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January 27, 2017

UIC Program Supervisor
WDEQ – Water Quality Division
Herschler Building – 4W
122 W. 25th Street
Cheyenne, WY 82002

RE: Quarterly and Annual Report for 4th Quarter 2016
UIC Class I Permit 13-409; UIC Class V Permit 15-081
Lost Creek ISR Project, Sweetwater County, WY

Dear Program Supervisor,

The attached Quarterly and Annual Report for the Lost Creek ISR Project has been submitted in accordance with the requirements of Class I Underground Injection Control (UIC) Permit 13-409 Section K. The reporting period for the Quarterly Report is the fourth calendar quarter of 2016 and the Annual Report is 2016.

A quarterly report is also required as per Class V UIC Permit 15-081 Section 9b. However, the Class V system had not yet commenced injection as of the end of the reporting period and therefore no report will be submitted with the exception of the online submittal on the agencies GEM website, if applicable.

If you have any questions regarding this submittal, please contact me at the Casper Office.

Regards,

Michael Gaither
Manager EHS and Regulatory Affairs
Ur-Energy USA, Inc.

Attachments: UIC Class I Quarterly and Annual Report

Cc: Theresa Horne, Ur-Energy, Littleton Office (via e-mail)
Brian Wood, WDEQ-LQD, Lander (via e-mail)
John Saxton, NRC Project Manager (via e-mail)

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**UIC CLASS I QUARTERLY REPORT
for the
LOST CREEK ISR PROJECT
4th Quarter 2016**



**LOST CREEK ISR, LLC
SWEETWATER COUNTY, WY**

UIC PERMIT 13-409

**Prepared by Ur-Energy for
Wyoming Department of Environmental Quality -
Water Quality Division – Underground Injection Control**

January 27, 2017



Contents

1.0	Introduction.....	1
2.0	Summary Data	2
3.0	Analytical Results	6
4.0	Permit Exceedances.....	6
5.0	Alarms, Shut-Downs, and Corrective Actions.....	10
6.0	Summary of Well Tests or Workovers	10

Tables

Table 1A: Operational Data Summary for DDW-1
Table 1B: Operational Data Summary for DDW-3
Table 1C: Operational Data Summary for DDW-4
Table 2: Cumulative Injection Volumes to Date
Table 3: Analytical Results Summary
Table 4: Summary of Exceedances
Table 5: Summary of Automatic Pressure Shutoff Testing

Figures

Figure 1: Well Locations

Appendices

Appendix 1: Daily Injection Pressures
Appendix 2: Lab Report
Appendix 3: Annual Report Summaries and Data Disk
Appendix 3a: 5-Year Summary of Monthly Injection Pressures and Volumes
Appendix 3b: 5-Year Summary of Water Quality Data

