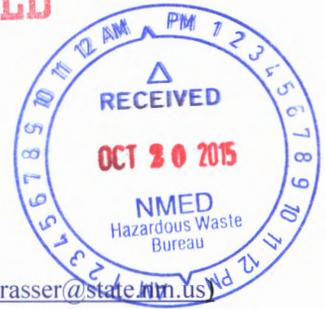




DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

ENTERED



(Via e-mail david.strasser@state.nm.us)

October 6, 2015

Mr. David Strasser
New Mexico Environmental Department
5500 San Antonio Dr., NE
Albuquerque, NM 87109

Re: Letter Report for OT-32 (AOC-PRI-A)
EPA ID# NM6572124422, HWB-HAFB-12-017
Holloman Air Force Base, Alamogordo, New Mexico
Contract No. FA8903-13-C-0008

Dear Mr. Strasser:

FPM Remediations/URS Group, Inc. (URS) is tasked by the Air Force Civil Engineer Center (AFCEC) with achieving Corrective Action Complete (CAC) without Controls at the Primate Research Lab Sewer Line (Environmental Restoration Program [ERP] Site OT-32, AOC-PRI-A) located at Holloman Air Force Base (AFB) (**Figure 1**).

URS has reviewed the New Mexico Environmental Department (NMED) *Notice of Disapproval (NOD)* dated September 18, 2014 for the *Accelerated Corrective Measures (ACM) Completion Report* (Bhate 2012) and understands that the rationale for the Disapproval is based upon:

- Detection of 1,1-dichloroethene (1,1-DCE) in monitoring well OT32-TMW09 (TMW09) at 18 micrograms per liter (ug/L) in 2007, in exceedance of the New Mexico Water Quality Control Commission (NMWQCC) groundwater standard of 5 ug/L, and
- Questionable groundwater flow direction as depicted in the *ACM Completion Report*.

The chronology of the site has been recorded in the following documents:

- *ACM Completion Report* (Bhate, September 2012)
- *NOD – ACM Completion Report* (NMED, September 18, 2014)
- *Letter Response to the NOD*: Proposal for additional groundwater sampling and Request for Extension of Work Plan deadline (Holloman AFB, October 2, 2014)
- *Response to the NOD*, Approval of additional groundwater sampling and Extension of Work Plan Deadline (NMED, December 5, 2014)
- *Letter Work Plan for OT-32*, and reporting of October 2014 analytical data (Holloman AFB, February 5, 2015)
- *Second Response to the NOD*, and Approval of the *Letter Work Plan* including a second quarter of groundwater sampling (NMED, March 3, 2015)

URS has evaluated the data available for this Site and provided a *Letter Work Plan* (February 3, 2015) to NMED that described supplemental groundwater monitoring, and included analytical results from October 2014 and revised potentiometric maps. URS has subsequently taken action to gather the additional quarter of groundwater data stipulated in NMED's *Second Response to the NOD* (March 3, 2015).

The October 2014 sampling event documented in the *Letter Work Plan* (February 5, 2015) represents the first quarterly sampling event, conducted prior to NMED's approval of the *Letter Work Plan* as an attempt to meet NMED's timeline. The second sampling event was conducted in July 2015, with analytical results documented below. In conjunction with the 2014 and 2015 groundwater sampling events, new water-level measurements from the 12 site monitoring wells were also collected and updated potentiometric surface maps were created for the site.

Site Description and Previous Investigations

OT-32 is located along the waste discharge sewer line of the former Primate Research Institute (PRI). The former PRI was located on Douglas Road, near the intersection with Vandergrift Road, approximately 2 miles north of the Main Base Area (**Figure 1**). For a detailed history and description of the Site, refer to the *ACM Completion Report* (Bhate 2012).

