HEALTH, SAFETY, ENVIRONMENTAL AND REMEDIATION WEEKLY REPORT
Williams AFB ST012

Site No.: 9101-11-0001

Week Ending 19 August 2016

I. SITE SUBCONTRACTOR SUMMARY

Company	Sat	Sun	Mon	Tue	Wed	Thu	Fri
Amec Foster Wheeler			X	X	X	X	X
Terra Therm							
MP Environmental							
Yellow Jacket							

II. SCHEDULE / SITE ACTIVITIES REVIEW

A. SEE Demolition - None

B. Well Drilling and Development - None

C. EBR Construction - None

D. Sampling/Monitoring

- Perimeter well monitoring
- SEE/EBR well LNAPL monitoring/removal

E. SVE System Operation/Optimization

- Routine operation
- Operated the flame-oxidizer on SVE wells in parallel with the thermal oxidizer.
    1. Thermal oxidizer shut down with a high LEL alarm 15 August 2016. Cause determined to be weather.
    2. Flame oxidizer shut down with flame failure alarm four times between 15 August and 17 August. Cause determined to be weather (strong winds).

III. SVE OPERATING DATA

A. Thermal Oxidizer Destruction Efficiency/Mass Removal Summary

The destruction efficiency and mass removal calculations for the thermal oxidizer are tabulated below. A correction factor was applied to PID readings based on available analytical data and corresponding PID data. This factor is updated each time new analytical data is available and may retroactively alter previously reported data.

Date Period Began	Date Period Ended	Days in Period	Time Thermal Oxidizer Operated	Thermal Oxidizer Uptime	Date of Influent Laboratory TPH Result	Influent Concentration (PID)	Influent Concentration (Adjusted PID)[c]	Effluent Concentration (PID)	Effluent Concentration (Adjusted PID)	Calculated Destruction Efficiency[a]	Flowrate into Oxidizer (End of Period)	Estimated VOC Mass Removed[b]	Average Daily Removal Rate[b]	Estimated VOC Mass Released to Atmosphere[b]	Average VOC Mass Released to Atmosphere[b]
---	---	days	hrs	%		ppmv	mg/m^3	ppmv	mg/m^3	%	scfm	lbs/period	lbs/day	lbs/period	lbs/day
4/7/2016	4/15/2016	9	112	52%	3/11/2016	560	56,313	4.6	4.2	99.99%	1,396	32,984	3,665	2	0.27
4/15/2016	4/21/2016	7	147	88%	3/11/2016	342	34,391	1.0	0.9	100.00%	1,571	29,743	4,249	0.8	0.11
4/21/2016	4/29/2016	9	188	87%	4/25/2016	296	7,980	2.6	2.4	99.97%	1,396	7,846	872	2.3	0.26
4/29/2016	5/5/2016	7	130	77%	4/25/2016	179	4,826	1.6	1.5	99.97%	1,396	3,281	469	1.0	0.14
5/5/2016	5/20/2016	16	323	84%	4/25/2016	394	10,622	0.5	0.5	100.00%	1,047	13,457	841	0.6	0.04
5/20/2016	5/26/2016	7	146	87%	5/23/2016	699	18,340	42.2	38	99.79%	698	7,002	1,000	14.6	2.09
5/26/2016	6/2/2016	8	166	86%	5/23/2016	340	9,166	62.2	56	99.38%	698	3,979	497	24.5	3.06
6/2/2016	6/10/2016	9	164	76%	6/9/2016	679	17,325	1.2	1.1	99.99%	1,309	13,933	1,548	0.9	0.10
6/10/2016	6/17/2016	8	167	87%	6/9/2016	462	11,788	12.7	12	99.90%	1,047	7,721	965	7.5	0.94
6/17/2016	6/24/2016	8	165	86%	6/9/2016	179	4,567	0.6	0.5	99.99%	1,466	4,139	517	0.5	0.06
6/24/2016	6/27/2016	4	74	77%	6/27/2016	431	4,850	0.0	0.0	100.00%	1,920	2,581	645	0.0	0.00
6/27/2016	6/29/2016	3	47	65%	6/27/2016	N/A	4,850	N/A	0.0	100.00%	1,152	984	328	0.0	0.00
6/29/2016	7/8/2016	10	215	90%	6/27/2016	697	7,843	0.2	0.8	99.99%	524	3,310	331	0.3	0.03
7/8/2016	7/14/2016	7	128	76%	7/12/2016	1080	24,311	1.3	5.1	99.98%	489	5,700	814	1.2	0.17
7/14/2016	7/22/2016	9	56	26%	7/12/2016	848	19,088	7.6	30	99.85%	698	2,795	311	4.3	0.48
7/22/2016	7/29/2016	8	163	85%	7/26/2016	636	19,714	10.2	40	99.80%	628	7,560	945	15.2	1.90
7/29/2016	8/4/2016	7	84	50%	7/26/2016	681	21,109	1.5	6	99.97%	1,466	9,737	1,391	2.7	0.38
8/4/2016	8/11/2016	8	168	88%	7/26/2016	475	14,724 *	1.2	5	99.97%	698	6,468	809	2.0	0.26
8/11/2016	8/18/2016	8	120	63%	7/26/2016	476	14,755 *	1.6	6	99.96%	768	5,094	637	2.1	0.27

Notes:
% - percent
hrs - hours
JP-4 - jet petroleum fuel grade four
lbs - pounds
mg/m^3 - milligrams per cubic meter
ppmv - parts per million by volume
scfm - standard cubic feet per minute

TPH - total petroleum hydrocarbons
PID - photoionization detector
SVE - soil vapor compound
VOC - volatile organic compound
* Concentration and associated calculated values may change after receipt of subsequent analytical data.

(a) Calculated destruction efficiencies are calculated using a single sampling event for each quarter, not using the average influent and effluent results.
(b) Mass and volumes are calculated based on laboratory data for TPH reported as JP-4. As has been the basis for previous calculations at ST012, the average molecular weight of TPH as JP-4 is assumed equivalent to xylene (106.168 grams per mole). The assumed liquid density of the fuel is 6.57 lbs per gallon.
(c) The PID correction factor for the 23 May 2016 sample was anomalous compared to historical values. An average of correction factors from samples before and after this date was used.

B. Flame Oxidizer Destruction Efficiency/Mass Removal Summary

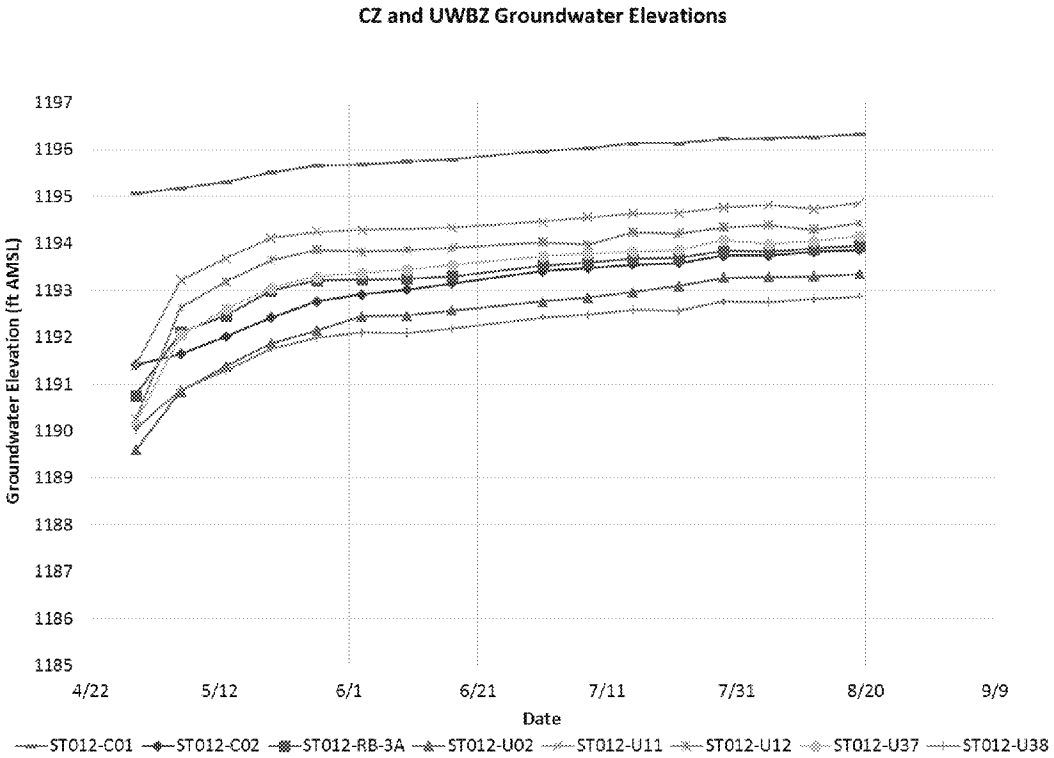
The destruction efficiency and mass removal calculations for the flame oxidizer are tabulated below. A correction factor was applied to PID readings based on available analytical data and corresponding PID data. This factor is updated each time new analytical data is available and may retroactively alter previously reported data.

