	<2.6	<0.729	<3.38	<2.66	<2.48	<3.08	< 3.04	<3.44	<1.66
1,2-dichloroethane	4600	UG/KG	--	--	<1.4	<1.7	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
1,1-dichloroethene	230000	UG/KG	--	--	<2.6	<3.3	<2	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
cis-1,2-dichloroethene	160000	UG/KG	--	--	<1.1	<1.4	<2.1	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
trans-1,2-dichloroethene	1600000	UG/KG	--	--	<2.2	<2.7	<2.1	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
1,2-dichloropropane	10000	UG/KG	--	--	<1.1	<1.4	<1.7	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
cis-1,3-dichloropropene		UG/KG	--	--	<1.1	<1.4	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
trans-1,3-dichloropropene		UG/KG	--	--	<1.2	<1.6	<1.6	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
ethylbenzene	58000	UG/KG	--	--	<1.2	<1.6	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
4-methyl-2-pentanone (MIBK)	33000000	UG/KG	--	--	<9.4	<12	<7.8	<13	<0.729	<8.46	<6.66	<6.2	<7.7	< 7.62	<8.60	<8.28
methylene chloride	350000	UG/KG	--	--	<5.7	<7.1	<6.5	25.6 J	<0.729	<3.38	<2.66	<2.48	2.05 B	< 3.04	<3.44	<3.32
1,1,1,2-tetrachloroethane	6000	UG/KG	--	--	<1.5	<1.8	<1.7	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	--	<1.72	<1.66
tetrachloroethene (PCE)	81000	UG/KG	--	--	<2	<2.6	<1.4	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
toluene	4900000	UG/KG	--	--	11.5	<1.7	<1.7	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	4.91	<1.66
1,1,1-trichloroethane	8100000	UG/KG	--	--	<2	<2.6	<1.6	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
1,1,2-trichloroethane	1500	UG/KG	--	--	<1.5	<1.8	<1.6	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
trichloroethene (TCE)	9400*	UG/KG	--	--	<1.8	<2.3	<1.7	<2.6	<0.729	<1.694	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
trichlorofluoromethane	23000000	UG/KG	--	--	<2.9	<3.7	<2.8	<5.3	<0.729	<3.38	<2.66	<2.48	<3.08	< 3.04	<3.44	<3.32
vinyl chloride	590	UG/KG	--	--	<2.3	<2.8	<2.1	<2.6	<0.729	<3.38	<2.66	<2.48	<3.08	< 3.04	<3.44	<3.32
m- & p-xylene	550000	UG/KG	--	--	<1.4	<1.7	<3.1	<5.3	<1.46	--	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
o-xylene	650000	UG/KG	--	--	<1.1	<1.4	<1.4	<2.6	<0.729	--	<1.332	<1.24	<1.538	< 1.524	<1.72	<1.66
xylenes, total	580000	UG/KG	--	--	--	--	--	--	--	<1.694	--	--	--	--	--	--

Sediment Analytical Data Summary – 2009 to Present Vance Air Force Base

Notes:

Blank results indicate sample not collected and/or parameter not analyzed.

RSL-Res = USEPA Regional Screening Level for Residential Soil (TR=1E-5, HQ=1, November 2015).

The RSL-Res value for m-xylene was used.

* USEPA Residential Regional Screening Level (RSL; June 2017). RSLs are the lower of the noncarcinogen screening level based on an HQ of 1 and the carcinogenic screening level based on a risk level of 1×10^{-5} .

J = Parameter detected between the limit of detection and the limit of quantitation.

Q = One or more quality control criteria failed.

Bold = Compound detected at or above the limit of detection.

Shading = RSL-Res Exceedance.

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Surface Water SW05-13**

Metals

	OK WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		--	--	--	--	--	--	--	<0.01	<0.1	--	<0.1	--	<0.0100	<0.0100
arsenic	40	UG/L		--	--	<2	2.2	<2	9.3 J	2.67 J		--	--	--	< 10	--	--
barium	1.00	MG/L		0.0584 J	0.155 J	--	--	--	--	--	0.057	0.0449	--	0.0365	--	<0.103	0.12
barium	1000	UG/L		--	--	83.1	301	106	815	122 J	--	--	--	--	90.8	--	--
cadmium	0.020	MG/L		--	--	--	--	--	--	--	<0.01	<0.02	--	<0.02	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	3.2 J	0.19 J	--	--	--	--	< 10	--	--
chromium, total	0.05	MG/L		0.0141	0.0044 J	--	--	--	--	--	<0.02	0.025 F	--	0.0189 F	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	5.3	<1	<1	95.6 J	4.95 J	--	--	--	--	< 20	--	--
lead	0.100	MG/L		--	--	--	--	--	--	--	<0.01	<0.01	--	<0.01	--	<0.0100	<0.0100
lead	100	UG/L		--	--	2.1	3.7	<1	80.2 J	6.01 J	--	--	--	--	< 10	--	--
mercury	0.002	MG/L		--	--	--	--	--	--	<0.0002	<0.0002	<0.0002	--	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	<0.05	<0.1	--	--	--	--	--	< 0.2	--	--
selenium	0.01	MG/L		<0.00500	0.0036 J	--	--	--	--	--	0.00194 F	0.00761 F	--	0.00147 B	--	0.00456	0.0043
selenium	10	UG/L		--	--	3	<2	<2	2.9 J	<0.11	--	--	--	--	1.99 J	--	--
silver	0.020	MG/L	1	--	--	--	--	--	--	--	--	--	--	--	--	<0.0100	<0.0100
silver	20	UG/L	1	--	--	<1	<1	<1	<1	<0.06	--	--	--	--	< 10	--	--

Petroleum Hydrocarbons

	OK RBCL	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
TPH-DRO (petroleum hydrocarbons C1)		MG/L		0.0428 J	0.0168 J	0.134	0.202	0.144	0.176 J	--	--	--	--	--	--	--	--
TPH-DRO (petroleum hydrocarbons C1)		UG/L		--	--	--	--	--	--	145 J	232 B	74.2 F	--	<108.6	156 J	<100	<100
TPH-GRO (PHC as gasoline)		MG/L		<0.100	0.0096 J,B	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--	--	--	--
TPH-GRO (PHC as gasoline)		UG/L		--	--	--	--	--	--	<20	<160	<160	--	<160	< 160	<160	<160