In 2007, 12 soil borings were drilled along 2,600 feet of the sewer line and completed as temporary groundwater monitoring wells. The temporary wells were surveyed to evaluate hydraulic conditions at the site, and sampled for laboratory analysis. Results of the 2007 groundwater monitoring investigation indicated one elevated concentration of 1,1-DCE in well TMW09 at 18 ug/L (**Table 1 and Figure 2**). All other analytes were below the applicable groundwater standards. The groundwater flow direction illustrated in the *ACM Completion Report* (Bhate 2012) indicated groundwater flow to the south.

Evaluation of 1,1-DCE in Groundwater

URS re-evaluated the potentiometric data presented in the *ACM Completion Report* (Bhate 2012), and believe the data were contoured incorrectly (variable contour intervals and lack of a holistic approach). The data were re-contoured using the same potentiometric data and applying standard rules of contouring. The resulting potentiometric surface indicates that groundwater flows to the southwest, consistent with the flow direction observed at other locations in this area of Holloman AFB (**Figure 2**).

In October 2014, a URS field team collected new water-level measurements at OT-32, as well as a groundwater sample for VOC analysis from the TMW09 well that reported an elevated 1,1-DCE concentration in 2007. In addition to TMW09, surrounding wells TMW08 and TMW10 were also sampled and analyzed for VOCs to confirm that elevated concentrations of 1,1-DCE are limited to TMW09. All 12 temporary monitoring wells were also re-surveyed because of uncertainties in the existing survey data, and the new potentiometric data were contoured to determine the Site's groundwater flow direction. These data were previously provided to NMED in the *Letter Work Plan* (February 5, 2015), and are included here in **Table 1** and **Figure 3**.

In July 2015, URS mobilized to Holloman AFB to conduct the second round of groundwater sampling required for OT32-TMW09. Groundwater samples were collected from the monitoring well and submitted for laboratory analysis of VOCs and Total Dissolved Solids (TDS). In addition to sample collection at TMW09, groundwater levels were once again measured at all site monitoring wells.

The October 2014 and July 2015 potentiometric data confirm that groundwater at OT-32 flows to the southwest (**Figures 3 and 4**), consistent with the re-contoured data from 2007 (**Figure 2**). Analytical results from 2014 and 2015 (**Table 1**) indicate that 1,1-DCE is still present in TMW09 (12 and 7.5 ug/L, respectively), but that the concentration has decreased by approximately 58 percent over the last 8 years. Groundwater analysis at adjacent wells TMW08 and TMW10 did not detect any VOCs above the 0.5 ug/L Limit of Detection (**Table 1**) in the October 2014 sampling event, consistent with the data reported in 2007 (**Figure 2**). TDS were also evaluated in 2007 from these three wells, with concentrations ranging from 13,000 to 14,000 milligrams per liter (mg/L) (Bhate 2012). In the July 2015 sampling event for TMW09, the TDS concentration was 14,000 mg/L, greater than the 10,000 mg/L threshold the NMED Groundwater Quality Bureau uses to regulate groundwater.

Based on these data, the extent of 1,1-DCE is localized, attenuating, and approaching the relevant NMWQCC standard.

Reporting

This brief letter report includes analytical results for TMW09 from 2007, 2014, and 2015 (**Table 1**), as well as updated potentiometric surface maps (**Figures 2 through 4**). As indicated in the 2014 *NOD*, following receipt of the report, “NMED will make a decision regarding the need for future site characterization activities.”

If you have any questions, please don't hesitate to contact me at 575-572-6675 or the URS Project Manager, Brian Powers at (303) 740-3924.

Sincerely,

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DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USAF, cn=KUSMAK.ADAM.M.1263331806
Date: 2015.10.15 13:03:01 -06'00'

Adam M. Kusmak, GS-13, USAF

Chief, Installation Management Flight (49 CES/CEI) 49th Civil Engineer Squadron (49 CES)
Holloman Air Force Base, NM

Attachments

Tables:

Table 1 – Summary of OT-32 Analytical Results

Figures:

Figure 1 – OT-32 Site Location Map

Figure 2 – OT-32 Potentiometric Surface (Re-contoured) and 1,1-DCE Analytical Results (July 2007)