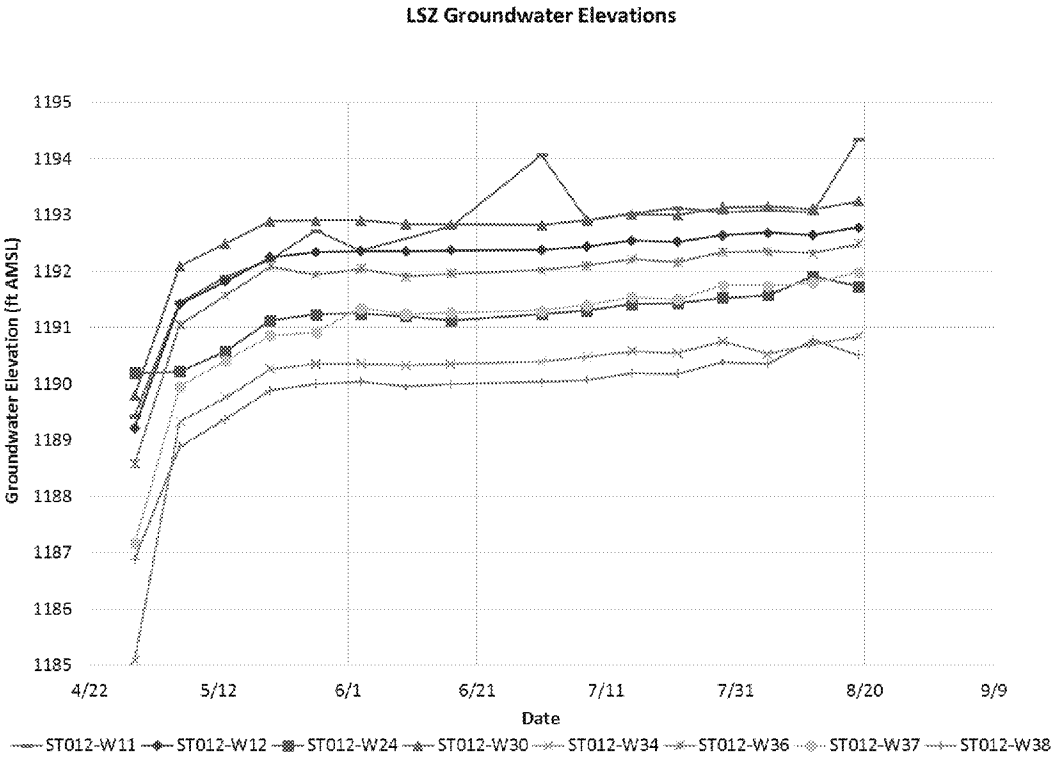
Date Period Began	Date Period Ended	Days in Period	Time Flame Oxidizer Operated	Flame Oxidizer Uptime	Date of Influent Laboratory TPH Result	Influent Concentration (PID)	Influent Concentration (Adjusted PID)	Effluent Concentration (PID)	Effluent Concentration (Adjusted PID)	Calculated Destruction Efficiency[a]	Flowrate into Oxidizer (End of Period)	Estimated VOC Mass Removed[b]	Average Daily Removal Rate[b]	Estimated VOC Mass Released to Atmosphere[b]	Average VOC Mass Released to Atmosphere[b]
---	---	days	hrs	%		ppmv	mg/m3	ppmv	mg/m3	%	scfm	lbs/period	lbs/day	lbs/period	lbs/day
8/4/2016	8/11/2016	8	107	56%	7/26/2016	509	15,778 *	17.1	66	99.58%	768	4,856	607	20.5	2.56
8/11/2016	8/18/2016	8	93	48%	7/26/2016	428	13,267 *	16.4	64	99.52%	768	3,550	444	17.1	2.13

Notes:
% - percent
hrs - hours
JP-4 - jet petroleum fuel grade four
lbs - pounds
mg/m^3 - milligrams per cubic meter
ppmv - parts per million by volume
scfm - standard cubic feet per minute
TPH - total petroleum hydrocarbons
PID - photoionization detector
SVE - soil vapor compound
VOC - volatile organic compound
* Concentration and associated calculated values may change after receipt of subsequent analytical data.
(a) Calculated destruction efficiencies are calculated using a single sampling event for each quarter, not using the average influent and effluent results.
(b) Mass and volumes are calculated based on laboratory data for TPH reported as JP-4. As has been the basis for previous calculations at ST012, the average molecular weight of TPH as JP-4 is assumed equivalent to xylene (106.168 grams per mole). The assumed liquid density of the fuel is 6.57 lbs per gallon.

IV. GROUNDWATER ELEVATION MONITORING

Groundwater elevations monitored since the shutdown of the final extraction phase of SEE (29 April 2016).

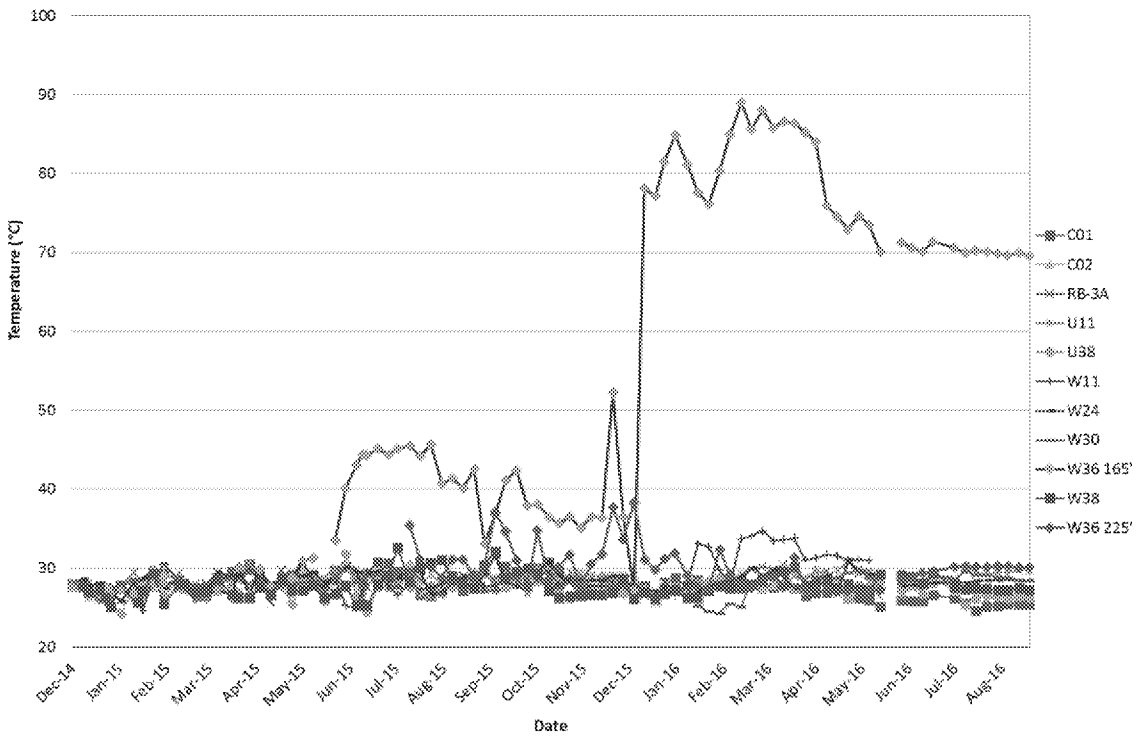




Note: Increased groundwater elevation in ST012-W11 on 19 August 2016 is suspected to be influenced by LNAPL in the monitoring well caused by malfunctioning measuring equipment. The equipment is being serviced.

V. SUBSURFACE TEMPERATURE MONITORING

A. Perimeter Monitoring Well Temperatures



Note: Thermocouples are measured at approximate depths as follows (in feet below top of casing) : C01=162; C02=168; RB-3A=161; U11=180; U38=164; W24=230; W30=231; W36=225; W11=228; and W38=228.

VI. WELL TEMPERATURE MONITORING

The following wells used during SEE were monitored for vertical temperature profile. The table lists the peak temperatures in the vadose and saturated zones. Temperature monitoring efforts have been focused on providing information to site personnel to support sampling efforts, not delineate subsurface temperature after SEE. Any additional wells that are monitored in future weeks will be included on this table.