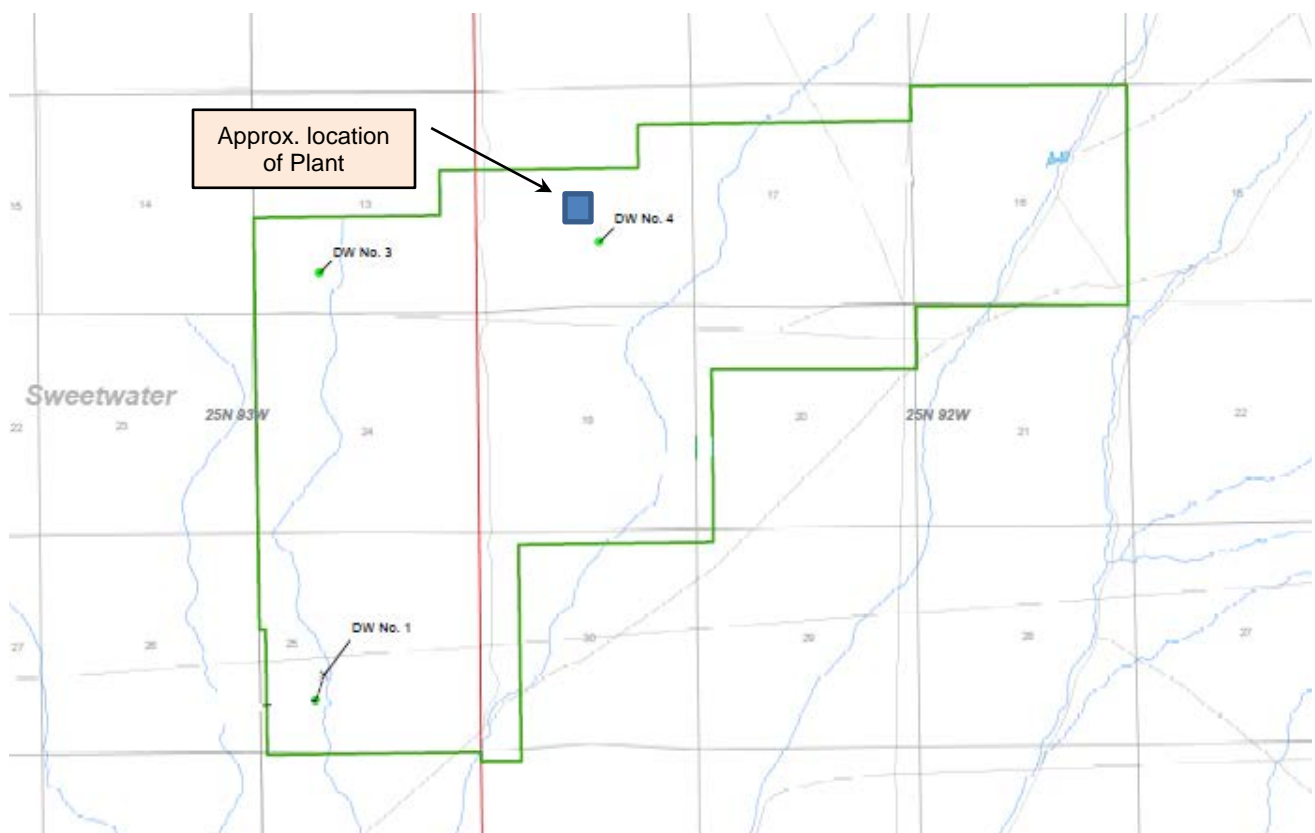


1.0 Introduction

The period covered by this report is the fourth calendar quarter of 2016 from October 1 to December 31, 2016.

Three Class I disposal wells were operational during the reporting period: LC DW No. 1 (“DDW-1”), LC DW No. 3 (“DDW-3”), and LC DW No. 4 (“DDW-4”). Well locations (labeled) are shown below in relation to the Permit to Mine boundary (green line):

FIGURE 1: Well Locations



All three wells were operated intermittently during the quarter. Operational data was monitored and recorded electronically and also recorded manually by operator each shift.

As per permit requirements, the following elements from Section K(6) of the UIC Permit have been included in this report:

- a. Minimum, volume-weighted average, and maximum instantaneous injection rates for each well for each month*
- b. Minimum, average, and maximum daily injection pressures for each well for each month*



- c. Total injection volume in barrels (bbl) for each well for each month, total for the quarter, and cumulative volume of waste injected to date.*
- d. Maximum and minimum annulus pressures for each month with alarm/kill pressure value*
- e. Quarterly analytical results*
- f. Permit exceedances during the quarter*
- g. Any alarms or shutdowns and corrective actions*
- h. Summary of well tests or workovers*

The Annual Summary is submitted pursuant to Section K(7) of the Permit. The following information is to be included for the Annual Report:

- i. Graphical representation of injection pressures and volumes for the previous five (5) year's operation and a digital file containing the data.*
- ii. Graphical representation of quality of injected waste over time for the previous five (5) year's operation and a digital file containing the data.*

Graphs of the injection pressures and volumes have been provided as **Appendix 3** and electronic data in Excel format is included via data disc.

2.0 Summary Data

Tables 1A, 1B, 1C, and 2 below provide a data summary for above items **a**, **c**, and **d** above. Data for item **b** above is provided in **Appendix 1** including tables and charts of the daily injection pressure values.