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Surface Water SW05-13**

Semi-Volatile Organic Compound

	OK	WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acenaphthene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
acenaphthylene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
anthracene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
benzo(a)anthracene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
benzo(b)fluoranthene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
benzo(k)fluoranthene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
benzo(g,h,i)perylene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
benzyl alcohol			UG/L		--	--	<0.95	<0.97	<0.95	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
bis(2-chloroethyl)ether			UG/L		--	--	<0.95	<0.97	<0.51	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
bis(2-chloroisopropyl)ether			UG/L		--	--	<0.95	<0.97	<0.51	<0.97	--	--	--	--	--	--	5.00 Q	< 5.1
bis(2-chloroethoxy)methane			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
bis(2-ethylhexyl)phthalate	25		UG/L		--	--	<1.9	<1.9	<1	<1.9	<0.505	<5	<6	--	<6.46	< 6.12	6.00 Q	< 6.12
4-bromophenyl phenyl ether			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
butyl benzyl phthalate	150		UG/L	1	--	--	<0.95	<0.97	<1	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
carbazole			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
4-chloro-3-methylphenol			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
4-chloroaniline			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-chloronaphthalene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-chlorophenol			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
4-chlorophenyl phenyl ether			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
chrysene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
dibenz(a,h)anthracene			UG/L		--	--	<0.95	<0.97	<0.5	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
dibenzofuran			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
1,2-dichlorobenzene			UG/L		--	--	<0.95	<0.97	<0.95	<1.9	<0.2	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
1,3-dichlorobenzene			UG/L		--	--	<0.95	<0.97	<0.95	<1.9	<0.2	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
1,4-dichlorobenzene			UG/L		--	--	<0.95	<0.97	<0.95	<1.9	<0.2	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
3,3'-dichlorobenzidine			UG/L		--	--	<1.9	<1.9	<0.95	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2,4-dichlorophenol			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
diethyl phthalate	5,600		UG/L	1	--	--	<1.9	<1.9	<1	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
dimethyl phthalate	70,000		UG/L		--	--	<1	<1.1	<0.94	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2,4-dimethylphenol			UG/L		--	--	<0.95	<0.97	<1	<1.9	<1.21	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
di-n-butyl phthalate	700		UG/L	1	--	--	<0.95	<0.97	<0.83	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
4,6-dinitro-2-methylphenol			UG/L		--	--	<0.95	<0.97	<1.9	<3.9	<5.05	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
2,4-dinitrophenol			UG/L		--	--	<9.5	<9.7	<9.5	<19	<5.05	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
2,4-dinitrotoluene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2,6-dinitrotoluene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
di-n-octyl phthalate			UG/L		--	--	<0.95	<0.97	<1	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
1,4-dioxane			UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Surface Water SW05-13**

Semi-Volatile Organic Compound

	OK	WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
fluoranthene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
fluorene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
hexachlorobenzene			UG/L		--	--	<0.95	<0.97	<0.53	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
hexachlorobutadiene			UG/L		--	--	<2.5	<2.5	<0.95	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
hexachlorocyclopentadiene			UG/L		--	--	<4.7	<4.8	<1.8	<1.9	<0.505	<5	<5	--		< 5.1	5.00 Q	< 5.1
hexachloroethane			UG/L		--	--	<2.1	<2.1	<0.95	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
indeno(1,2,3-cd)pyrene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
isophorone			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-methylnaphthalene			UG/L		--	--	<0.95	<0.97	<0.54	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-methylphenol			UG/L		--	--	<0.95	<0.97	<0.51	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
3- & 4-methylphenol			UG/L		--	--	<1.5	<1.6	<1	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
naphthalene			UG/L		--	--	<0.95	<0.97	<0.76	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-nitroaniline			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
3-nitroaniline			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
4-nitroaniline			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
nitrobenzene			UG/L		--	--	<0.95	<0.97	<0.56	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2-nitrophenol			UG/L		--	--	<0.95	<0.97	<0.51	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
4-nitrophenol			UG/L		--	--	<9.5	<9.7	<4.8	<9.7	<5.05	<25	<25	--	--	< 25.6	25.0 Q	< 25.6
n-nitrosodiphenylamine			UG/L		--	--	<0.95	<0.97	<0.95	<1.9	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
n-nitrosodipropylamine			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
pentachlorophenol			UG/L		--	--	<9.5	<9.7	<5.1	<9.7	<0.505	<25	<25	--	<26.8	< 25.6	25.0 Q	< 25.6
phenanthrene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
phenol	4,200		UG/L	1	--	--	<0.95	<0.97	<0.48	<1.9	<0.505	<5	<5	--	--	< 5.1	5.00 Q	< 5.1
pyrene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
pyridine			UG/L		--	--	<2.8	<2.8	<1.5	<1.9	<5.05	<25	<25	--	--	< 25.6	25.0 Q	< 25.6
1,2,4-trichlorobenzene			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2,4,5-trichlorophenol			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1
2,4,6-trichlorophenol			UG/L		--	--	<0.95	<0.97	<0.48	<0.97	<0.505	<5	<5	--	<5.38	< 5.1	5.00 Q	< 5.1

**Surface Water Analytical Data Summary – 2009 to Present
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**DP005 - Tank Sludge Disposal Area
Surface Water SW05-13**

Volatile Organic Compound

	OK	WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone			UG/L		9.05	4.17 J	<10	<10	<10	<20	2.39 J	<5	6.69 F	--	<5	2.56 J	<5.00	5.00 J
benzene			UG/L		--	--	<0.21	<0.21	<0.2	<0.5	<0.2	<2	<2	--	<2	< 0.25	<0.250	<0.250
bromodichloromethane			UG/L		--	--	<0.28	<0.28	<0.2	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
bromoform			UG/L		--	--	<0.24	<0.24	<0.2	<0.5	<0.5	<1	<1	--	<1	< 1	<1.00	<1.00
bromomethane			UG/L		--	--	<0.78	<0.78	<0.5	<1	<0.5	<1	<1	--	<1	< 1	<1.00	<1.00
2-butanone (MEK)			UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	--	<5	< 5	<5.00	<5.00
carbon tetrachloride			UG/L		--	--	<0.34	<0.34	<0.25	<0.5	<0.5	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
chlorobenzene			UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	112	<0.25	--	<0.25	< 0.25	<0.250	<0.250
chloroethane			UG/L		--	--	<0.51	<0.51	<0.5	<1	<0.5	<1	<1	--	<1	< 1	<1.00	<1.00
2-chloroethyl vinyl ether			UG/L		--	--	<1.1	--	--	--	<2	--	<4	--	--	< 4	<4.00	<4.00
chloroform	70		UG/L		--	--	<0.25	<0.25	<0.22	<0.5	<0.2	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<0.250
chloromethane			UG/L		<0.482	1.77 J	<0.5	<0.5	<0.5	<1	<0.2	<1	<1	--	<1	< 1	<1.00	<1.00
dibromochloromethane	6		UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	--	--
1,1-dichloroethane			UG/L		--	--	<0.22	<0.22	<0.25	<0.5	<0.2	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<0.250
1,2-dichloroethane			UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.250	<0.500
1,1-dichloroethene			UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.5	<1	<1	--	<1	< 1	<1.00	<1.00
cis-1,2-dichloroethene			UG/L		0.397 J	<0.367	<0.32	<0.32	<0.26	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
trans-1,2-dichloroethene			UG/L		--	--	<0.34	<0.34	<0.35	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
1,2-dichloropropane			UG/L		--	--	<0.27	<0.27	<0.25	<0.5	<0.2	<0.25	<0.4	--	<0.4	< 0.4	<0.400	<0.400
cis-1,3-dichloropropene			UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
trans-1,3-dichloropropene			UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<1	<1	--	<1	< 1	<1.00	<1.00
ethylbenzene			UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<2	<2	--	<2	< 0.5	<0.500	<0.500
4-methyl-2-pentanone (MIBK)			UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	--	<5	< 5	<5.00	<5.00
methylene chloride			UG/L		--	--	<2	<2	<2	<4	<0.5	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
1,1,2,2-tetrachloroethane			UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.2	<0.4	<0.4	--	<0.4		<0.500	<0.500
tetrachloroethene (PCE)			UG/L		--	--	<0.44	<0.44	<0.25	<0.5	<0.5	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
toluene			UG/L		<0.391	0.468 J	<0.2	<0.2	<0.2	<0.5	<0.2	<2	<2	--	<2	< 0.5	<0.500	<0.500
1,1,1-trichloroethane			UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
1,1,2-trichloroethane			UG/L		--	--	<0.29	<0.29	<0.22	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
trichloroethene (TCE)			UG/L		1.75	1.06	<0.24	<0.24	<0.26	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
trichlorofluoromethane			UG/L		--	--	<0.4	<0.4	<0.5	<1	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
vinyl chloride			UG/L		--	--	<0.28	<0.28	<0.22	<0.5	<0.2	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<0.500
m- & p-xylene			UG/L		--	--	<0.34	<0.34	<0.32	<0.5	<0.4	<2	<2	--	<2	< 1	<1.00	<1.00
o-xylene			UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<2	<2	--	<2	< 0.5	<0.500	<0.500
xylene, total			UG/L		--	--	--	--	--	--	--	<1	--	--	--	--	<1.00	<1.00