Figure 3 – OT-32 Potentiometric Surface and 1,1-DCE Analytical Results (October 2014)

Figure 4 – OT-32 Potentiometric Surface and 1,1-DCE Analytical Results (July 2015)

cc: Brian Renaghan, AFCEC
DeAnna Rothaupt, Holloman AFB
Wayne Bitner, Kirtland AFB
Cole Crosgrove, Kirtland AFB
Scott Clark, Kirtland AFB
Victoria Branson, Kirtland AFB
Brian Powers, URS

Table 1 - Summary of OT-32 Analytical Results

Field Sample ID Date Collected Analyte	Units	Groundwater Standard	Groundwater Standard Source	OT32-TMW09 7/20/2007					H-OT32-TMW09-NT01 10/26/2014					H-OT032-TMW09-NT01 7/22/2015				
				Result	Qualifier	MDL	RL	LOD	Result	Qualifier	MDL	RL	LOD	Result	Qualifier	MDL	RL	LOD
				Total Dissolved Solids	mg/L	10000	NMWQCC	13000		47	100	na	na		na	na	na	14000
1,1,2-Trichloroethane	ug/L	5	USEPA	0.55	J	0.32	1	na	<0.5		0.38	1	0.5	<0.5		0.38	1	0.5
1,1-Dichloroethane	ug/L	25	NMWQCC	10		0.16	1	na	7.3		0.26	1	0.5	6.8		0.26	1	0.5
1,1-Dichloroethene	ug/L	5	NMWQCC	18		0.14	1	na	12		0.4	1	0.5	7.5		0.4	1	0.5
1,4-Dichlorobenzene	ug/L	75	USEPA	0.6	J	0.16	1	na	<0.5		0.27	1	0.5	<0.5		0.27	1	0.5
Benzene	ug/L	5	USEPA	0.49	J	0.16	1	na	<0.5		0.33	1	0.5	0.35	F	0.33	1	0.5
Chloroform	ug/L	80	USEPA	17		0.16	1	na	9.3		0.32	5	2.5	<10		10	10	10
Methylene Chloride	ug/L	5	USEPA	0.51	J	0.32	5	na	<2.5		1	5	2.5	<2.5		1	5	2.5
p-Isopropyltoluene	ug/L	na	na	0.18	J	0.17	1	na	<0.5		0.35	1	0.5	<0.5		0.35	1	0.5
Trichloroethylene	ug/L	5	USEPA	0.18	J	0.16	1	na	<0.5		0.4	1	0.5	<0.5		0.4	1	0.5

Field Sample ID Date Collected Analyte	Units	Groundwater Standard	Groundwater Standard Source	H-OT32-TMW08-NT01 10/26/2014					H-OT32-TMW10-NT01 10/26/2014				
				Result	Qualifier	MDL	RL	LOD	Result	Qualifier	MDL	RL	LOD
				Total Dissolved Solids	mg/L	10000	NMWQCC	na		na	na	na	na
1,1,2-Trichloroethane	ug/L	5	USEPA	<0.5		0.38	1	0.5	<0.5		0.38	1	0.5
1,1-Dichloroethane	ug/L	25	NMWQCC	<0.5		0.26	1	0.5	<0.5		0.26	1	0.5
1,1-Dichloroethene	ug/L	5	NMWQCC	<0.5		0.4	1	0.5	<0.5		0.4	1	0.5
1,4-Dichlorobenzene	ug/L	75	USEPA	<0.5		0.27	1	0.5	<0.5		0.27	1	0.5
Benzene	ug/L	5	USEPA	<0.5		0.33	1	0.5	<0.5		0.33	1	0.5
Chloroform	ug/L	80	USEPA	<2.5		0.32	5	2.5	0.98	F	0.32	5	2.5
Methylene Chloride	ug/L	5	USEPA	<2.5		1	5	2.5	<2.5		1	5	2.5
p-Isopropyltoluene	ug/L	na	na	<0.5		0.35	1	0.5	<0.5		0.35	1	0.5
Trichloroethylene	ug/L	5	USEPA	<0.5		0.4	1	0.5	<0.5		0.4	1	0.5