TABLE 1A: Operational Data Summary for DDW-1

PARAMETER	UNITS	LC DW No. 1			
		October 2016	November 2016	December 2016	Total or Average
Operation Time	min	20158	27008	43048	30071
% Run Time	%	45%	63%	96%	68%
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	3	2	1	2
Injection Rate Maximum Instantaneous	gpm	5	4	2	3
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	293	245	0	179
Injection Pressure Daily Average	psig	551	542	567	554
Injection Pressure Daily Maximum	psig	607	2371 (603)*	2371 (591)*	600**
Injection Pressure Permit Limit (LSIP)	psig	609			609
Injection Pressure Automatic Kill	psig	600			600
Injection Volume	gal	67007	48633	62586	178226
Injection Volume	bbl	1595	1158	1490	4243
Annulus Pressure Minimum	psig	287	258	260	268
Annulus Pressure Average	psig	293	283	287	288
Annulus Pressure Maximum	psig	300	298	304	301
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A

*Max pressure excluding pressure anomaly in parentheses

**Average excluding pressure anomalies



TABLE 1B: Operational Data Summary for DDW-3

PARAMETER	UNITS	LC DW No. 3			
		October 2016	November 2016	December 2016	Total or Average
Operation Time	min	36439	33897	38939	109275
% Run Time	%	82%	78%	87%	82%
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	8	7	7	7
Injection Rate Maximum Instantaneous	gpm	52	30	23	35
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	720	0	706	475
Injection Pressure Daily Average	psig	834	770	814	806
Injection Pressure Daily Maximum	psig	897	886	898	894
Injection Pressure Permit Limit (LSIP)	psig	915			915
Injection Pressure Automatic Kill	psig	910			910
Injection Volume	gal	287841	245721	285814	819377
Injection Volume	bbl	6853	5851	6805	19509
Annulus Pressure Minimum	psig	248	251	252	250
Annulus Pressure Average	psig	266	268	280	271
Annulus Pressure Maximum	psig	273	287	287	282
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A



TABLE 1C: Operational Data Summary for DDW-4

PARAMETER	UNITS	LC DW No. 4			
		October 2016	November 2016	December 2016	Total or Average
Operation Time	min	38716	33925	40690	113331
% Run Time	%	87%	79%	91%	85%
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	8	9	8	8
Injection Rate Maximum Instantaneous	gpm	10	22	9	14
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	582	551	623	585
Injection Pressure Daily Average	psig	708	710	731	716
Injection Pressure Daily Maximum	psig	766	770	776	771
Injection Pressure Permit Limit (LSIP)	psig	838			838
Injection Pressure Automatic Kill	psig	830			830
Injection Volume	gal	312591	297389	333671	943651
Injection Volume	bbl	7443	7081	7945	22468
Annulus Pressure Minimum	psig	286	286	288	287
Annulus Pressure Average	psig	295	295	297	296
Annulus Pressure Maximum	psig	323	304	303	310
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A

TABLE 2: Cumulative Injection Volumes to Date

TIME PERIOD	UNITS	LC DW No. 1	LC DW No. 3	LC DW No. 4
2013	bbl	14,625	N/A	6,471
2014	bbl	31,278	8,239	164,694
2015	bbl	14,966	130,113	105,999
2016 1 st Quarter	bbl	0	26,819	29,839
2016 2 nd Quarter	bbl	0	26,844	32,540
2016 3 rd Quarter	bbl	5,057	22,481	22,407
2016 4 th Quarter	bbl	4,243	19,509	22,468
CUMULATIVE TOTAL TO DATE	bbl	70,169	234,005	384,418



3.0 Analytical Results

A quarterly grab sample of the injectate was collected from the Plant waste water line upstream of the branch points to each individual well. Sample parameters pH, conductivity, and temperature were measured with a field meter at the sampling site and other applicable parameters were analyzed by Energy Laboratories in Casper, WY. Results of the sample analyses are summarized in **Table 3** below and the associated lab report is included as **Appendix 2**.