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**DP005 - Tank Sludge Disposal Area
Surface Water SW05-14**

Metals

	OK WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		--	--	--	--	--	--	--	<0.01	<0.1	<0.1	<0.1	--	<0.0100	<0.0100
arsenic	40	UG/L		--	--	<2	<2	<2	2 J	4.9 J	--	--	--	--	< 10	--	--
barium	1.00	MG/L		0.0928 J	0.245	--	--	--	--	--	0.106	0.0777	0.123	0.103	--	0.178	0.156
barium	1000	UG/L		--	--	235	206	111	141 J	162 J	--	--	--	--	193	--	--
cadmium	0.020	MG/L		--	--	--	--	--	--	--	<0.01	<0.02	<0.02	<0.02	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	<1	<0.026	--	--	--	--	< 10	--	--
chromium, total	0.05	MG/L		0.0326	0.0056	--	--	--	--	--	<0.02	0.0165 F	<0.02	0.017 F	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	4.1	<1	2.5	5.8 J	4.28 J	--	--	--	--	< 20	--	--
lead	0.100	MG/L		0.00508	<0.003	--	--	--	--	--	<0.01	<0.01	<0.01	.00831 F	--	<0.0100	0.00533 J
lead	100	UG/L		--	--	4.9	<1	<1	2.5 J	0.55 J	--	--	--	--	6.52 J	--	--
mercury	0.002	MG/L		--	--	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	<0.05	<0.1	--	--	--	--	--	< 0.2	--	--
selenium	0.01	MG/L		0.00269 J	0.0031 J	--	--	--	--	--	0.00595	0.00235	0.0136	0.0438 B	--	0.00822	0.00703
selenium	10	UG/L		--	--	<2	4.6	<2	<2	4.36 J	--	--	--	--	7.77	--	--
silver	0.020	MG/L		--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.0100	<0.0100
silver	20	UG/L		--	--	<1	<1	<1	<1	<0.017	--	--	--	--	< 10	--	--

Petroleum Hydrocarbons

	OK RBCL	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
TPH-DRO (petroleum hydrocarbons C1)		MG/L		0.0919	<0.00984	0.136	0.129	0.101	<0.12	--	--	--	--	--	--	--	--
TPH-DRO (petroleum hydrocarbons C1)		UG/L		--	--	--	--	--	--	107 J	382 B	<107.6	<106.4	<102	53.5 J	<100	<102
TPH-GRO (PHC as gasoline)		MG/L		<0.100	0.0079 J,B	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--	--	--	--
TPH-GRO (PHC as gasoline)		UG/L		--	--	--	--	--	--	3.4 J	<160	<160	<160	<160	< 160	<160	<160

**Surface Water Analytical Data Summary – 2009 to Present
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**DP005 - Tank Sludge Disposal Area
Surface Water SW05-14**

Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acenaphthene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
acenaphthylene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
anthracene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
benzo(a)anthracene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
benzo(b)fluoranthene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
benzo(k)fluoranthene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
benzo(g,h,i)perylene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
benzyl alcohol	UG/L		--	--	<0.95	<0.96	<0.96	<1.9	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
bis(2-chloroethyl)ether	UG/L		--	--	<0.95	<0.96	<0.52	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
bis(2-chloroisopropyl)ether	UG/L		--	--	<0.95	<0.96	<0.52	<0.97	--	--	--	--	--	--	<5.00	<5.00
bis(2-chloroethoxy)methane	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
bis(2-ethylhexyl)phthalate	UG/L		--	--	<1.9	<1.9	<1.1	<1.9	<0.505	85.4 R	<6.52	106	<6	<6	<6.00	<6.00
4-bromophenyl phenyl ether	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
butyl benzyl phthalate	UG/L		--	--	<0.95	<0.96	<1.1	<1.9	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
carbazole	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
4-chloro-3-methylphenol	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
4-chloroaniline	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
2-chloronaphthalene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
2-chlorophenol	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
4-chlorophenyl phenyl ether	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
chrysene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
dibenz(a,h)anthracene	UG/L		--	--	<0.95	<0.96	<0.5	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
dibenzofuran	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
1,2-dichlorobenzene	UG/L		--	--	<0.95	<0.96	<0.96	<1.9	<0.2	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
1,3-dichlorobenzene	UG/L		--	--	<0.95	<0.96	<0.96	<1.9	<0.2	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
1,4-dichlorobenzene	UG/L		--	--	<0.95	<0.96	<0.96	<1.9	<0.2	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
3,3'-dichlorobenzidine	UG/L		--	--	<1.9	<1.9	<0.96	<1.9	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
2,4-dichlorophenol	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
diethyl phthalate	UG/L		--	--	<1.9	<1.9	<1.1	<1.9	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
dimethyl phthalate	UG/L		--	--	<1	<1.1	<0.95	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
2,4-dimethylphenol	UG/L		--	--	<0.95	<0.96	<1.1	<1.9	<1.21	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
di-n-butyl phthalate	UG/L		--	--	<0.95	<0.96	<0.84	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
4,6-dinitro-2-methylphenol	UG/L		--	--	<0.95	<0.96	<1.9	<3.9	<5.05	<25	<27.2	<26.8	<25	<25	<25.0	<25.0
2,4-dinitrophenol	UG/L		--	--	<9.5	<9.6	<9.6	<19	<5.05	<25	<27.2	<26.8	<25	<25	<25.0	<25.0
2,4-dinitrotoluene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
2,6-dinitrotoluene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
di-n-octyl phthalate	UG/L		--	--	<0.95	<0.96	<1.1	<1.9	<0.505	<5	<5.44	<5.38	<5	<5	<5.00	<5.00
1,4-dioxane	UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--