Well ID	Well Use	Date	Vadose Zone Peak Temperature (°F)	Saturated Zone Peak Temperature (°F)
CZ01	SEE SIW	5/16/2016	178.9	215.6
CZ06	SEE SIW	5/16/2016	185.7	216.5
CZ07	SEE MPE	6/28/2016	176.3	197.6
CZ08	SEE MPE	6/29/2016	154.7	188.1
CZ09	SEE MPE	6/22/2016	143.3	206.8
CZ10	SEE MPE	6/22/2016	137.2	198.1
CZ11	SEE MPE	5/17/2016	182.8	214.9
		6/29/2016	185.9	198.3
CZ12	EBR Injection	5/13/2016	178.0	195.4
		6/22/2016	176.8	199.5
CZ14	EBR Injection	5/17/2016	151.7	203.4
		5/22/2016	186.1	211.4
CZ16	EBR Injection	5/17/2016	154.4	200.8
		6/22/2016	170.2	198.5
CZ18	EBR Extraction	6/22/2016	174.9	170.6
CZ19	EBR Extraction	6/22/2016	164.8	172.1
CZ20	SEE MPE	7/1/2016	104.0	97.2
UWBZ02	SEE MPE	7/6/2016	200.3	246.3
UWBZ10	EBR Extraction	5/20/2016	161.2	216.1
		6/22/2016	179.8	216.1
UWBZ12	SEE SIW	5/16/2016	211.1	239.5
UWBZ16	SEE SIW	5/16/2016	208.0	242.8
UWBZ17	SEE MPE	6/29/2016	180.2	205.3
		7/6/2016	181.5	204.5
UWBZ18	SEE MPE	6/22/2016	190.0	239.3
UWBZ19	SEE MPE	6/22/2016	172.2	228.9
UWBZ21	EBR Injection	5/17/2016	119.5	180.7
		6/28/2016	118.0	189.4
		7/6/2016	125.6	190.7
UWBZ22	EBR Extraction	5/19/2016	127.0	168.4
		7/7/2016	154.5	171.6
UWBZ23	EBR Injection	5/17/2016	99.0	196.3
		7/6/2016	204.9	231.0
UWBZ26	EBR Extraction	7/5/2016	98.1	138.9

Well ID	Well Use	Date	Vadose Zone Peak Temperature (°F)	Saturated Zone Peak Temperature (°F)
UWBZ27	EBR Extraction	5/17/2016	103.8	181.8
		7/1/2016	102.3	134.8
UWBZ29*	EBR Injection	6/19/2016	193.5	241.2
UWBZ30*	EBR Injection	6/17/2016	130.6	151.9
UWBZ31*	EBR Injection	6/18/2016	155.7	165.2
UWBZ34*	EBR Injection	6/11/2016	96.3	94.9
UWBZ36*	EBR Injection	6/11/2016	124.3	91.3
LSZ03	SEE SIW	5/16/2016	202.1	201.4
LSZ09	EBR Extraction	7/1/2016	136.7	158.1
LSZ10	SEE SIW	5/23/2016	142.7	206.1
LSZ11	EBR Extraction	5/19/2016	106.2	159.3
		7/1/2016	141.7	143.6
LSZ12	EBR Extraction	5/18/2016	159.8	161.4
		7/1/2016	147.1	160.8
LSZ14	EBR Extraction	5/17/2016	149.9	191.7
		7/1/2016	96.4	162.5
LSZ15	SEE MPE	6/28/2016	131.3	189.7
LSZ17	EBR Extraction	5/20/2016	177.8	216.7
		6/23/2016	179.1	213.1
LSZ18	SEE SIW	5/16/2016	204.1	238.1
LSZ22	SEE SIW	5/16/2016	139.1	218.5
LSZ23	EBR Extraction	5/23/2016	132.8	178.9
LSZ25	SEE SIW	5/16/2016	196.0	222.4
LSZ26	EBR Extraction	5/16/2016	171.1	190.9
		7/6/2016	168.3	193.1
LSZ28	EBR Extraction	5/20/2016	125.8	124.2
		6/23/2016	187.7	223.4
		7/6/2016	186.3	221.6
LSZ29	EBR Extraction	5/17/2016	119.7	178.9
		7/6/2016	145.9	200.2
LSZ31	SEE MPE	6/29/2016	98.7	98.4
LSZ32	SEE MPE	6/29/2016	123.1	124.7
LSZ34	Sampling/Monitoring	5/17/2016	119.5	182.5
		7/6/2016	171.8	208.0
LSZ35	SEE MPE	6/28/2016	110.7	135.9
LSZ36	EBR Extraction	5/18/2016	167.9	176.0
		7/7/2016	137.0	163.9
LSZ37	EBR Extraction	5/20/2016	100.6	168.1
		6/30/2016	96.9	97.7
LSZ38	EBR Extraction	5/13/2016	107.1	99.0

Well ID	Well Use	Date	Vadose Zone Peak Temperature (°F)	Saturated Zone Peak Temperature (°F)
		6/23/2016	101.4	147.3
LSZ39	EBR Extraction	5/19/2016	89.1	98.2
		6/23/2016	95.3	143.2
LSZ42	SEE MPE	6/30/2016	119.4	178.2
LSZ43*	EBR Injection	6/19/2016	191.3	232.7
LSZ44*	EBR Injection	6/19/2016	95.2	87.1
UWBZ-32/ LSZ-47*	EBR Injection	6/10/2016	91.4	84.9
UWBZ-33/ LSZ-48*	EBR Injection	6/10/2016	89.6	166.1
LSZ49*	EBR Injection	6/21/2016	90.3	86.0
LSZ50*	EBR Injection	6/22/2016	83.8	83.1
UWBZ28/LSZ51*	EBR Injection	6/9/2016	166.5	165.4

Notes:

* - Denotes a newly installed well

(1) Peak temperature corresponds to the highest temperature recorded in each zone. Temperatures not recorded below 200 ft bgs. LSZ well saturated temperatures are from the water column above the screened interval.

(2) Due to temperature interference with equipment, depth to water is assumed to be between 145 and 150 ft bgs, as observed in locations unaffected by temperature interference. Vadose zone temperatures range from 10 to 140 ft bgs and saturated zone temperatures range from 150 to the end of the temperature profile.

VII. LNAPL MONITORING

A. Perimeter LNAPL Thickness (ft)

Monitoring Well	7/29/2016			8/5/2016			8/12/2016			8/19/2016		
	Before bailing/ pumping	After Bailing/ pumping	Weekly Gallons Removed	Before bailing/ pumping	After Bailing/ pumping	Weekly Gallons Removed	Before bailing/ pumping	After Bailing/ pumping	Weekly Gallons Removed	Before bailing/ pumping	After Bailing/ pumping	Weekly Gallons Removed
CZ/UWBZ Wells												
ST012-C01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-C02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UWBZ Wells												
ST012-U02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-U11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-U12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-U37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-U38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-RB-3A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LSZ Wells												
ST012-W11	0.74	0.74	0.00	1.14	1.14	0.00	3.00	3.00	0.00	0.00	0.00	0.00
ST012-W12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ST012-W38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

B. LNAPL Monitoring and Removal

The table included with this report as Attachment 1 summarizes the removal and monitoring performed at LNAPL screened wells.

VIII. WASTE GENERATION AND RECYCLING

No site-derived waste or recyclable material was removed this week.

IX. TWO WEEK LOOK AHEAD

A. SEE Demolition - None

B. EBR Construction - None

C. Well Drilling/Development - None

D. Sampling Activities

1. Pumping and bailing to remove NAPL from SEE wells
2. Continued NAPL screening in SEE extraction and injection wells
3. Monitoring temperature monitoring points from existing TMPs used during SEE.

E. SVE System Operation/Optimization

1. Continue operation of flame oxidizer and thermal oxidizer with SVE system.

X. ATTACHMENTS

1. LNAPL Monitoring and Removal Table
2. LNAPL Screening Figures based on table in Attachment 1.

Attachment 1. LNAPL Monitoring and Removal

The following table summarizes the removal and monitoring performed at LNAPL screened wells. LNAPL monitoring of wells was prioritized based on expected future usage of each well as part of EBR. Subsequent LNAPL monitoring/removal frequency was prioritized based on the amount of LNAPL, the observed LNAPL recharge, and the temperature of each well. LNAPL monitoring and removal is initially conducted weekly at wells with LNAPL and the frequency may be reduced depending on whether LNAPL returns after pumping/bailing. Wells with high temperatures were not able to be bailed, or NAPL thicknesses recorded because of temperature interference with equipment. Currently 19 SEE wells have eductors or pumps in them that have not been removed and cannot be effectively screened for LNAPL (CZ13, CZ15, CZ17, UWBZ01, UWBZ04, UWBZ05, UWBZ06, UWBZ30, LSZ01, LSZ02, LSZ04, LSZ05, LSZ06, LSZ08, LSZ13, LSZ16, LSZ30, LSZ33, LSZ40). Eductor removal was put on hold along with SEE decommissioning. Any additional wells that are monitored in future weeks will be included on this table:

Well	Date	Able to Use Interface Probe?	NAPL Present (Y/N)	Before Pumping			Bailed/ Pumped (Y/N)	NAPL Remaining (Y/N)	After Pumping			LNAPL Removed (Gallons)
				Depth to Product (ft. bgs)	Depth to Water (ft. bgs)	NAPL Thickness (ft.)			Depth to Product (ft. bgs)	Depth to Water (ft. bgs)	NAPL Thickness (ft.)	
	7/19/2016	N	Y	NM	146 (2)	0.3 (1)	N	Y	---	---	---	0
	7/25/2016	N	Y	NM	145 (2)	0.08 (1)	N	Y	---	---	---	0
	8/2/2016	N	Sheen	144 (2)	144 (2)	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Y	NM	144 (2)	0.02 (1)	N	Y	---	---	---	0
CZ01	8/15/2016	N	Y	NM	147 (2)	0.04 (1)	N	Y	---	---	---	0
	7/12/2016	N	N	---	144 (2)	---	N	N	---	---	---	0
	7/27/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
CZ02	8/2/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/11/2016	N	N	---	142 (2)	---	N	N	---	---	---	0
	7/27/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
CZ03	8/2/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
	7/27/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
CZ04	8/2/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/28/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
CZ05	8/3/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	7/11/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/28/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
CZ06	8/2/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	7/13/2016	N	Y	NM	142 (2)	0.04 (1)	N	Y	---	---	---	0
	7/25/2016	N	Y	144 (2)	144 (2)	0.50 (1)	N	Y	---	---	---	0
	8/2/2016	N	Y	NM	144 (2)	0.01 (1)	N	Y	---	---	---	0
CZ07	8/16/2016	N	N	---	146 (2)	---	N	N	---	---	---	0
	7/13/2016	N	Y	NM	147 (2)	0.04 (1)	N	Y	---	---	---	0
	7/25/2016	N	Y	NM	146 (2)	0.02 (1)	N	Y	---	---	---	0
	8/2/2016	N	Sheen	146 (2)	146 (2)	Sheen	N	Sheen	---	---	---	0
CZ08	8/16/2016	N	Y	NM (2)	146 (2)	0.02 (1)	N	Y	---	---	---	0
	6/22/2016	N	Y	NR	NR	0.13 (1)	N	Y	---	---	---	0
	7/18/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/25/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
CZ09	8/2/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	6/23/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	Sheen	146 (2)	146 (2)	Sheen	N	Sheen	---	---	---	0
	7/27/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
CZ10	8/2/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	5/23/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	7/7/2016	N	Sheen	---	NM	---	N	Sheen	---	---	---	0
	7/12/2016	N	N	---	145 (2)	---	N	Y	---	---	---	0
	7/27/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	8/2/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
CZ11	8/16/2016	N	Y	NM	148 (2)	0.01 (1)	N	Y	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/7/2016	N	Y	149 (2)	NM	NM	Y	N	NR	NR	NR	1
	6/23/2016	N	N	---	---	---	N	N	---	---	---	0
	6/29/2016	N	N	NM	156 (2)	NM	N	N	---	---	---	0
	7/13/2016	N	Y	143 (2)	150 (2)	7	N	Y	---	---	---	0
	7/19/2016	N	Sheen	---	146 (2)	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Sheen	---	148 (2)	Sheen	N	Sheen	---	---	---	0
	8/2/2016	N	Sheen	---	148 (2)	Sheen	N	Sheen	---	---	---	0
CZ12	8/17/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
	5/22/2016	N	N	---	---	---	N	N	---	---	---	0
	5/26/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/7/2016	N	Y	148 (2)	NM	NM	Y	N	NR	NR	NR	3
	6/22/2016	N	N	---	---	---	N	N	---	---	---	0

	6/29/2016	N	Sheen	NM	152 (2)	NM	N	Sheen	---	---	---	0
	7/7/2016	N	Sheen	---	NM	---	N	Sheen	---	---	---	0
	7/11/2016	N	Sheen	142 (2)	142 (2)	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Sheen	149 (2)	149 (2)	Sheen	N	Sheen	---	---	---	0
	8/2/2016	N	Sheen	NM	149 (2)	Sheen	N	Sheen	---	---	---	0
CZ14	8/16/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	5/19/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/7/2016	N	Y	151 (2)	NM	NM	Y	N	151	NR	NR	1
	6/22/2016	N	N	---	---	---	N	N	---	---	---	0
	6/29/2016	N	N	---	152 (2)	---	N	N	---	---	---	0
	7/11/2016	N	N	---	141 (2)	---	N	N	---	---	---	0
	7/25/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
CZ16	8/3/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	5/31/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/15/2016	N	N	NM	149 (2)	NM	N	N	---	---	---	0
	6/22/2016	N	Y	NM	NM	0.13 (1)	N	Y	---	---	---	0
	6/29/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/12/2016	N	Y	---	144 (2)	0.02 (1)	N	Y	---	---	---	0
	7/28/2016	N	Y	---	148 (2)	0.01 (1)	N	Y	---	---	---	0
	8/3/2016	N	Y	---	148 (2)	0.01 (1)	N	Y	---	---	---	0
	8/10/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
CZ18	8/15/2016	N	Y	NM	147 (2)	0.01 (1)	N	Y	---	---	---	0
	5/31/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/22/2016	N	N	---	NM (2)	---	N	N	---	---	---	0
	6/29/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	7/12/2016	N	Sheen	147 (2)	147 (2)	Sheen	N	Sheen	---	---	---	0
	7/28/2016	N	Y	NM	147 (2)	0.01 (1)	N	Y	---	---	---	0
	8/3/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
CZ19	8/15/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
	7/12/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/28/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
CZ20	8/3/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/20/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/25/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
CZ21*	8/2/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
CZ22/ UWBZ35*	7/20/2015	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	Y	142 (2)	169 (2)	27 (1)	Y	N	NR	NR	0	25
	7/27/2016	N	Y	NM	149 (2)	0.25 (1)	N	Y	---	---	---	0
	8/2/2016	N	Sheen	149 (2)	149 (2)	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Sheen	149 (2)	149 (2)	Sheen	N	Sheen	---	---	---	0
UWBZ02	8/15/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	7/27/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
UWBZ03	8/3/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	7/27/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
UWBZ07	8/2/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	7/19/2016	N	Y	---	144 (2)	0.4 (1)	N	Y	---	---	---	0
	7/25/2016	N	Y	---	145 (2)	0.33 (1)	N	Y	---	---	---	0
	8/2/2016	N	Y	---	145 (2)	0.01 (1)	N	Y	---	---	---	0
	8/12/2016	N	Sheen	145 (2)	145 (2)	Sheen	N	Sheen	---	---	---	0
UWBZ09	8/15/2016	N	Y	---	147 (2)	0.04 (1)	N	Y	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/3/2016	N	Y	143 (3)	NM	NM	Y	N	NR	NR	NR	13
	6/23/2016	N	N	---	---	---	N	N	---	---	---	0
	6/29/2016	N	Y	151 (2)	151 (2)	0.08 (1)	N	Y	---	---	---	0
	7/12/2016	N	Y	142 (2)	152 (2)	10 (1)	N	Y	---	---	---	0
	7/13/2016	N	Y	NR	NR	NR	Y	N	NR	NR	0	18
	7/27/2016	N	Y	NM	148 (2)	0.2 (1)	N	Y	---	---	---	0
	8/2/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
UWBZ10	8/15/2016	N	Y	NM	148 (2)	0.2 (1)	N	Y	---	---	---	0
	7/18/2016	N	Y	142 (2)	158 (2)	16 (1)	N	Y	---	---	---	0
	7/29/2016	N	Y	144 (2)	151 (2)	7 (1)	Y	N	NR	148	0	20
	8/3/2016	N	Y	NM	149 (2)	0.2 (1)	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	148 (2)	0.2 (1)	N	Y	---	---	---	0
	8/15/2016	N	Y	146 (2)	148 (2)	2 (1)	N	Y	---	---	---	0
UWBZ11	8/18/2016	N	Y	146 (2)	147 (2)	1 (1)	Y	Y	147 (2)	147 (2)	0.01 (1)	10
	7/19/2016	N	Sheen	145 (2)	145 (2)	Sheen	N	Sheen	---	---	---	0