TABLE 3: Analytical Results Summary

Sample ID: DDW-Injectate			
Sample Date: 12/15/2016			
Lab Analyte or Parameter	Method Used	Results	Units
pH, field	SM4500-H ⁺ B	6.36	s.u.
Specific Cond. at 25°C, field	120.1	14,090	uS/cm
Temperature, field	SM2550B	12.8	°C
Specific Gravity	n/a	1.006	---
Total Dissolved Solids	SM2540C	7,730	mg/L
Bicarbonate	SM2320B	707	mg/L
Carbonate	SM2320B	ND(5)	mg/L
Chloride, total	300.0	3,610	mg/L
Sulfate, total	300.0	875	mg/L
Sulfide (as hydrogen sulfide)	A4500-S F	ND(1)	mg/L
Arsenic, dissolved	200.8	0.010	mg/L
Selenium, dissolved	200.8	0.170	mg/L
Vanadium, dissolved	200.8	ND(0.01)	mg/L
Uranium, total	200.7	4.29	mg/L
Radium-226, total	E903.0	2,150	pCi/L

The only constituent with a defined Permit limit is pH which must have a value between 2.0 and 12.5. The measured value for pH of 6.36 was within the limit.

4.0 Permit Exceedances

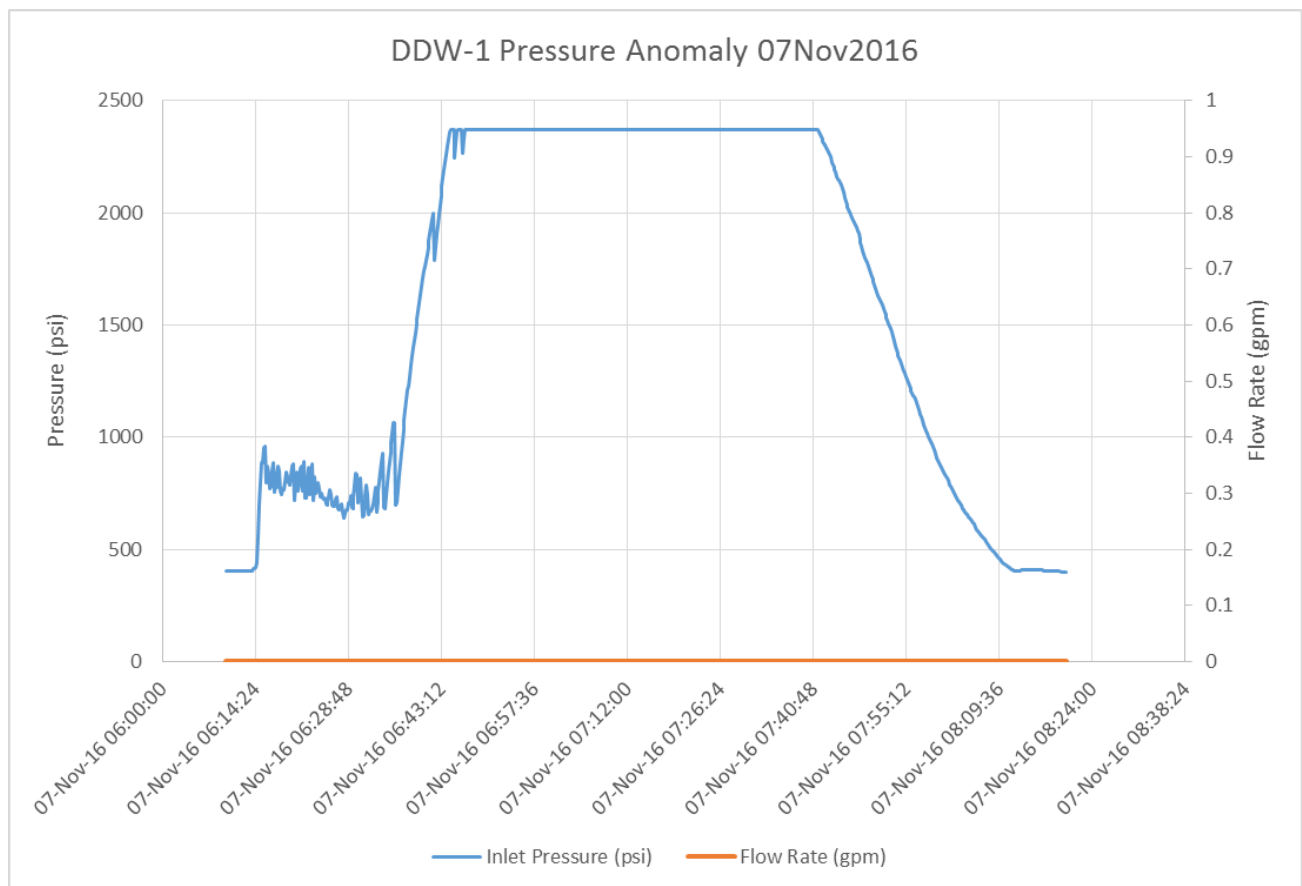
The following qualified exceedances occurred as shown on **Table 4** below.