Notes:

Bold values indicate analytical results above the associated standards.

mg/L = milligrams per liter

µg/L = micrograms per liter

<0.5 = Analyte not detected above the LOD

na = Not Applicable

MDL = method detection limit

RL = reporting limit

LOD = limit of detection

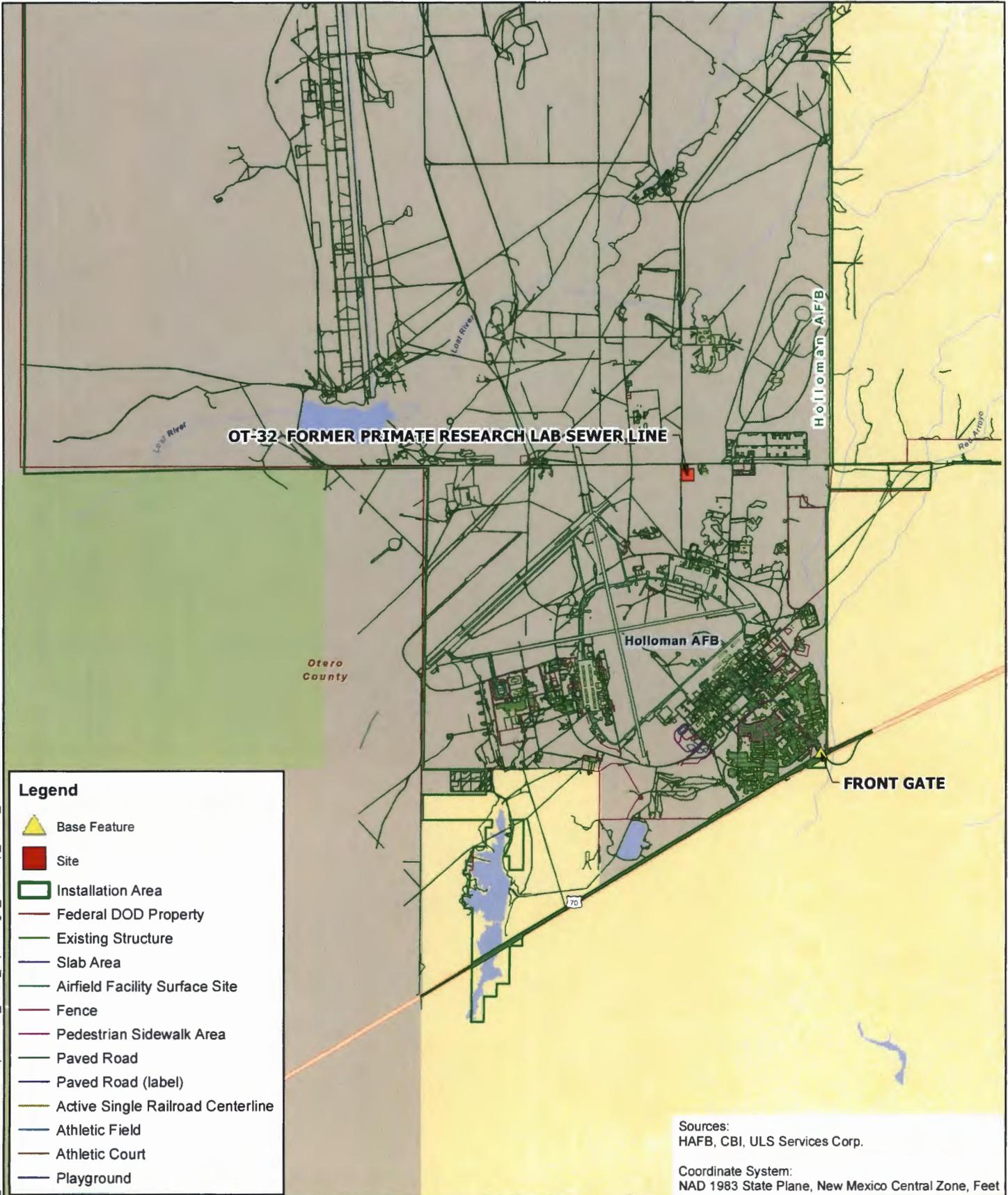
NMWQCC = New Mexico Water Quality Control Commission; NMAC 20.6.2.3103-Domestic & Agricultural water; New Mexico Human Health Standards, Other Standards for Domestic Water Supply, and Agricultural Standards (NMAC 2013)