	7/25/2016	N	Y	NM	145 [2]	0.1 [1]	N	Y	---	---	---	0
	8/2/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ12	8/16/2016	N	Y	NM	146 [2]	0.02 [1]	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	<0.02 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	140 [2]	165 [2]	25 [1]	N	Y	---	---	---	0
	7/13/2016	N	Y	NR	NR	NR	Y	N	NR	NR	0	40
	7/27/2016	N	Y	NM	148 [2]	0.4 [1]	N	Y	---	---	---	0
	8/3/2016	N	Sheen	NM	148 [2]	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
UWBZ13	8/15/2016	N	Y	---	149 [2]	0.02 [1]	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	0.02 [1]	N	Y	---	---	---	0
	7/11/2016	N	Y	NM	144 [2]	0.02 [1]	N	Y	---	---	---	0
	7/25/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	8/2/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
UWBZ14	8/17/2016	N	Y	NM	148 [2]	0.25 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	140 [2]	170 [2]	30 [1]	N	Y	---	---	---	0
	7/18/2016	N	Y	140 [2]	150 [2]	10 [1]	Y	N	NR	147	0	55
	7/27/2016	N	Y	147 [2]	152 [2]	5 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	149 [2]	0.08 [1]	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	148 [2]	0.6 [1]	N	Y	---	---	---	0
UWBZ15	8/15/2016	N	Y	146 [2]	149 [2]	3 [1]	N	Y	---	---	---	0
	7/11/2016	N	Y	NM	143 [2]	0.02 [1]	N	Y	---	---	---	0
	7/25/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
	8/3/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
UWBZ16	8/16/2016	N	Y	NM	146 [2]	0.01 [1]	N	Y	---	---	---	0
	7/25/2016	N	Y	143 [2]	150 [2]	7 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	143 [2]	150 [2]	7 [1]	Y	N	NR	142 [2]	0 [1]	36
	8/10/2016	N	Sheen	150 [2]	150 [2]	Sheen	N	Sheen	---	---	---	0
UWBZ17	8/16/2016	N	Y	146 [2]	148 [2]	2 [1]	N	Y	---	---	---	0
	6/22/2016	N	Y	NM	NM	3 [1]	N	Y	---	---	---	0
	6/30/2016	N	Y	147 [2]	NM	NM	Y	N	NR	NR	0	20
	7/19/2016	N	Y	NM	145 [2]	0.2 [1]	N	Y	---	---	---	0
	7/25/2016	N	Y	NM	145 [2]	0.7 [1]	N	Y	---	---	---	0
	8/2/2016	N	Sheen	145 [2]	145 [2]	Sheen	N	Sheen	---	---	---	0
	8/12/2016	N	Sheen	145 [2]	145 [2]	Sheen	N	Sheen	---	---	---	0
UWBZ18	8/15/2016	N	Y	145 [2]	147 [2]	2 [1]	N	Y	---	---	---	0
	6/6/2016	N	Y	150 [2]	NM	NM	Y	N	NR	NR	0	1
	6/22/2016	N	Y	NM	NM	3 [1]	N	Y	---	---	---	0
	7/11/2016	N	Y	138 [2]	164 [2]	26 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	142 [2]	162 [2]	20 [1]	Y	N	---	144 [2]	0	28
	7/25/2016	N	Y	NM	147 [2]	0.2 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	147 [2]	0.02 [1]	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	147 [2]	0.02 [1]	N	Y	---	---	---	0
UWBZ19	8/16/2016	N	Y	147 [2]	148 [2]	1 [1]	N	Y	---	---	---	0
	5/26/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/14/2016	N	Y	148 [2]	NM	NM	Y	N	NR	NR	0	24
	6/23/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/29/2016	N	Y	155 [2]	157.5 [2]	2.5 [1]	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	0.08 [1]	N	Y	---	---	---	0
	7/29/2016	N	Y	146 [2]	152 [2]	6 [1]	Y	N	NR	148 [2]	0.1 [1]	20
	8/2/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	8/10/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Sheen	---	---	---	0
UWBZ21	8/15/2016	N	Y	NM	147 [2]	0.01 [1]	N	Y	---	---	---	0
	5/19/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/8/2016	N	Y	149 [2]	NM	NM	Y	N	NR	NR	0	1
	6/29/2016	N	Y	147.5 [2]	147 [2]	0.5 [1]	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	0.02 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	NM	146 [2]	0.04 [1]	N	Y	---	---	---	0
	7/28/2016	N	Y	NM	150 [2]	0.4 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	150 [2]	0.02 [1]	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	149 [2]	0.04 [1]	N	Y	---	---	---	0
UWBZ22	8/15/2016	N	Y	NM	147 [2]	0.2 [1]	N	Y	---	---	---	0
	5/18/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/9/2016	N	Y	148 [2]	NM	NM	Y	N	NR	NR	0	35
	6/29/2016	N	Y	153 [2]	154.5 [2]	1.5 [1]	N	Y	---	---	---	0
	7/11/2016	N	Y	142 [2]	148 [2]	6 [1]	N	Y	---	---	---	0
	7/25/2016	N	Y	NM	149 [2]	0.8 [1]	N	Y	---	---	---	0
	8/2/2016	N	Y	NM	149 [2]	0.02 [1]	N	Y	---	---	---	0
	8/10/2016	N	Sheen	149 [2]	149 [2]	Sheen	N	Sheen	---	---	---	0
UWBZ23	8/16/2016	N	Y	146 [2]	149 [2]	3 [1]	N	Y	---	---	---	0
	7/20/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ24	8/12/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/19/2016	N	Sheen	145 [2]	145 [2]	Sheen	N	Sheen	---	---	---	0

	7/25/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	8/2/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ25	8/16/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	6/29/2016	N	Y	141.5 [2]	170 [2]	28.5 [1]	N	Y	---	---	---	0
	7/5/2016	Y	Y	140.4	167.1	26.61	Y	Y	142.2	162.9	20.7	10
	7/6/2016	Y	Y	142	163	20.99	Y	Y	147.3	147.8	0.45	40
	7/12/2016	N	Y	NM	142 [2]	0.17 [1]	N	Y	---	---	---	0
	7/28/2016	N	Y	147 [2]	148 [2]	1 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	147 [2]	148 [2]	0.01 [1]	N	Y	---	---	---	0
	8/12/2016	N	Y	NM	148 [2]	0.04 [1]	N	Y	---	---	---	0
UWBZ26	8/16/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/8/2016	N	Y	143 [2]	NM	NM	Y	N	NR	NR	NR	32
	6/29/2016	N	Y	148 [2]	148 [2]	0.02 [1]	N	Y	---	---	---	0
	7/12/2016	N	N	---	143 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
UWBZ27	8/2/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
UWBZ28/ LSZ51*	7/20/2016	N	N	NM	NM	---	N	N	---	---	---	0
	7/20/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/27/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ29	8/2/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/20/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/25/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	8/2/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ31	8/16/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
UWBZ32/ LSZ47*	7/20/2016	N	N	NM	NM	---	N	N	---	---	---	0
UWBZ33/ LSZ48*	7/12/2016[5]	Y	Y	144.9	146.6	1.65	Y	Y	145.2	145.4	0.13	2
	7/25/2016[5]	N	Sheen	NM	NM	Sheen	Y	Sheen	---	---	---	0
	7/20/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	144.5	---	N	N	---	---	---	0
	8/5/2016	Y	N	---	144.6	---	N	N	---	---	---	0
UWBZ34	8/19/2016	Y	N	---	144.4	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	144.3	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	144.1	---	N	N	---	---	---	0
UWBZ36	8/5/2016	Y	N	---	144.2	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
LSZ03	8/3/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
LSZ07	8/2/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
	5/26/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/29/2016	N	Y	152 [2]	152 [2]	<0.08 [1]	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	<0.08 [1]	N	Y	---	---	---	0
	7/12/2016	N	Sheen	144 [2]	144 [2]	Sheen	N	Sheen	---	---	---	0
	7/27/2016	N	Y	NM	149 [2]	0.1 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	148 [2]	0.1 [1]	N	Y	---	---	---	0
	8/12/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Sheen	---	---	---	0
LSZ09	8/16/2016	N	Y	NM	149 [2]	0.04 [1]	N	Y	---	---	---	0
	7/12/2016	N	N	---	142 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
LSZ10	8/3/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/1/2016	N	Y	NM	NM	NM	Y	N	NR	NR	0	10 [4]
	6/29/2016	N	N	---	147	---	N	N	---	---	---	0
	7/7/2016	N	Y	NM	NM	<0.02 [1]	N	Y	---	---	---	0
	7/11/2016	N	Y	NM	145 [2]	0.08 [1]	N	Y	---	---	---	0
	7/28/2016	N	N	---	150 [2]	---	N	N	---	---	---	0
	8/3/2016	N	N	---	150 [2]	---	N	N	---	---	---	0
LSZ11	8/16/2016	N	N	---	150 [2]	---	N	N	---	---	---	0
	5/19/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/14/2016	N	Y	NM	NM	NM	Y	N	NR	NR	0	50
	6/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/29/2016	N	Y	148 [2]	158 [2]	10 [1]	Y	Y	NR	NR	<0.08	25
	7/12/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
	7/25/2016	N	Y	---	148 [2]	0.2	N	Y	---	---	---	0
	8/2/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Sheen	---	---	---	0
LSZ12	8/16/2016	N	Y	NM	150 [2]	0.02 [1]	N	Y	---	---	---	0
	5/18/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/13/2016	N	Y	144 [2]	NM	NM	Y	N	NR	NR	0	26
	6/29/2016	N	N	---	150 [2]	---	N	N	---	---	---	0