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**DP005 - Tank Sludge Disposal Area
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Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
fluoranthene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	0.297 J	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
fluorene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
hexachlorobenzene	UG/L		--	--	<0.95	<0.96	<0.54	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
hexachlorobutadiene	UG/L		--	--	<2.5	<2.5	<0.96	<1.9	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
hexachlorocyclopentadiene	UG/L		--	--	<4.7	<4.7	<1.8	<1.9	<0.505	<5	<5.44	--	--	< 5	<5.00	<5.00
hexachloroethane	UG/L		--	--	<2.1	<2.1	<0.96	<1.9	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
indeno(1,2,3-cd)pyrene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
isophorone	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2-methylnaphthalene	UG/L		--	--	<0.95	<0.96	<0.55	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2-methylphenol	UG/L		--	--	<0.95	<0.96	<0.52	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
3- & 4-methylphenol	UG/L		--	--	8.6	<1.5	<1.1	<1.9	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
naphthalene	UG/L		--	--	<0.95	<0.96	<0.77	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2-nitroaniline	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<25	<27.2	<26.8	<25	< 25	<25.0	<25.0
3-nitroaniline	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<25	<27.2	<26.8	<25	< 25	<25.0	<25.0
4-nitroaniline	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<25	<27.2	<26.8	<25	< 25	<25.0	<25.0
nitrobenzene	UG/L		--	--	<0.95	<0.96	<0.57	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2-nitrophenol	UG/L		--	--	<0.95	<0.96	<0.52	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
4-nitrophenol	UG/L		--	--	<9.5	<9.6	<4.8	<9.7	<5.05	<25	<27.2	--	--	< 25	<25.0	<25.0
n-nitrosodiphenylamine	UG/L		--	--	<0.95	<0.96	<0.96	<1.9	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
n-nitrosodipropylamine	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
pentachlorophenol	UG/L		--	--	<9.5	<9.6	<5.2	<9.7	<0.505	<25	<27.2	<26.8	<25	< 25	<25.0	<25.0
phenanthrene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
phenol	UG/L		--	--	<0.95	<0.96	<0.48	<1.9	<0.505	<5	<5.44	--	<5.38	< 5	<5.00	<5.00
pyrene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	--	<5	< 5	<5.00	<5.00
pyridine	UG/L		--	--	<2.8	<2.8	<1.5	<1.9	<5.05	<25	<27.2	--	--	< 25	<25.0	<25.0
1,2,4-trichlorobenzene	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2,4,5-trichlorophenol	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00
2,4,6-trichlorophenol	UG/L		--	--	<0.95	<0.96	<0.48	<0.97	<0.505	<5	<5.44	<5.38	<5	< 5	<5.00	<5.00

Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base

DP005 - Tank Sludge Disposal Area
Surface Water SW05-14

Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	UG/L		17.1	4.17 J	18.4	<10	<10	<20	2.2 J	<5	<5	2.78 F	<5	< 5	2.82 J	6.50 J
benzene	UG/L		--	--	<0.21	<0.21	<0.2	<0.5	<0.2	<2	<2	<2	<2	< 0.25	<0.250	0.250 Q
bromodichloromethane	UG/L		--	--	<0.28	<0.28	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
bromoform	UG/L		--	--	<0.24	<0.24	<0.2	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	1.00 Q
bromomethane	UG/L		--	--	<0.78	<0.78	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	1.00 Q
2-butanone (MEK)	UG/L		1.02 J	<0.841	5.2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	5.00 Q
carbon tetrachloride	UG/L		--	--	<0.34	<0.34	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
chlorobenzene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	111	<0.25	<0.25	<0.25	< 0.25	<0.250	0.250 Q
chloroethane	UG/L		--	--	<0.51	<0.51	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	1.00 Q
2-chloroethyl vinyl ether	UG/L		--	--	<1.1	--	--	--	<2	--	<4	--	--	< 4	<4.00	4.00 Q
chloroform	UG/L		--	--	<0.25	<0.25	<0.22	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	0.250 Q
chloromethane	UG/L		<0.482	1.77 J	<0.5	<0.5	<0.5	<1	<0.2	<1	<1	<1	<1	< 1	<1.00	1.00 Q
dibromochloromethane	UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	--	--
1,1-dichloroethane	UG/L		--	--	<0.22	<0.22	<0.25	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	0.497 J
1,2-dichloroethane	UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.490 J	0.250 Q
1,1-dichloroethene	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	1.00 Q
cis-1,2-dichloroethene	UG/L		--	--	<0.32	0.43	0.43	<0.5	<0.2	0.859 F	0.491 F	0.669 F	0.31 F	0.483 J	0.843 J	1.11J
trans-1,2-dichloroethene	UG/L		--	--	<0.34	<0.34	<0.35	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
1,2-dichloropropane	UG/L		--	--	<0.27	<0.27	<0.25	<0.5	<0.2	<0.25	<0.4	<0.4	<0.4	< 0.4	<0.400	0.400 Q
cis-1,3-dichloropropene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
trans-1,3-dichloropropene	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<1	<1	<1	<1	< 1	<1.00	1.00 Q
ethylbenzene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<2	<2	<2	<2	< 0.5	<0.500	0.500 Q
4-methyl-2-pentanone (MIBK)	UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	5.00 Q
methylene chloride	UG/L		--	--	<2	<2	<2	<4	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
1,1,2,2-tetrachloroethane	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.2	<0.4	<0.4	<0.4	<0.4		<0.500	0.500 Q
tetrachloroethene (PCE)	UG/L		--	--	<0.44	<0.44	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
toluene	UG/L		--	--	1.1	<0.2	<0.2	<0.5	<0.2	<2	<2	<2	<2	< 0.5	<0.500	0.500 Q
1,1,1-trichloroethane	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
1,1,2-trichloroethane	UG/L		--	--	<0.29	<0.29	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
trichloroethene (TCE)	UG/L		--	--	0.93	2.4	2	<0.5	3.83 J	3.18 F	2.8	2.32	1.55	1.7	3.20	3.59 J
trichlorofluoromethane	UG/L		--	--	<0.4	<0.4	<0.5	<1	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
vinyl chloride	UG/L		--	--	<0.28	<0.28	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	0.500 Q
m- & p-xylene	UG/L		--	--	<0.34	<0.34	<0.32	<0.5	<0.4	<2	<2	<2	<2	< 1	<1.00	1.00 Q
o-xylene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<2	<2	<2	<2	< 0.5	<0.500	0.500 Q
xylene, total	UG/L		--	--	--	--	--	--	--	<1	--	--	--	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW03-11**