USEPA = United States Environmental Protection Agency; USEPA Maximum Contaminant Level for Drinking Water (USEPA 2013)

Qualifiers:

J = Estimated Result. Result is less than the RL.

F = Estimated result between the MDL and the RL

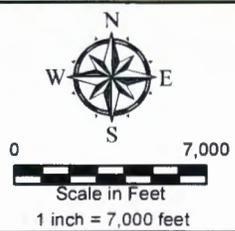


Legend

- Base Feature
- Site
- Installation Area
- Federal DOD Property
- Existing Structure
- Slab Area
- Airfield Facility Surface Site
- Fence
- Pedestrian Sidewalk Area
- Paved Road
- Paved Road (label)
- Active Single Railroad Centerline
- Athletic Field
- Athletic Court
- Playground

Sources:
HAFB, CBI, ULS Services Corp.

Coordinate System:
NAD 1983 State Plane, New Mexico Central Zone, Feet



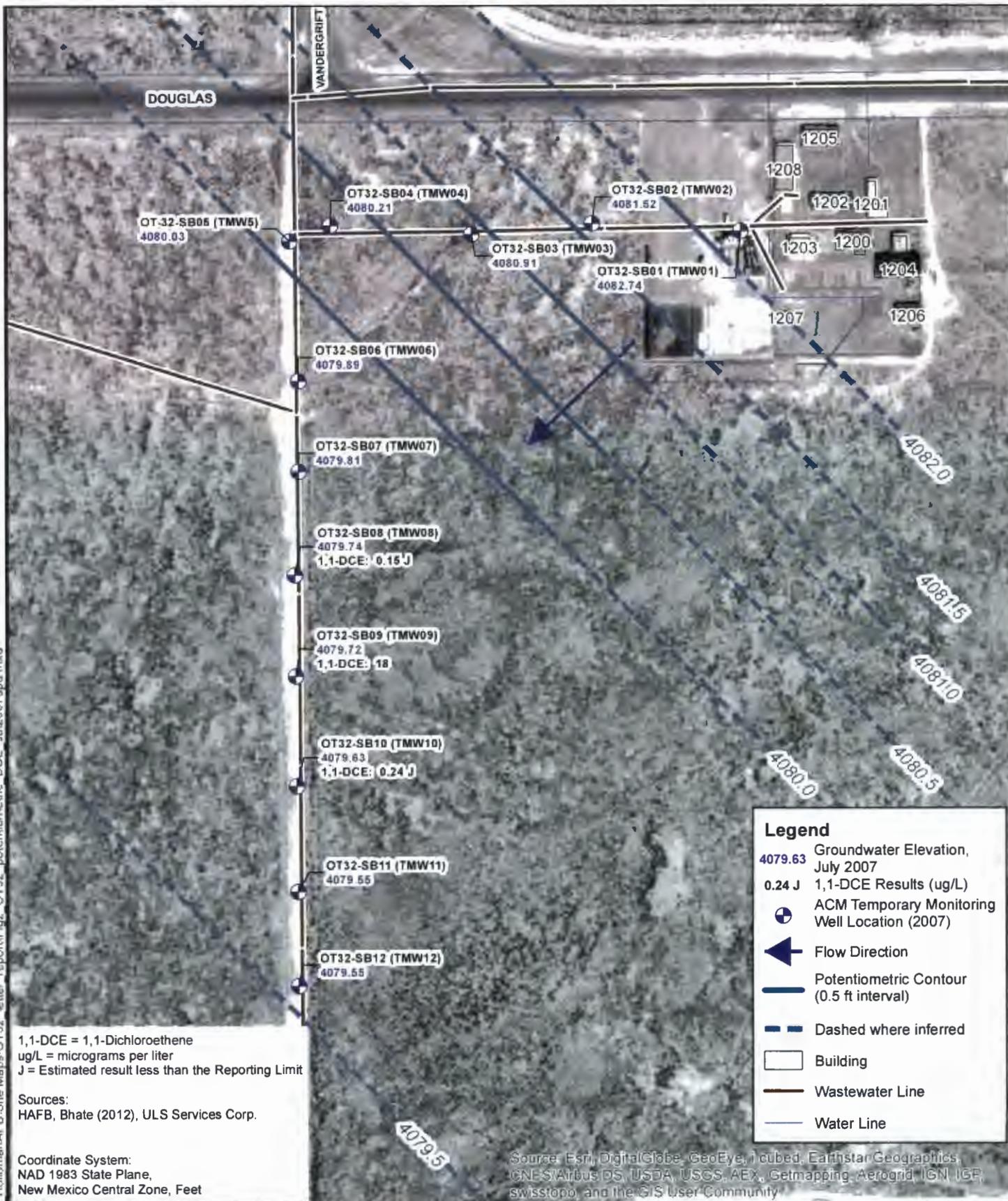
Designed	JDM
Drawn	LED
Checked	DAE
Peer Review	DAE
Project Manager	BGP
Project Number	23446543