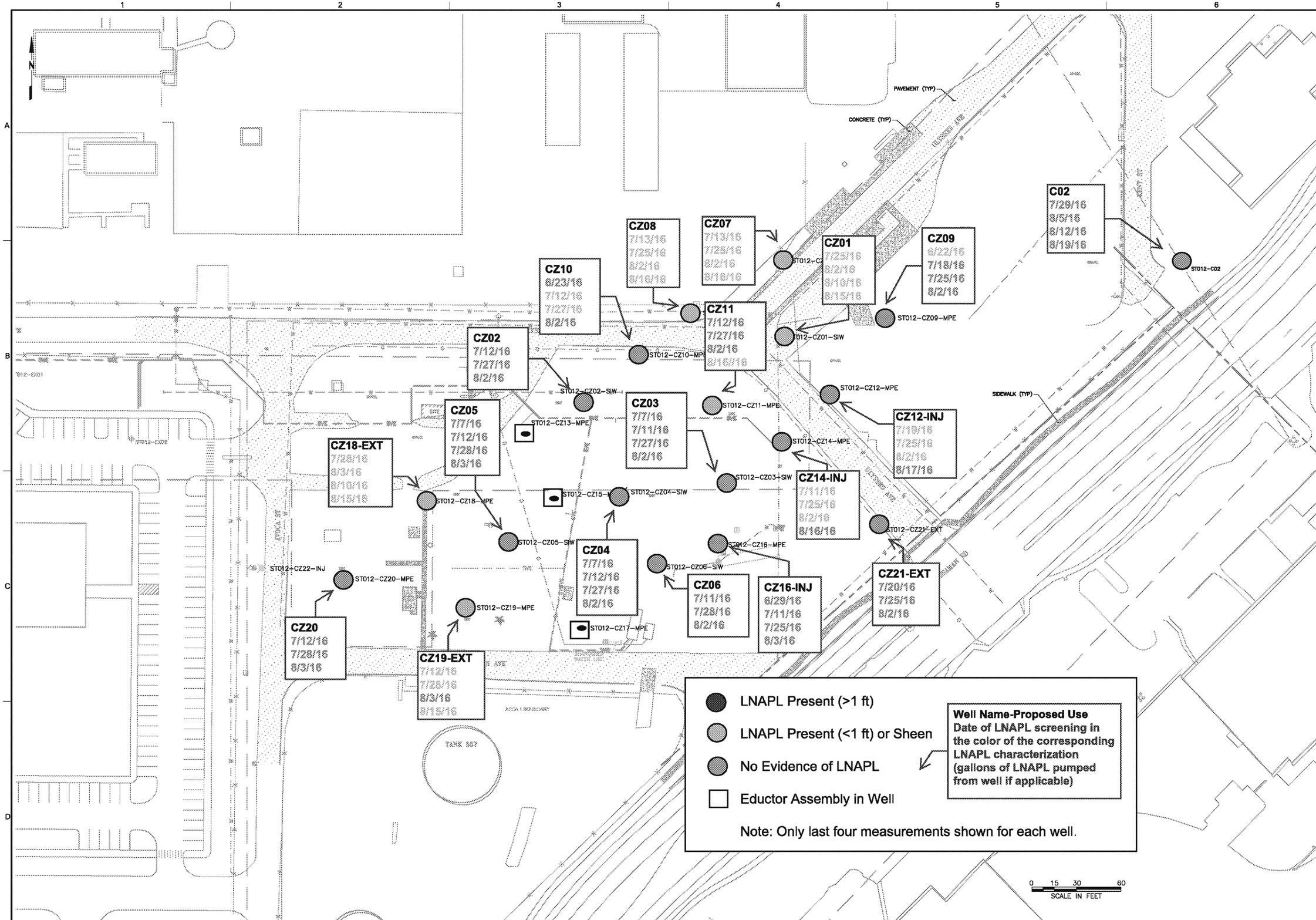
	7/7/2016	N	Y	146 [2]	165 [2]	21 [1]	N	Y	148 [2]	NR	NR	35
	7/25/2016	N	Y	NM	147 [2]	0.2 [1]	N	Y	---	---	---	0
	8/2/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	148 [2]	0.04 [1]	N	Y	---	---	---	0
LSZ14	8/15/2016	N	Y	NM	149 [2]	0.58 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	135 [2]	NM	>35 [1]	N	Y	---	---	---	0
	7/14/2016	N	Y	144 [2]	159 [2]	15 [1]	Y	N	NR	147 [2]	Sheen	100
	7/25/2016	N	Y	NM	147 [2]	0.2 [1]	N	Y	---	---	---	0
	8/3/2016	N	Sheen	147 [2]	147 [2]	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Sheen	147 [2]	147 [2]	Sheen	N	Sheen	---	---	---	0
LSZ15	8/15/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/2/2016	N	Y	130 [2]	NM	NM	Y	N	NR	NR	0	50 [4]
	6/23/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/29/2016	N	Y	150 [2]	150 [2]	0.08 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	NM	145 [2]	0.08 [1]	N	Y	---	---	---	0
	7/27/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	148 [2]	0.04 [1]	N	Y	---	---	---	0
LSZ17	8/15/2016	N	Y	NM	148 [2]	0.04 [1]	N	Y	---	---	---	0
	7/18/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/25/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	8/2/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
LSZ18	8/16/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/7/2016	N	Y	NM	NM	0.02 [1]	N	Y	---	---	---	0
	7/12/2016	N	Y	NM	144 [2]	0.04 [1]	N	Y	---	---	---	0
	7/27/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	148 [2]	0.2 [1]	N	Y	---	---	---	0
	8/10/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Y	---	---	---	0
LSZ19	8/16/2016	N	Y	NM	148 [2]	0.08 [1]	N	Y	---	---	---	0
	7/7/2016	N	Sheen	---	NM	---	N	Y	---	---	---	0
	7/11/2016	N	Sheen	142 [2]	142 [2]	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Sheen	149 [2]	149 [2]	Sheen	N	Sheen	---	---	---	0
	8/2/2016	N	Sheen	149 [2]	149 [2]	Sheen	N	Sheen	---	---	---	0
LSZ20	8/16/2016	N	Y	NM	149 [2]	0.01 [1]	N	Y	---	---	---	0
	7/19/2016	N	Sheen	NM	144 [2]	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Sheen	NM	146 [2]	Sheen	N	Sheen	---	---	---	0
	8/3/2016	N	Sheen	NM	146 [2]	Sheen	N	Sheen	---	---	---	0
LSZ21	8/16/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/25/2016	N	Sheen	NM	148 [2]	Sheen	N	Sheen	---	---	---	0
	8/3/2016	N	Sheen	NM	148 [2]	Sheen	N	Sheen	---	---	---	0
	8/12/2016	N	Sheen	NM	148 [2]	Sheen	N	Sheen	---	---	---	0
LSZ22	8/15/2016	N	N	---	150 [2]	---	N	N	---	---	---	0
	5/26/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/20/2016	N	N	---	151 [2]	---	N	N	---	---	---	0
	6/29/2016	N	N	---	152 [2]	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
LSZ23	8/3/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
	7/12/2016	N	N	---	142 [2]	---	N	N	---	---	---	0
	7/28/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
LSZ24	8/3/2016	N	N	---	147 [2]	---	N	N	---	---	---	0
	7/11/2016	N	Sheen	143 [2]	143 [2]	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Sheen	149 [2]	149 [2]	Sheen	N	Sheen	---	---	---	0
	8/2/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
LSZ25	8/16/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
	5/16/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/14/2016	N	N	---	149 [2]	---	N	N	---	---	---	0
	6/29/2016	N	N	---	153 [2]	---	N	N	---	---	---	0
	7/11/2016	N	N	---	146 [2]	---	N	N	---	---	---	0
	7/25/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
LSZ26	8/2/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	7/7/2016	N	N	---	---	---	N	N	---	---	---	0
	7/12/2016	N	N	---	145 [2]	---	N	N	---	---	---	0
	7/27/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
LSZ27	8/3/2016	N	N	---	148 [2]	---	N	N	---	---	---	0
	5/24/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/3/2016	N	Y	146	NM	NM	Y	N	NR	NR	0	5
	6/23/2016	N	N	---	NM	---	N	N	---	---	---	0
	6/29/2016	N	N	---	151 [2]	---	N	N	---	---	---	0
	7/12/2016	N	Sheen	145 [2]	145 [2]	Sheen	N	Sheen	---	---	---	0
	7/27/2016	N	Sheen	148 [2]	148 [2]	Sheen	N	Sheen	---	---	---	0
	8/2/2016	N	N	---	148 [2]	---	N	N	---	---	---	0