Metals

	OK WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		--	--	--	--	--	--	--	<0.01	<0.1	<0.1	<0.1	--	<0.0200	<0.0100
arsenic	40	UG/L		--	--	<2	<2	<2	<2	4.26 J	--	--	--	--	< 10	--	--
barium	1.00	MG/L		0.178 J	0.178 J	--	--	--	--	--	0.119	0.106	0.166	0.155	--	0.0986	0.122
barium	1000	UG/L		--	--	123	139	201	135 J	182 J	--	--	--	--	139	--	--
cadmium	0.020	MG/L		0.000400 J	<0.002	--	--	--	--	--	<0.01	<0.02	<0.02	<0.02	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	<1	<0.026	--	--	--	--	< 10	--	--
chromium, total	0.05	MG/L		0.00310 J	<0.005	--	--	--	--	--	<0.02	<0.02	<0.02	<0.02	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	1.3	<1	1.2	1.1 J	0.67 J	--	--	--	--	< 20	--	--
lead	0.100	MG/L		0.00724	<0.003	--	--	--	--	--	.00558 F	<0.01	.00531 F	0.0216	--	<0.0100	<0.0100
lead	100	UG/L		--	--	3.3	<1	<1	1.2 J	2.59 J	--	--	--	--	< 10	--	--
mercury	0.002	MG/L		--	--	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	<0.05	<0.1	--	--	--	--	--	< 0.2	--	--
selenium	0.01	MG/L		0.00299 J	0.0045 J	--	--	--	--	--	0.00763	0.00346	0.00619	0.00504	--	0.00481	0.00627
selenium	10	UG/L		--	--	3.3	<2	<2	2.8 J	2.53 J	--	--	--	--	11.1	--	--
silver	0.020	MG/L	1	0.00223 J	<0.005	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.0100	<0.0100
silver	20	UG/L	1	--	--	<1	<1	<1	<1	<0.06	--	--	--	--	< 10	--	--

Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	UG/L		--	--	<0.26	<0.26	<0.25	<0.5	<0.2	--	<0.25	<0.25	<0.25	--	--	--
1,3-dichlorobenzene	UG/L		--	--	<0.29	<0.29	<0.2	<0.5	<0.2	--	<0.5	<0.5	<0.5	--	--	--
1,4-dichlorobenzene	UG/L		--	--	<0.22	<0.22	<0.23	<0.5	<0.2	--	<0.25	<0.25	<0.25	--	--	--
1,4-dioxane	UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--
hexachlorobutadiene	UG/L		--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	--	--	--
naphthalene	UG/L		--	--	--	--	--	--	--	--	<0.4	<0.4	<0.4	--	--	--
1,2,4-trichlorobenzene	UG/L		--	--	--	--	--	--	--	--	<0.4	<0.4	<0.4	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW03-11**

Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16*	June-17
acetone	UG/L		3.64 J	5.93	<10	<10	<10	<20	2.02 J	3.27 F	<5	<5	<5	2.51 J	5.44Q	7.06 J
benzene	UG/L		--	--	1.2	<0.21	<0.2	<0.5	<0.2	2.1 F	<0.25	<0.25	<0.25	0.95	<0.250	<0.250
bromodichloromethane	UG/L		--	--	<0.28	<0.28	0.83	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
bromoform	UG/L		--	--	<0.24	<0.24	0.96	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	<1.00
bromomethane	UG/L		--	--	<0.78	<0.78	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	<1.00
2-butanone (MEK)	UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	<5.00
carbon tetrachloride	UG/L		--	--	<0.34	<0.34	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.500
chlorobenzene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.250
chloroethane	UG/L		--	--	<0.51	<0.51	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	<1.00
2-chloroethyl vinyl ether	UG/L		--	--	<1.1	--	--	--	<2	--	<4	--	--	< 4	<4.00	<4.00
chloroform	UG/L		--	--	<0.25	<0.25	0.41	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.250
chloromethane	UG/L		--	--	<0.5	0.74	<0.5	<1	<0.2	<1	<1	<1	<1	< 1	<1.00	<1.00
dibromochloromethane	UG/L		--	--	<0.33	<0.33	1.3	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	--	--
1,1-dichloroethane	UG/L		--	--	<0.22	<0.22	<0.25	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.250
1,2-dichloroethane	UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.500
1,1-dichloroethene	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	<1.00
cis-1,2-dichloroethene	UG/L		--	--	<0.32	<0.32	<0.26	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
trans-1,2-dichloroethene	UG/L		--	--	<0.34	<0.34	<0.35	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
1,2-dichloropropane	UG/L		--	--	<0.27	<0.27	<0.25	<0.5	<0.2	<0.25	<0.4	<0.4	<0.4	< 0.4	<0.400	<0.400
cis-1,3-dichloropropene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
trans-1,3-dichloropropene	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<1	<1	<1	<1	< 1	<1.00	<1.00
ethylbenzene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
4-methyl-2-pentanone (MIBK)	UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	<5.00
methylene chloride	UG/L		--	--	<2	<2	<2	<4	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
1,1,2,2-tetrachloroethane	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.2	<0.4	<0.4	<0.4	<0.4	--	<0.500	<0.500
tetrachloroethene (PCE)	UG/L		--	--	<0.44	<0.44	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
toluene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
1,1,1-trichloroethane	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.500
1,1,2-trichloroethane	UG/L		--	--	<0.29	<0.29	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
trichloroethene (TCE)	UG/L		--	--	0.52	<0.24	<0.26	<0.5	<0.2	0.412 F	<0.5	<0.5	<0.5	0.414 J	<0.500	<0.500
trichlorofluoromethane	UG/L		--	--	<0.4	<0.4	<0.5	<1	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.500
vinyl chloride	UG/L		--	--	<0.28	<0.28	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
m- & p-xylene	UG/L		--	--	<0.34	<0.34	<0.32	<0.5	<0.4	--	<1	<1	<1	< 1	<1.00	<1.00
o-xylene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	--	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.500
xylene, total	UG/L		--	--	--	--	--	--	--	<1	--	--	--	--	<1.00	<1.00