Figure 1

OT-32 Site Location Map

Holloman Air Force Base

USAF September 22, 2015



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1,1-DCE = 1,1-Dichloroethene
 ug/L = micrograms per liter
 J = Estimated result less than the Reporting Limit

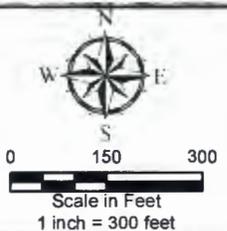
Sources:
 HAFB, Bhate (2012), ULS Services Corp.

Coordinate System:
 NAD 1983 State Plane,
 New Mexico Central Zone, Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- 4079.63 Groundwater Elevation, July 2007
- 0.24 J 1,1-DCE Results (ug/L)
- ⊕ ACM Temporary Monitoring Well Location (2007)
- ← Flow Direction
- Potentiometric Contour (0.5 ft interval)
- - - Dashed where inferred
- ▭ Building
- Wastewater Line
- Water Line

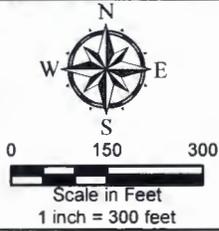
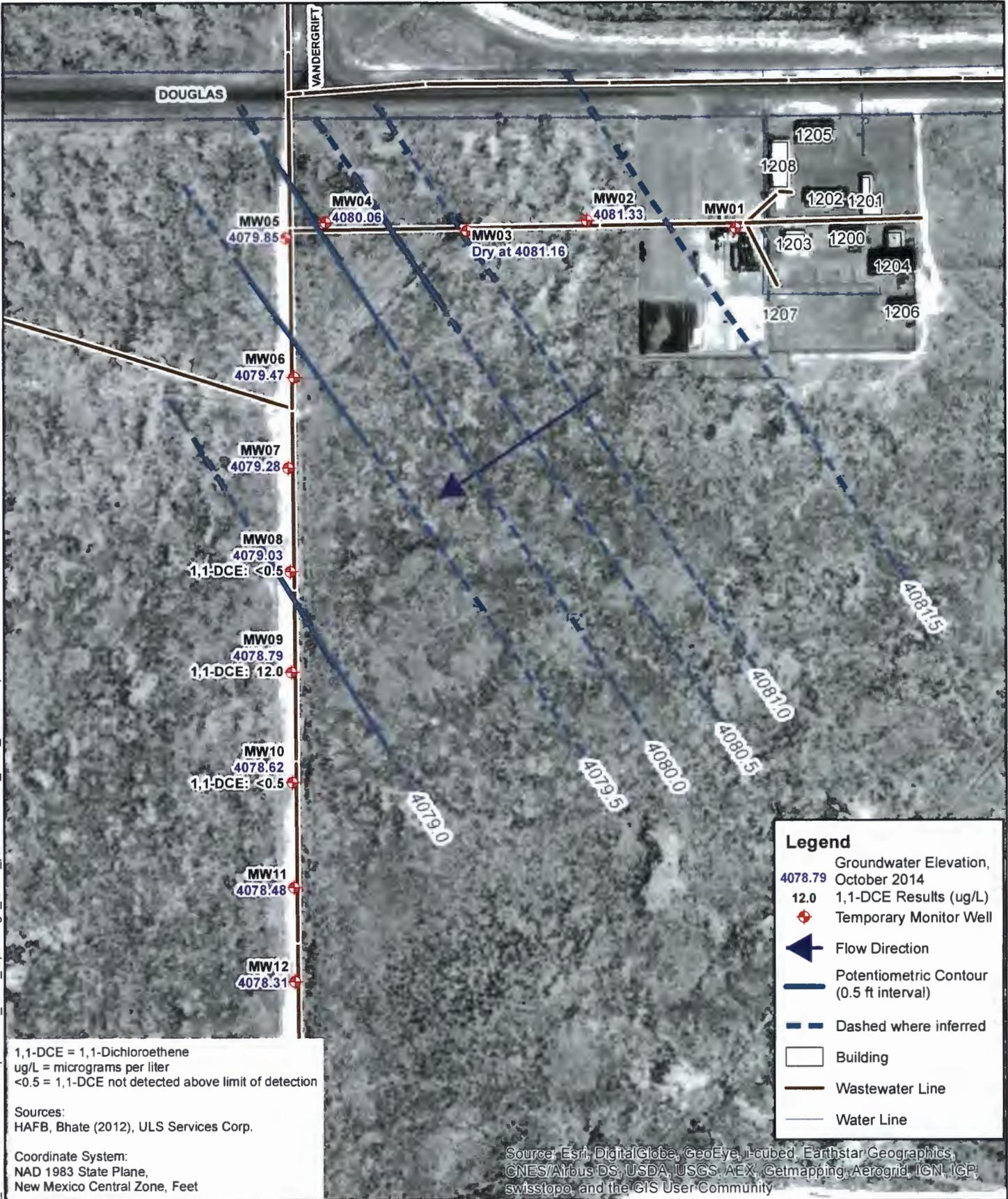


Designed	JDM
Drawn	LED
Checked	MEH
Peer Review	DAE
Project Manager	BGP
Project Number	23446543

Figure 2
Former Primate Research Lab
OT-32
Potentiometric Surface (Re-contoured) and
1,1-DCE Analytical Results (July 2007)