LSZ28	8/16/2016	N	N	---	149 (2)	---	N	N	---	---	---	0
	5/18/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/6/2016	N	Y	142 (2)	NM	NM	Y	Y	NR	NR	NR	3
	6/29/2016	N	Y	152 (2)	152 (2)	<0.01 (1)	N	Y	NR	NR	<0.01	0
	7/20/2016	N	N	---	150 (2)	---	N	N	---	---	---	0
	7/25/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
LSZ29	8/2/2016	N	N	---	148 (2)	---	N	N	---	---	---	0
	6/6/2016	N	Y	151 (2)	NM	NM	Y	N	NR	NR	0	20
	7/25/2016	N	Y	NM	145 (2)	0.2 (1)	N	Y	---	---	---	0
LSZ31	8/3/2016	N	Sheen	145 (2)	145 (2)	Sheen	N	Sheen	---	---	---	0
	7/25/2016	N	Y	144.8 (2)	145 (2)	1.2 (1)	N	Y	---	---	---	0
	8/2/2016	N	Y	NM (2)	147 (2)	0.02 (1)	N	Y	---	---	---	0
	8/12/2016	N	Y	NM (2)	147 (2)	0.02 (1)	N	Y	---	---	---	0
LSZ32	8/15/2016	N	Y	NM	148 (2)	0.08 (1)	N	Y	---	---	---	0
	5/17/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/14/2016	N	Y	148 (2)	NM	NM	Y	N	NR	NR	0	38
	6/29/2016	N	Y	152 (2)	152 (2)	<0.08 (1)	N	Y	---	---	---	0
	7/11/2016	N	Y	NM	145 (2)	0.08 (1)	N	Y	---	---	---	0
	7/25/2016	N	Y	NM	149 (2)	0.2 (1)	N	Y	---	---	---	0
	8/2/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
	8/10/2016	N	Sheen	148 (2)	148 (2)	Sheen	N	Sheen	---	---	---	0
LSZ34	8/15/2016	N	Y	NM (2)	149 (2)	0.01 (1)	N	Y	---	---	---	0
	6/29/2016	N	Y	147 (2)	NM	NM	Y	N	NR	NR	0	65
	7/12/2016	N	Y	140 (2)	168 (2)	28 (1)	N	Y	---	---	---	0
	7/18/2016	N	Y	143 (2)	149 (2)	6 (1)	Y	N	NR	146 (2)	Sheen	35
	7/25/2016	N	Y	NM	149 (2)	0.2 (1)	N	Y	---	---	---	0
	8/3/2016	N	Y	NM	150 (2)	0.08 (1)	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	149 (2)	0.06 (1)	N	Y	---	---	---	0
LSZ35	8/16/2016	N	Y	146 (2)	149 (2)	3 (1)	N	Y	---	---	---	0
	5/19/2016	N	Y	NM	NM	NM	N	Y	---	---	---	0
	6/10/2016	N	Y	144 (2)	NM	NM	Y	N	NR	NR	0	86
	6/29/2016	N	Y	152 (2)	152 (2)	0.08 (1)	N	Y	---	---	---	0
	7/7/2016	N	Y	NM	NM	0.06 (1)	N	Y	---	---	---	0
	7/11/2016	N	Y	NM	145 (2)	0.08 (1)	N	Y	---	---	---	0
	8/2/2016	N	Y	NM	145 (2)	0.04 (1)	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	145 (2)	0.04 (1)	N	Y	---	---	---	0
LSZ36	8/15/2016	N	Y	NM	146 (2)	0.01 (1)	N	Y	---	---	---	0
	5/23/2016	Y	Y	138.40	185.80	47.40	N	Y	---	---	---	0
	5/24/2016	Y	Y	NR	NR	NR	Y	Y	145.1	161.7	16.56	60
	5/25/2016	Y	Y	NR	NR	NR	Y	Y	148.6	149.6	1.05	25
	5/25/2016	Y	Y	148.5	149.5	1.06	N	Y	---	---	---	0
	5/26/2016	Y	Y	148.5	149.5	1.04	N	Y	---	---	---	0
	5/26/2016	Y	Y	148.4	149.5	1.12	N	Y	---	---	---	0
	5/27/2016	Y	Y	148.3	149.5	1.19	N	Y	---	---	---	0
LSZ37	5/31/2016	Y	Y	148.3	149.5	1.18	N	N	---	---	---	0
	6/2/2016	Y	Y	NR	NR	NR	Y	Y	149.1	150.1	0.99	17
	6/3/2016	Y	Y	148.7	148.7	0.04	N	Y	---	---	---	0
	7/1/2016	Y	N	---	148.58	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	148.45	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	148.29	---	N	N	---	---	---	0
	8/5/2016	Y	N	---	148.45	---	N	N	---	---	---	0
	5/23/2016	Y	Y	145.3	156.2	10.86	N	Y	---	---	---	0
	5/24/2016	Y	Y	NR	NR	NR	Y	Y	148.5	149.6	1.08	15
	5/25/2016	Y	Y	148.6	149.7	1.15	N	Y	---	---	---	0
	5/25/2016	Y	Y	148.5	149.7	1.19	N	Y	---	---	---	0
	5/26/2016	Y	Y	148.5	149.8	1.25	N	Y	---	---	---	0
	5/26/2016	Y	Y	148.4	149.6	1.19	N	Y	---	---	---	0
LSZ38	5/27/2016	Y	Y	148.3	149.6	1.24	N	Y	---	---	---	0
	5/31/2016	Y	Y	148.3	149.6	1.28	N	Y	---	---	---	0
	6/3/2016	Y	Y	148.4	149.6	1.21	N	Y	---	---	---	0
	7/1/2016	Y	N	---	148.33	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	148.22	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	148.02	---	N	N	---	---	---	0
	8/5/2016	Y	N	---	148.65	---	N	N	---	---	---	0
	5/19/2016	Y	Y	NR	NR	NR	N	Y	---	---	---	0
	5/23/2016	Y	Y	135.8	191	55.24	N	Y	---	---	---	0
	5/26/2016	Y	Y	135.9	191.2	55.29	N	Y	---	---	---	0
	6/1/2016	Y	Y	135.9	190.8	54.95	Y	Y	150.2	152.5	2.29	80
	6/1/2016	Y	Y	148.5	150.8	2.33	N	Y	---	---	---	0
LSZ39	6/1/2016	Y	Y	148.7	151.1	2.38	N	Y	---	---	---	0
	6/3/2016	Y	Y	148.71	151.11	2.40	N	Y	---	---	---	0
	7/1/2016	Y	N	---	149.18	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	149.05	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	148.81	---	N	N	---	---	---	0
	8/5/2016	Y	N	---	148.83	---	N	N	---	---	---	0
	7/20/2016	N	N	---	147 (2)	---	N	N	---	---	---	0
	7/28/2016	N	N	---	150 (2)	---	N	N	---	---	---	0
	8/2/2016	N	N	---	150 (2)	---	N	N	---	---	---	0
LSZ41	8/16/2016	N	N	---	148 (2)	---	N	N	---	---	---	0

	7/19/2016	N	Y	143 (2)	151 (2)	8 (1)	N	Y	---	---	---	0
	7/29/2016	N	Y	143 (2)	149 (2)	6 (1)	Y	Y	NR	148 (2)	0.5 (1)	36
	8/3/2016	N	Y	NM	148 (2)	0.04 (1)	N	Y	---	---	---	0
	8/10/2016	N	Y	NM	148 (2)	0.02 (1)	N	Y	---	---	---	0
LSZ42	8/15/2016	N	Y	NM	148 (2)	0.04 (1)	N	Y	---	---	---	0
	7/20/2016	N	N	---	146 (2)	---	N	N	---	---	---	0
	7/25/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
	8/2/2016	N	N	---	145 (2)	---	N	N	---	---	---	0
LSZ43*	8/16/2016	N	N	---	146 (2)	---	N	N	---	---	---	0
	7/8/2016	Y	N	---	144.70	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	150.3	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	150.1	---	N	N	---	---	---	0
LSZ44*	8/5/2016	Y	N	---	150.2	---	N	N	---	---	---	0
	6/27/2016	Y	N	---	151.61	---	N	N	---	---	---	0
	7/8/2016	Y	N	---	148.94	---	N	N	---	---	---	0
	7/11/2016	Y	N	---	145.00	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	148.89	---	N	N	---	---	---	0
	7/22/2016	Y	N	---	148.65	---	N	N	---	---	---	0
LSZ45*	8/5/2016	Y	N	---	148.73	---	N	N	---	---	---	0
	6/27/2016	Y	N	---	148.05	---	N	N	---	---	---	0
	7/8/2016	Y	N	---	147.95	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	147.87	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	147.71	---	N	N	---	---	---	0
LSZ46*	8/5/2016	Y	N	---	147.73	---	N	N	---	---	---	0
	6/14/2016	Y	N	---	145.67	---	N	N	---	---	---	0
	7/8/2016	Y	N	---	145.93	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	145.85	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	145.74	---	N	N	---	---	---	0
LSZ49*	8/5/2016	Y	N	---	145.69	---	N	N	---	---	---	0
	6/14/2016	Y	N	---	145.26	---	N	N	---	---	---	0
	7/8/2016	Y	N	---	144.70	---	N	N	---	---	---	0
	7/15/2016	Y	N	144.60	146.82	2.22	N	Y	---	---	---	0
	7/29/2016	Y	N	144.48	146.69	2.21	N	Y	---	---	---	0
	8/5/2016	Y	N	---	144.42	---	N	N	---	---	---	0
	8/12/2016	Y	Y	144.42	146.62	2.20	N	Y	---	---	---	0
LSZ50*	8/19/2016	Y	Y	144.46	146.56	2.10	N	Y	---	---	---	0
	7/8/2016	Y	N	---	149	---	N	N	---	---	---	0
	7/15/2016	Y	N	---	148.9	---	N	N	---	---	---	0
	7/29/2016	Y	N	---	148.7	---	N	N	---	---	---	0
LSZ52*	8/5/2016	Y	N	---	148.7	---	N	N	---	---	---	0

NM = Not measured due to temperature interference.
NR = Not recorded.
--- = No NAPL present. Measurement not performed.
* = Newly installed well.

Notes:
(1) LNAPL estimated using PTFE bailer, not interface probe.
(2) Depth measured using a bailer.
(3) Depth measured using a tagline.
(4) LNAPL recovered included water.
(5) Dual screened well location monitored for LNAPL in the upper interval only.