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW03-12**

Metals

	OK WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		--	--	--	--	--	--	--	<0.01	<0.1	<0.1	<0.1	--	<0.0100	<0.0100
arsenic	40	UG/L		--	--	<2	<2	<2	<2	5.2 J	--	--	--	--	< 10	--	--
barium	1.00	MG/L		0.135 J	0.157	--	--	--	--	--	0.115	0.0984	0.168	0.121	--	0.114	0.125
barium	1000	UG/L		--	--	128	132	208	183 J	191 J	--	--	--	--	146	--	--
cadmium	0.020	MG/L		--	--	--	--	--	--	--	<0.01	<0.02	<0.02	<0.02	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	<1	<0.1	--	--	--	--	< 10	--	--
chromium, total	0.05	MG/L		--	--	--	--	--	--	--	<0.02	<0.02	<0.02	<0.02	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	1	<1	1.5	--	0.29 J	--	--	--	--	< 20	--	--
lead	0.100	MG/L		--	--	--	--	--	--	--	<0.01	<0.01	.00584 F	<0.01	--	<0.0100	<0.0100
lead	100	UG/L		--	--	2.5	<1	<1	1.6 J	0.45 J	--	--	--	--	10.2 J	--	--
mercury	0.002	MG/L		--	--	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	<0.05	<0.1	--	--	--	--	--	< 0.2	--	--
selenium	0.01	MG/L		0.00194 J	0.0051	--	--	--	--	--	0.00961	0.00433	0.00821	0.00435	--	0.00559	0.00671
selenium	10	UG/L		--	--	3.4	<2	<2	<2	3.11 J	--	--	--	--	12.1	--	--
silver	0.020	MG/L	1	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.0100	<0.0100
silver	20	UG/L	1	--	--	<1	<1	<1	<1	<0.017	--	--	--	--	< 10	--	--

Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	UG/L		--	--	<0.26	<0.26	<0.25	<0.5	<0.2	--	<0.25	<0.25	<0.25	--	--	--
1,3-dichlorobenzene	UG/L		--	--	<0.29	<0.29	<0.2	<0.5	<0.2	--	<0.5	<0.5	<0.5	--	--	--
1,4-dichlorobenzene	UG/L		--	--	<0.22	<0.22	<0.23	<0.5	<0.2	--	<0.25	<0.25	<0.25	--	--	--
1,4-dioxane	UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--
hexachlorobutadiene	UG/L		--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	--	--	--
naphthalene	UG/L		--	--	--	--	--	--	--	--	<0.4	<0.4	<0.4	--	--	--
1,2,4-trichlorobenzene	UG/L		--	--	--	--	--	--	--	--	<0.4	<0.4	<0.4	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW03-12**

Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	UG/L		<5.00	4.13 J	<10	<10	<10	<20	2.15 J	<5	<5	4.16 F	<5	< 5	3.69 Q	3.18 J
benzene	UG/L		0.678 J	<0.392	3	<0.21	<0.2	<0.5	<0.2	4.84 F	0.195 F	<0.25	<0.25	1.64	<0.250	<0.25
bromodichloromethane	UG/L		--	--	<0.28	<0.28	0.69	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
bromoform	UG/L		--	--	<0.24	<0.24	0.83	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	<1
bromomethane	UG/L		--	--	<0.78	<0.78	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	<1
2-butanone (MEK)	UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	<5
carbon tetrachloride	UG/L		--	--	<0.34	<0.34	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.5
chlorobenzene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.25
chloroethane	UG/L		--	--	<0.51	<0.51	<0.5	<1	<0.5	<1	<1	<1	<1	< 1	<1.00	<1
2-chloroethyl vinyl ether	UG/L		--	--	<1.1	--	--	--	<2	--	<4	--	--	< 4	<4.00	<4.00
chloroform	UG/L		--	--	0.42	<0.25	0.38	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.25
chloromethane	UG/L		--	--	<0.5	<0.5	<0.5	<1	<0.2	<1	<1	<1	<1	< 1	<1.00	<1
dibromochloromethane	UG/L		--	--	<0.33	<0.33	1.1	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	--	--
1,1-dichloroethane	UG/L		--	--	<0.22	<0.22	<0.25	<0.5	<0.2	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.250	<0.25
1,2-dichloroethane	UG/L		--	--	<0.33	<0.33	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.5
1,1-dichloroethene	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.5	<1	<1	<1	<1	< 1	<1.00	<1
cis-1,2-dichloroethene	UG/L		--	--	<0.32	<0.32	<0.26	<0.5	<0.2	0.781 F	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
trans-1,2-dichloroethene	UG/L		--	--	<0.34	<0.34	<0.35	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
1,2-dichloropropane	UG/L		--	--	<0.27	<0.27	<0.25	<0.5	<0.2	<0.25	<0.4	<0.4	<0.4	< 0.4	<0.400	<0.4
cis-1,3-dichloropropene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
trans-1,3-dichloropropene	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<1	<1	<1	<1	< 1	<1.00	<1
ethylbenzene	UG/L		--	--	0.22	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
4-methyl-2-pentanone (MIBK)	UG/L		--	--	<2	<2	<2	<4	<0.5	<5	<5	<5	<5	< 5	<5.00	<5
methylene chloride	UG/L		--	--	<2	<2	<2	<4	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
1,1,2,2-tetrachloroethane	UG/L		--	--	<0.29	<0.29	<0.23	<0.5	<0.2	<0.4	<0.4	<0.4	<0.4	--	<0.500	<0.500
tetrachloroethene (PCE)	UG/L		--	--	<0.44	<0.44	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
toluene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.5	0.606 F	<0.5	< 0.5	<0.500	<0.5
1,1,1-trichloroethane	UG/L		--	--	<0.22	<0.22	<0.2	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.5
1,1,2-trichloroethane	UG/L		--	--	<0.29	<0.29	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
trichloroethene (TCE)	UG/L		--	--	0.8	<0.24	<0.26	<0.5	<0.2	1.43 F	<0.5	<0.5	<0.5	0.51 J	<0.500	<0.5
trichlorofluoromethane	UG/L		--	--	<0.4	<0.4	<0.5	<1	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	0.500 Q	<0.5
vinyl chloride	UG/L		--	--	<0.28	<0.28	<0.22	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
m- & p-xylene	UG/L		--	--	<0.34	<0.34	<0.32	<0.5	<0.4	--	<1	<1	<1	< 1	<1.00	<1
o-xylene	UG/L		--	--	<0.2	<0.2	<0.2	<0.5	<0.2	--	<0.5	<0.5	<0.5	< 0.5	<0.500	<0.5
xylene, total	UG/L		--	--	--	--	--	--	--	<1	--	--	--	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW07-09**

Metals

	OK WQS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		<0.0100	0.0025 J	--	--	--	--	--	<0.01	<0.1	--	<0.1	--	0.00779 J	<0.0100
arsenic	40	UG/L		--	--	<2	<2	<2	--	--	--	--	--	--	< 10	--	--
barium	1.00	MG/L		0.0949 J	0.201	--	--	--	--	--	0.0458	0.0879	--	0.0289	--	0.132	0.138
barium	1000	UG/L		--	--	172	127	107	--	--	--	--	--	--	82.2	--	--
cadmium	0.020	MG/L		<0.002	0.0006 J	--	--	--	--	--	<0.01	<0.02	--	<0.01	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	--
chromium, total	0.05	MG/L		<0.00500	0.0128	--	--	--	--	--	<0.02	<0.02	--	<0.02	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	2.3	<1	1.3	--	--	--	--	--	--	< 20	--	--
lead	0.100	MG/L		<0.00300	0	--	--	--	--	--	<0.01	<0.01	--	<0.1	--	0.00708 J	<0.0100
lead	100	UG/L		--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	--
mercury	0.002	MG/L		--	--	--	--	--	--	--	<0.0002	<0.0002	--	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	0.13	--	--	--	--	--	--	< 0.2	--	--
selenium	0.01	MG/L		0.00472 J	0.0034 J	--	--	--	--	--	0.0645 F	.00187 F	--	<0.001	--	0.00640	0.00701
selenium	10	UG/L		--	--	<2	<2	<2	--	--	--	--	--	--	5.79	--	--
silver	0.020	MG/L	1	--	--	--	--	--	--	--	<0.01	<0.01	--	<0.01	--	<0.0100	<0.0100
silver	20	UG/L	1	--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	--

Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	UG/L		--	--	<0.26	<0.26	<0.25	--	--	--	<0.25	--	<0.25	--	--	--
1,3-dichlorobenzene	UG/L		--	--	<0.29	<0.29	<0.2	--	--	--	<0.5	--	<0.5	--	--	--
1,4-dichlorobenzene	UG/L		--	--	<0.22	<0.22	<0.23	--	--	--	<0.25	--	<0.25	--	--	--
1,4-dioxane	UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--
hexachlorobutadiene	UG/L		--	--	--	--	--	--	--	--	<0.5	--	<0.5	--	--	--
naphthalene	UG/L		--	--	--	--	--	--	--	--	<0.4	--	<0.4	--	--	--
1,2,4-trichlorobenzene	UG/L		--	--	--	--	--	--	--	--	<0.4	--	<0.4	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW07-09**

Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	UG/L		8.93	5.36	<10	<10	<10	--	--	2.73 F	2.97 F	--	<5	< 5	<5.00 Q	17.0 J
benzene	UG/L		--	--	<0.21	<0.21	<0.2	--	--	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<1.62
bromodichloromethane	UG/L		--	--	<0.28	<0.28	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
bromoform	UG/L		--	--	<0.24	<0.24	<0.2	--	--	<1	<1	--	<1	< 1	<1.00	<1.62
bromomethane	UG/L		--	--	<0.78	<0.78	<0.5	--	--	<1	<1	--	<1	< 1	<1.00	3.24 Q
2-butanone (MEK)	UG/L		--	--	<2	<2	<2	--	--	<5	<5	--	<5	< 5	<5.00	<8.10
carbon tetrachloride	UG/L		--	--	<0.34	<0.34	<0.25	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
chlorobenzene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<1.62
chloroethane	UG/L		--	--	<0.51	<0.51	<0.5	--	--	<1	<1	--	<1	< 1	<1.00	<3.24
2-chloroethyl vinyl ether	UG/L		--	--	<1.1	--	--	--	--	--	<4	--	--	< 4	<4.00	<6.48
chloroform	UG/L		--	--	<0.25	<0.25	<0.22	--	--	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<1.62
chloromethane	UG/L		--	--	<0.5	<0.5	<0.5	--	--	<1	<1	--	<1	< 1	<1.00	<6.48
dibromochloromethane	UG/L		--	--	<0.33	<0.33	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	--	<1.62
1,1-dichloroethane	UG/L		--	--	<0.22	<0.22	<0.25	--	--	<0.25	<0.25	--	<0.25	< 0.25	<0.250	<1.62
1,2-dichloroethane	UG/L		--	--	<0.33	<0.33	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<3.24
1,1-dichloroethene	UG/L		--	--	<0.29	<0.29	<0.23	--	--	<1	<1	--	<1	< 1	<1.00	<1.62
cis-1,2-dichloroethene	UG/L		--	--	<0.32	<0.32	<0.26	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
trans-1,2-dichloroethene	UG/L		--	--	<0.34	<0.34	<0.35	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
1,2-dichloropropane	UG/L		--	--	<0.27	<0.27	<0.25	--	--	<0.25	<0.4	--	<0.4	< 0.4	<0.400	<1.62
cis-1,3-dichloropropene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
trans-1,3-dichloropropene	UG/L		--	--	<0.22	<0.22	<0.2	--	--	<1	<1	--	<1	< 1	<1.00	<1.62
ethylbenzene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
4-methyl-2-pentanone (MIBK)	UG/L		--	--	<2	<2	<2	--	--	<5	<5	--	<5	< 5	<5.00	<8.10
methylene chloride	UG/L		--	--	<2	<2	<2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<3.24
1,1,2,2-tetrachloroethane	UG/L		--	--	<0.29	<0.29	<0.23	--	--	<0.4	<0.4	--	<0.4	--	<0.500	<1.62
tetrachloroethene (PCE)	UG/L		--	--	<0.44	<0.44	<0.25	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
toluene	UG/L		--	--	20.2	<0.2	0.27	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
1,1,1-trichloroethane	UG/L		--	--	<0.22	<0.22	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
1,1,2-trichloroethane	UG/L		--	--	<0.29	<0.29	<0.22	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
trichloroethene (TCE)	UG/L		--	--	<0.24	<0.24	<0.26	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
trichlorofluoromethane	UG/L		--	--	<0.4	<0.4	<0.5	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
vinyl chloride	UG/L		--	--	<0.28	<0.28	<0.22	--	--	<0.5	<0.5	--	<0.5	< 0.5	<0.500	<1.62
m- & p-xylene	UG/L		--	--	<0.34	<0.34	<0.32	--	--	--	<1	--	<1	< 1	<1.00	<1.62
o-xylene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	--	<0.5	--	<0.5	< 0.5	<0.500	<1.62
xylene, total	UG/L		--	--	--	--	--	--	--	<1	--	--	--	--	<1.00	<1.62

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW07-10**

Metals

	OK QWS	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
arsenic	0.04	MG/L		--	--	--	--	--	--	--	<0.01	<0.1	--	<0.1	--	<0.0200	<0.0100
arsenic	40	UG/L		--	--	<2	<2	<2	--	--	--	--	--	--	< 10	--	
barium	1.00	MG/L		0.108 J	0.0547 J	--	--	--	--	--	0.0307	0.0473	--	0.0604	--	0.0573	0.116
barium	1000	UG/L		--	--	143	68.2	42.7	--	--	--	--	--	--	70.5	--	
cadmium	0.020	MG/L		--	--	--	--	--	--	--	<0.01	<0.02	--	<0.01	--	<0.0200	<0.0100
cadmium	20	UG/L		--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	
chromium, total	0.05	MG/L		<0.00500	0.0037 J	--	--	--	--	--	<0.02	<0.02	--	<0.02	--	<0.0200	<0.0200
chromium, total	50	UG/L		--	--	<1	<1	1.3	--	--	--	--	--	--	< 20	--	
lead	0.100	MG/L		0.00251 J	<0.003	--	--	--	--	--	<0.01	<0.01	--	<0.1	--	0.00541 J	<0.0100
lead	100	UG/L		--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	
mercury	0.002	MG/L		--	--	--	--	--	--	--	<0.0002	<0.0002	--	<0.0002	--	<0.000200	<0.000200
mercury	2	UG/L		--	--	<0.071	<0.071	<0.05	--	--	--	--	--	--	< 0.2	--	
selenium	0.01	MG/L		0.00240 J	0.0028 J	--	--	--	--	--	.00096 F	00734 F	--	00554 F	--	0.00293	0.00657
selenium	10	UG/L		--	--	<2	<2	<2	--	--	--	--	--	--	2.21	--	
silver	0.020	MG/L	1	--	--	--	--	--	--	--	<0.01	<0.01	--	<0.01	--	<0.0100	<0.0100
silver	20	UG/L	1	--	--	<1	<1	<1	--	--	--	--	--	--	< 10	--	