TABLE 4: Summary of Exceedances

Event	Well	Date	Limit Exceeded	Peak Value	Permit Limit	Comment
1	DDW-1	11/07/2016	Injection Pressure	2371	609	Pressure anomaly with zero flow rate.
2	DDW-1	12/6/2016	Injection Pressure	2371	609	Pressure anomaly with zero flow rate.
3	DDW-3	10/13/2016	Flow Rate	52	50	Spike in flow rate due to shut-off

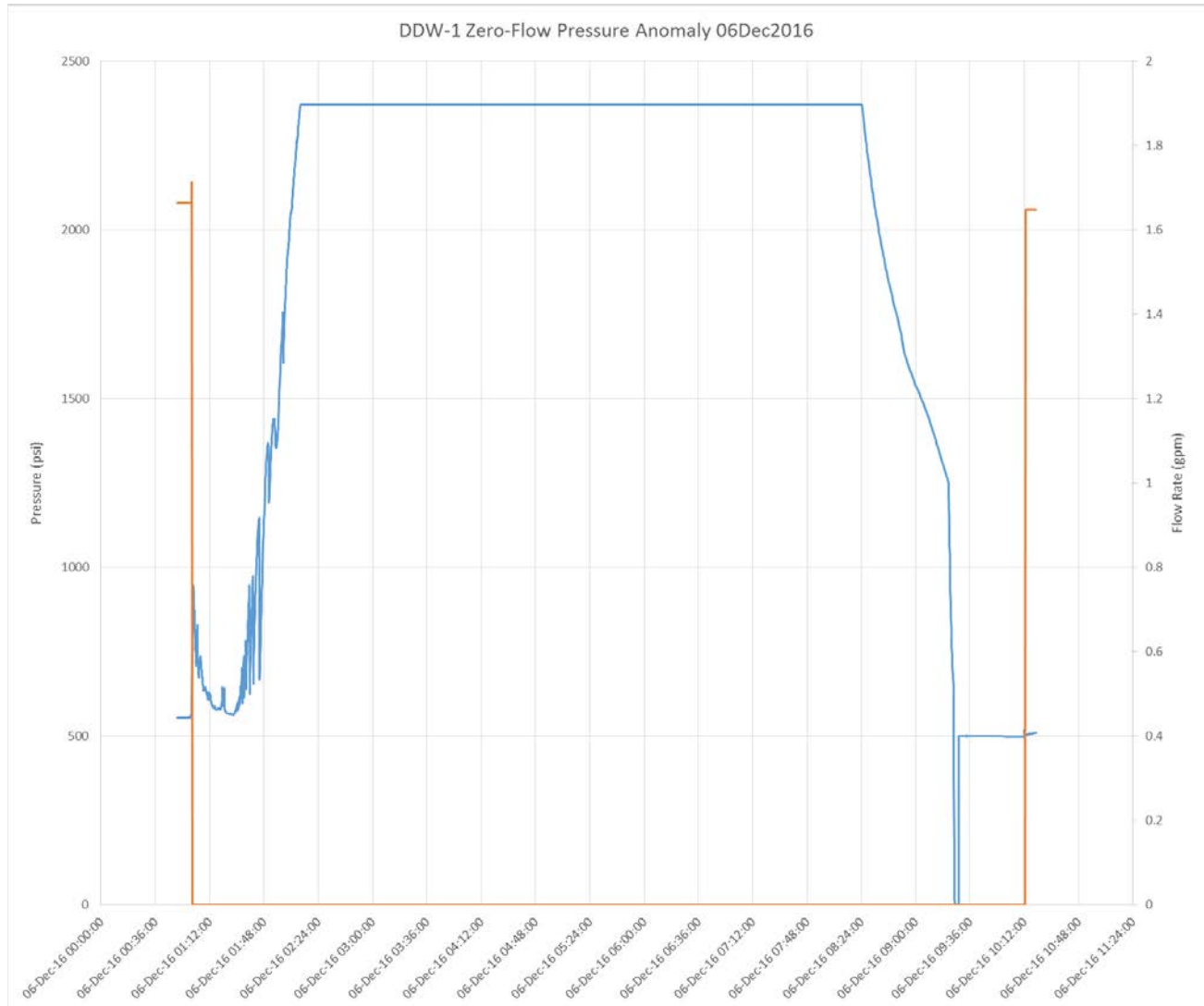
Event 1:



This event was likely due to the freezing of the discharge line and pressure sensor with no flow in the line. Manual pressure reading at wellhead was 503 psi.



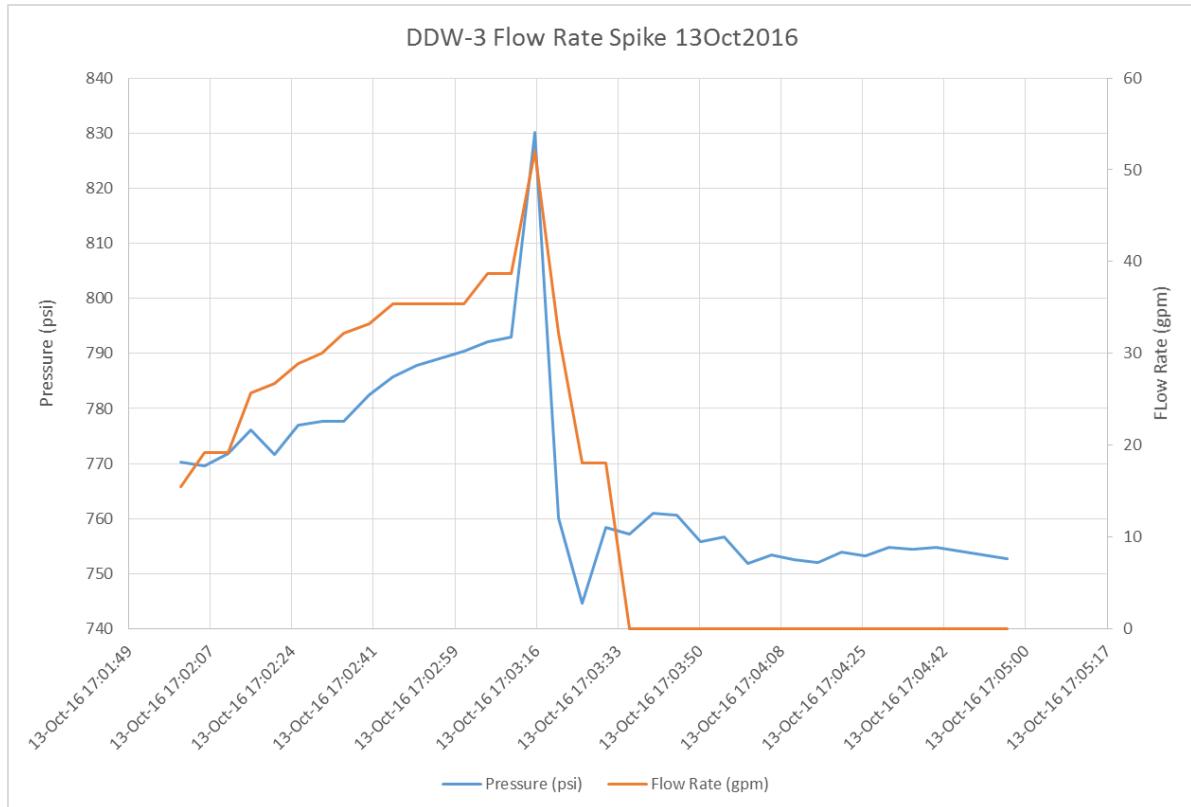
Event 2:



This event was likely due to the freezing of the discharge line and pressure sensor with no flow in the line. Manual pressure reading at wellhead was 542 psi.