NO.	DATE	REVISION	BY	APVD
DSGN		DR	CHK	APVD

REMEDIAL DESIGN/ REMEDIAL ACTION
WORK PLAN
ST012-FORMER WILLIAMS AIR FORCE BASE
MESA, ARIZONA

DRAWING STATUS
CONSTRUCTION RFP DRAWINGS

amec foster wheeler
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME 04112
(207) 775 5401

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

DATE
PROJ 9101-11-0001
DWG
SHEET OF 15

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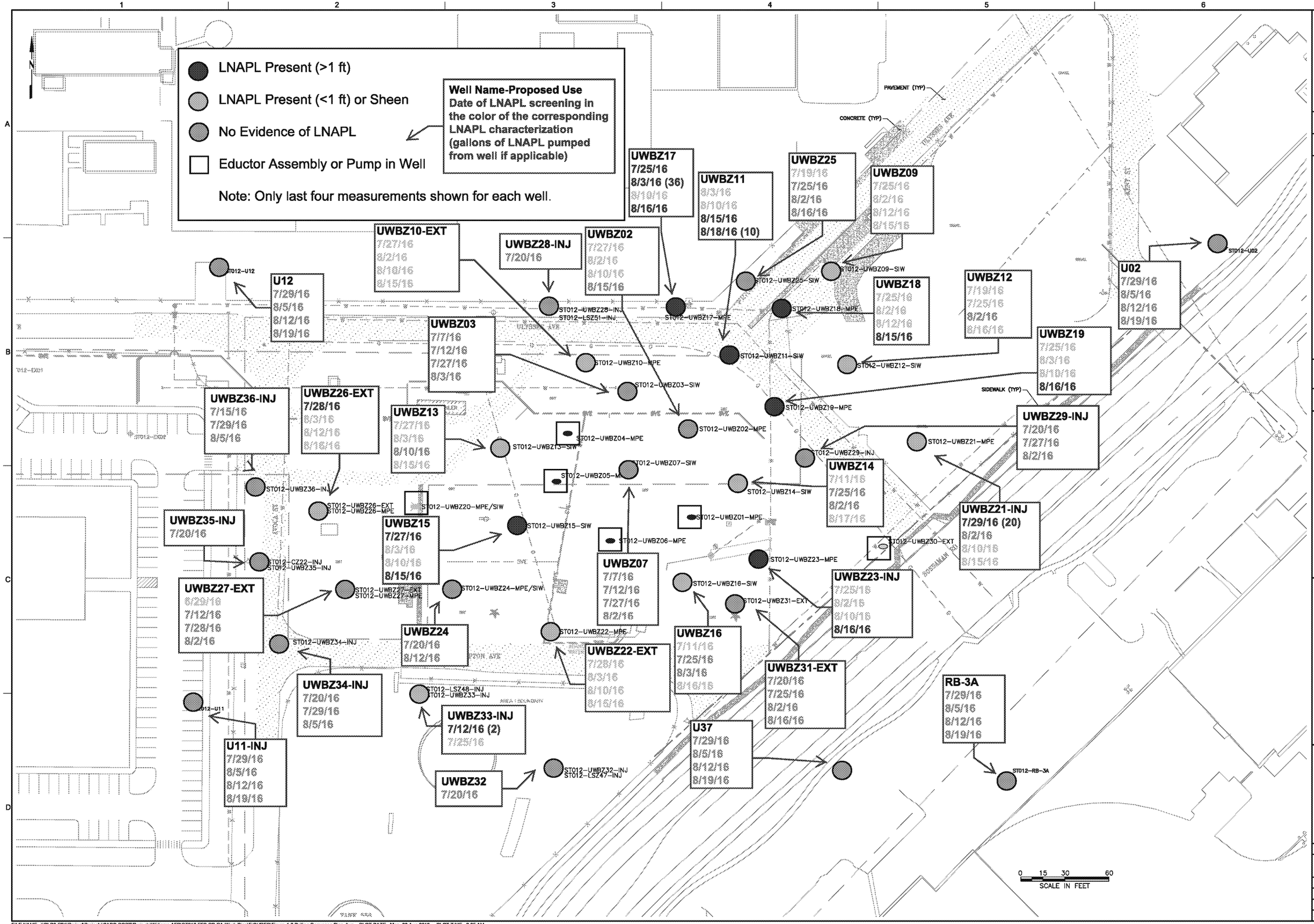
FILE NAME: Z:\Projects\Williams AFB\ST012 FFS-RD-RA-Work-Plan\FIGURES\Figure 1.1 Drilling Sequence Plan.dwg PLOT DATE: Fri, 05 Aug 2016 PLOT TIME: 4:14 PM



NO.	DATE	REVISION	BY	APVD
DSGN		DR	CHK	APVD

REMEDIAL DESIGN/ REMEDIAL ACTION WORK PLAN
ST012-FORMER WILLIAMS AIR FORCE BASE
MESA, ARIZONA

DRAWING STATUS
CONSTRUCTION RFP DRAWINGS

amec foster wheeler
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME 04112
(207) 775 - 5401

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FILE NAME: \\PLD2-FS1\Project\Projects\CADD-PORT\Projects\Williams AFB\ST012 FFS-RD-RA-Work-Plan\FIGURES\Figure 1 2 Drilling Sequence Plan.dwg PLOT DATE: Mon, 08 Aug 2016 PLOT TIME: 9:25 AM

LNAPL Present (>1 ft)

LNAPL Present (<1 ft) or Sheen

No Evidence of LNAPL

Eductor Assembly in Well

Note: Only last four measurements shown for each well.

Well Name-Proposed Use
Date of LNAPL screening in the color of the corresponding LNAPL characterization (gallons of LNAPL pumped from well if applicable)

W12 7/29/16 8/5/16 8/12/16 8/19/16

W30-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ37-EXT 7/1/16 7/15/16 7/29/16 8/5/16

LSZ27 7/7/16 7/12/16 7/27/16 8/3/16

LSZ17-EXT 7/27/16 8/3/16 8/10/16 8/15/16

LSZ51 7/20/16

LSZ28-EXT 7/12/16 7/27/16 8/2/16 8/16/16

LSZ03 7/7/16 7/12/16 7/28/16 8/3/16

W36-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ43-INJ 7/20/16 7/25/16 8/2/16 8/16/16

LSZ44-INJ 7/8/16 7/15/16 7/29/16 8/5/16

LSZ18 7/18/16 7/25/16 8/2/16 8/16/16

LSZ32 7/25/16 8/2/16 8/12/16 8/15/16

LSZ29-EXT 6/29/16 7/20/16 7/25/16 8/2/16

W34-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ31 6/6/16 (20) 7/25/16 8/3/16

LSZ50-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ19 7/27/16 8/3/16 8/10/16 8/16/16

LSZ07 7/7/16 7/12/16 7/28/16 8/2/16

LSZ22 7/25/16 8/3/16 8/12/16 8/15/16

LSZ09-EXT 7/27/16 8/3/16 8/12/16 8/16/16

LSZ20 7/11/16 7/25/16 8/2/16 8/16/16

LSZ21 7/19/16 7/25/16 8/3/16 8/16/16

LSZ14-EXT 7/25/16 8/2/16 8/10/16 8/15/16

LSZ38-EXT 7/1/16 7/15/16 7/29/16 8/5/16

LSZ23-EXT 7/7/16 7/12/16 7/28/16 8/3/16

LSZ24 7/12/16 7/28/16 8/3/16

LSZ25 7/11/16 7/25/16 8/2/16 8/16/16

LSZ15 7/27/16 8/3/16 8/10/16 8/15/16

LSZ42 7/29/16 (36) 8/3/16 8/10/16 8/15/16

LSZ26-EXT 6/29/16 7/11/16 7/25/16 8/2/16

LSZ49-INJ 7/8/16 7/15/16 7/29/16 8/5/16

LSZ39-EXT 7/1/16 7/15/16 7/29/16 8/5/16

LSZ34 7/28/16 8/2/16 8/10/16 8/15/16

LSZ45-INJ 7/11/16 7/15/16 7/22/16 8/5/16

LSZ11-EXT 7/11/16 7/28/16 8/3/16 8/16/16

LSZ12-EXT 7/25/16 8/2/16 8/10/16 8/16/16

LSZ36-EXT 7/11/16 8/2/16 8/10/16 8/15/16

LSZ35 7/28/16 8/3/16 8/10/16 8/16/16

LSZ10 7/12/16 7/28/16 8/3/16

W11-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ48 7/20/16

W37-INJ 7/29/16 8/5/16 8/12/16 8/19/16

LSZ47 7/20/16

LSZ41 7/20/16 7/28/16 8/2/16 8/16/16

LSZ46-INJ 7/8/16 7/15/16 7/29/16 8/5/16

LSZ52 7/8/16 7/15/16 7/29/16 8/5/16

W24 7/29/16 8/5/16 8/12/16 8/19/16

0 15 30 60
SCALE IN FEET

FILE NAME: Z:\Projects\Williams AFB\ST012 FFS-RD-RA-Work Plan\FIGURES\Figure 1.3 Drilling Sequence Plan.dwg PLOT DATE: Fri, 05 Aug 2016 PLOT TIME: 4:15 PM

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