Semi-Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
1,2-dichlorobenzene	UG/L		--	--	<0.26	<0.26	<0.25	--	--	--	<0.25	--	<0.25	--	--	--
1,3-dichlorobenzene	UG/L		--	--	<0.29	<0.29	<0.2	--	--	--	<0.5	--	<0.5	--	--	--
1,4-dichlorobenzene	UG/L		--	--	<0.22	<0.22	<0.23	--	--	--	<0.25	--	<0.25	--	--	--
1,4-dioxane	UG/L		--	--	--	--	--	--	--	<100	--	--	--	--	--	--
hexachlorobutadiene	UG/L		--	--	--	--	--	--	--	--	<0.5	--	<0.5	--	--	--
naphthalene	UG/L		--	--	--	--	--	--	--	--	<0.4	--	<0.4	--	--	--
1,2,4-trichlorobenzene	UG/L		--	--	--	--	--	--	--	--	<0.4	--	<0.4	--	--	--

**Surface Water Analytical Data Summary – 2009 to Present
Vance Air Force Base**

**IZ - Industrial Zone
Surface Water SW07-10**

Volatile Organic Compound

	Units	Notes	Apr-09	Oct-09	May-10	Oct-10	May-11	Oct-11	Oct-12	May-13	Nov-13	Apr-14	Nov-14	May-15	June-16	June-17
acetone	UG/L		8.53	6.74	<10	<10	<10	--	--	3.04 F	4.4 F	--	<5	3.48 J	5.00 Q	6.38 J
benzene	UG/L		--	--	<0.21	<0.21	<0.2	--	--	<0.25	<0.25	--	<0.25	< 0.25	0.250 Q	<0.250
bromodichloromethane	UG/L		--	--	<0.28	<0.28	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
bromoform	UG/L		--	--	<0.24	<0.24	<0.2	--	--	<1	<1	--	<1	< 1	1.00 Q	<1.00
bromomethane	UG/L		--	--	<0.78	<0.78	<0.5	--	--	<1	<1	--	<1	< 1	1.00 Q	<1.00
2-butanone (MEK)	UG/L		--	--	<2	<2	<2	--	--	<5	<5	--	<5	< 5	5.00 Q	<5.00
carbon tetrachloride	UG/L		--	--	<0.34	<0.34	<0.25	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
chlorobenzene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.25	<0.25	--	<0.25	< 0.25	0.250 Q	<0.250
chloroethane	UG/L		--	--	<0.51	<0.51	<0.5	--	--	<1	<1	--	<1	< 1	1.00 Q	1.00 Q
2-chloroethyl vinyl ether	UG/L		--	--	<1.1	--	--	--	--	--	<4	--	--	< 4	4.00 Q	<4.00
chloroform	UG/L		--	--	<0.25	<0.25	<0.22	--	--	<0.25	<0.25	--	<0.25	< 0.25	0.250 Q	<0.250
chloromethane	UG/L		--	--	<0.5	<0.5	<0.5	--	--	<1	<1	--	<1	< 1	1.00 Q	<1.00
dibromochloromethane	UG/L		--	--	<0.33	<0.33	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.250 Q	--
1,1-dichloroethane	UG/L		--	--	<0.22	<0.22	<0.25	--	--	<0.25	<0.25	--	<0.25	< 0.25	1.00 Q	<0.250
1,2-dichloroethane	UG/L		--	--	<0.33	<0.33	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
1,1-dichloroethene	UG/L		--	--	<0.29	<0.29	<0.23	--	--	<1	<1	--	<1	< 1	1.00 Q	<1.00
cis-1,2-dichloroethene	UG/L		--	--	<0.32	<0.32	<0.26	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
trans-1,2-dichloroethene	UG/L		--	--	<0.34	<0.34	<0.35	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
1,2-dichloropropane	UG/L		--	--	<0.27	<0.27	<0.25	--	--	<0.25	<0.4	--	<0.4	< 0.4	0.400 Q	<0.400
cis-1,3-dichloropropene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
trans-1,3-dichloropropene	UG/L		--	--	<0.22	<0.22	<0.2	--	--	<1	<1	--	<1	< 1	1.00 Q	<1.00
ethylbenzene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
4-methyl-2-pentanone (MIBK)	UG/L		--	--	<2	<2	<2	--	--	<5	<5	--	<5	< 5	5.00 Q	<5.00
methylene chloride	UG/L		--	--	<2	<2	<2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
1,1,2,2-tetrachloroethane	UG/L		--	--	<0.29	<0.29	<0.23	--	--	<0.4	<0.4	--	<0.4	--	0.500 Q	<0.500
tetrachloroethene (PCE)	UG/L		--	--	<0.44	<0.44	<0.25	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
toluene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
1,1,1-trichloroethane	UG/L		--	--	<0.22	<0.22	<0.2	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
1,1,2-trichloroethane	UG/L		--	--	<0.29	<0.29	<0.22	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
trichloroethene (TCE)	UG/L		--	--	<0.24	<0.24	<0.26	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
trichlorofluoromethane	UG/L		--	--	<0.4	<0.4	<0.5	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
vinyl chloride	UG/L		--	--	<0.28	<0.28	<0.22	--	--	<0.5	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
m- & p-xylene	UG/L		--	--	<0.34	<0.34	<0.32	--	--	--	<1	--	<1	< 1	1.00 Q	<1.00
o-xylene	UG/L		--	--	<0.2	<0.2	<0.2	--	--	--	<0.5	--	<0.5	< 0.5	0.500 Q	<0.500
xylene, total	UG/L		--	--	--	--	--	--	--	<1		--	--	--	1.00 Q	<1.00

Surface Water Analytical Data Summary – 2009 to Present Vance Air Force Base

Notes:

Blank results indicate sample not collected and/or parameter not analyzed.

OK WQS = Appendix G. Numerical Criteria to Protect Beneficial Uses, Table 2, and Appendix I. Criteria for Groundwater Protection, Oklahoma Water Quality Standards, Oklahoma Water Resources Board, Sept. 11, 2017.

J = Parameter detected between the limit of detection and the limit of quantitation.

Q = One or more quality control criteria failed.

Bold = Compound detected at or above the limit of detection.

Shading = MCL or RSL-Tapwater Exceedance.

* = SW03-11 DUP sample results used.