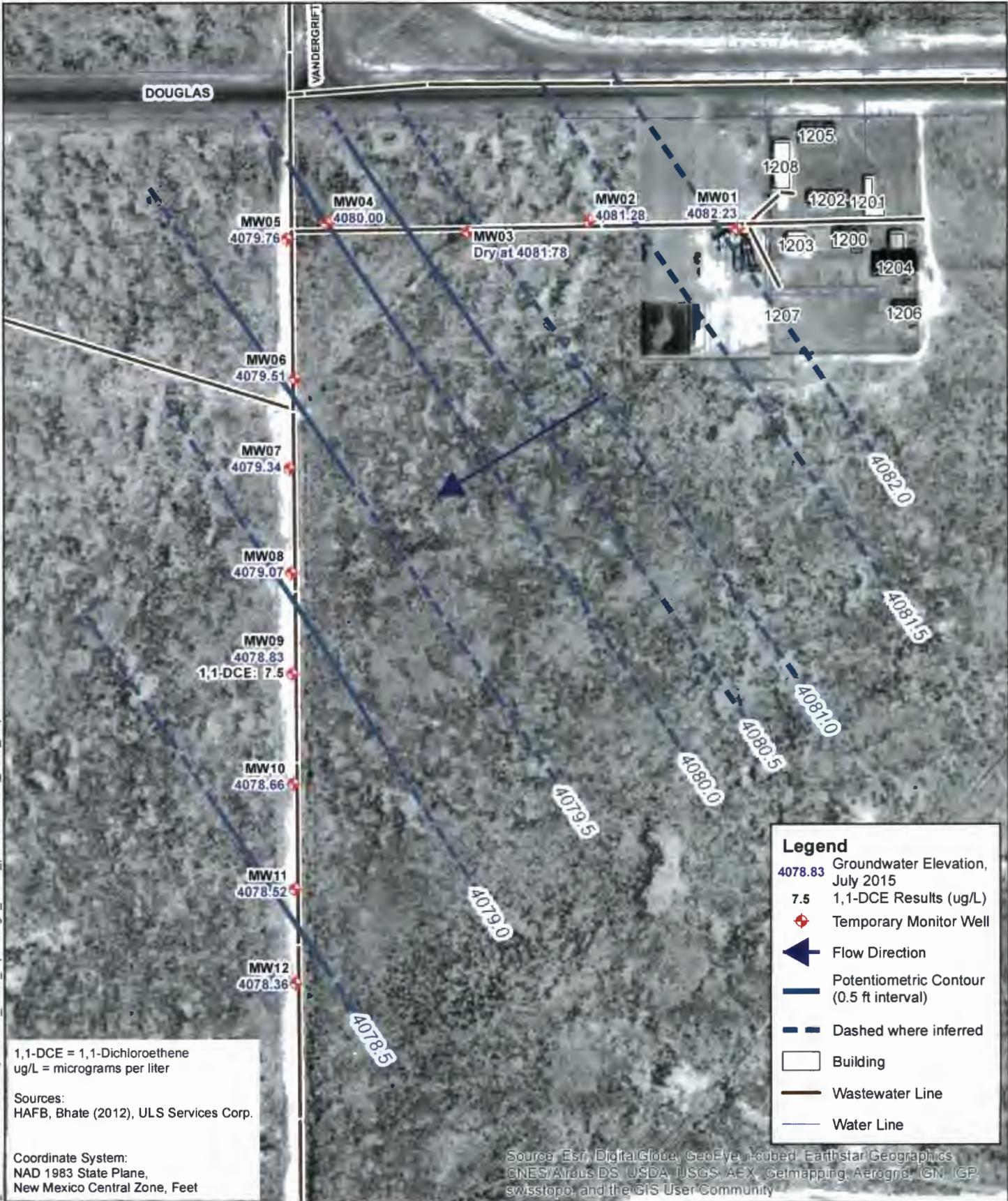
Holloman Air Force Base
USAF September 22, 2015

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Peer Review	DAE
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Project Number	23446543

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1,1-DCE = 1,1-Dichloroethene
 ug/L = micrograms per liter

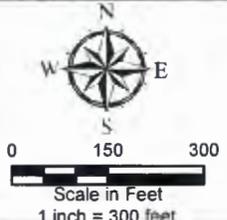
Sources:
 HAFB, Bhate (2012), ULS Services Corp.

Coordinate System:
 NAD 1983 State Plane,
 New Mexico Central Zone, Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar/Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Geomapping, AeroGrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- 4078.83 Groundwater Elevation, July 2015
- 7.5 1,1-DCE Results (ug/L)
- Temporary Monitor Well
- Flow Direction
- Potentiometric Contour (0.5 ft interval)
- Dashed where inferred
- Building
- Wastewater Line
- Water Line



Designed	JDM
Drawn	LED
Checked	MEH
Peer Review	DAE
Project Manager	BGP
Project Number	23446543

Figure 4
Former Primate Research Lab
OT-32
Potentiometric Surface and
1,1-DCE Analytical Results (July 2015)

Holloman Air Force Base
USAF September 22, 2015