Event 3:



This peak was due to shut-off spiking.



5.0 Alarms, Shut-Downs, and Corrective Actions

Planned shutdowns of the three wells occurred in November for the annual fall-off testing. Other shutdowns either automatically or manually occur frequently due to pressure increases or due to maintenance activity such as changing inline filters or program changes. Intermittent operation of the injection systems is typical.

Maintenance activities completed during the quarter included:

- Routine pump oil and filter changes at all wells

Testing of the pressure switches to verify operation of automatic shutdown and pressures occurred in November. Results of the testing are summarized on **Table 5**:

TABLE 5: Summary of Automatic Pressure Shutoff Testing

Well	Permit Pressure Limit (psi)	Test Date	Digital Shutoff Set To (psi)	Digital Shutoff Function	Well Shutoff by Analog Pressure Switch At (psi)	Comments
DDW-1	609	11/10/2016	600	Pass	602	
DDW-3	915	11/10/2016	900	Pass	907	
DDW-4	838	11/14/2016	825	Pass	830	

6.0 Summary of Well Tests or Workovers

Annual fall-off testing was performed on the three wells on the following dates:

- DDW-1: 11/5 – 11/7/2016
- DDW-3: 11/2 – 11/5/2016
- DDW-4: 10/31 – 11/2/2016

The fall-off testing was completed by Petrotek and the testing report was previously submitted by Petrotek to the agency.



APPENDIX 1

APPENDIX 1: Daily Injection Pressures
DDW-1 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
10/1/2016	336	341	346	600	609	
10/2/2016	328	332	337	600	609	
10/3/2016	320	324	328	600	609	
10/4/2016	313	317	321	600	609	
10/5/2016	293	311	320	600	609	
10/6/2016	302	329	417	600	609	
10/7/2016	416	509	556	600	609	
10/8/2016	533	554	572	600	609	
10/9/2016	441	500	568	600	609	
10/10/2016	537	540	548	600	609	
10/11/2016	552	559	565	600	609	
10/12/2016	509	545	599	600	609	
10/13/2016	495	558	606	600	609	
10/14/2016	521	568	602	600	609	
10/15/2016	498	552	603	600	609	
10/16/2016	482	537	600	600	609	
10/17/2016	474	526	599	600	609	
10/18/2016	453	525	603	600	609	
10/19/2016	505	541	600	600	609	
10/20/2016	477	543	592	600	609	
10/21/2016	466	518	574	600	609	
10/22/2016	448	532	603	600	609	
10/23/2016	480	536	603	600	609	
10/24/2016	497	534	599	600	609	
10/25/2016	471	529	598	600	609	
10/26/2016	510	558	604	600	609	
10/27/2016	489	543	607	600	609	
10/28/2016	537	582	601	600	609	
10/29/2016	481	532	599	600	609	
10/30/2016	467	539	599	600	609	
10/31/2016	506	566	599	600	609	
11/1/2016	525	557	603	600	609	
11/2/2016	476	497	526	600	609	
11/3/2016	464	485	503	600	609	
11/4/2016	481	489	503	600	609	
11/5/2016	442	484	505	600	609	Fall-off test
11/6/2016	409	424	443	600	609	Fall-off test
11/7/2016	245	521	2371	600	609	Fall-off test, pressure anomaly
11/8/2016	435	456	468	600	609	
11/9/2016	467	477	485	600	609	
11/10/2016	455	470	482	600	609	
11/11/2016	412	450	467	600	609	

APPENDIX 1: Daily Injection Pressures
DDW-1 4th Quarter 2016
Lost Creek ISR Project 13-409

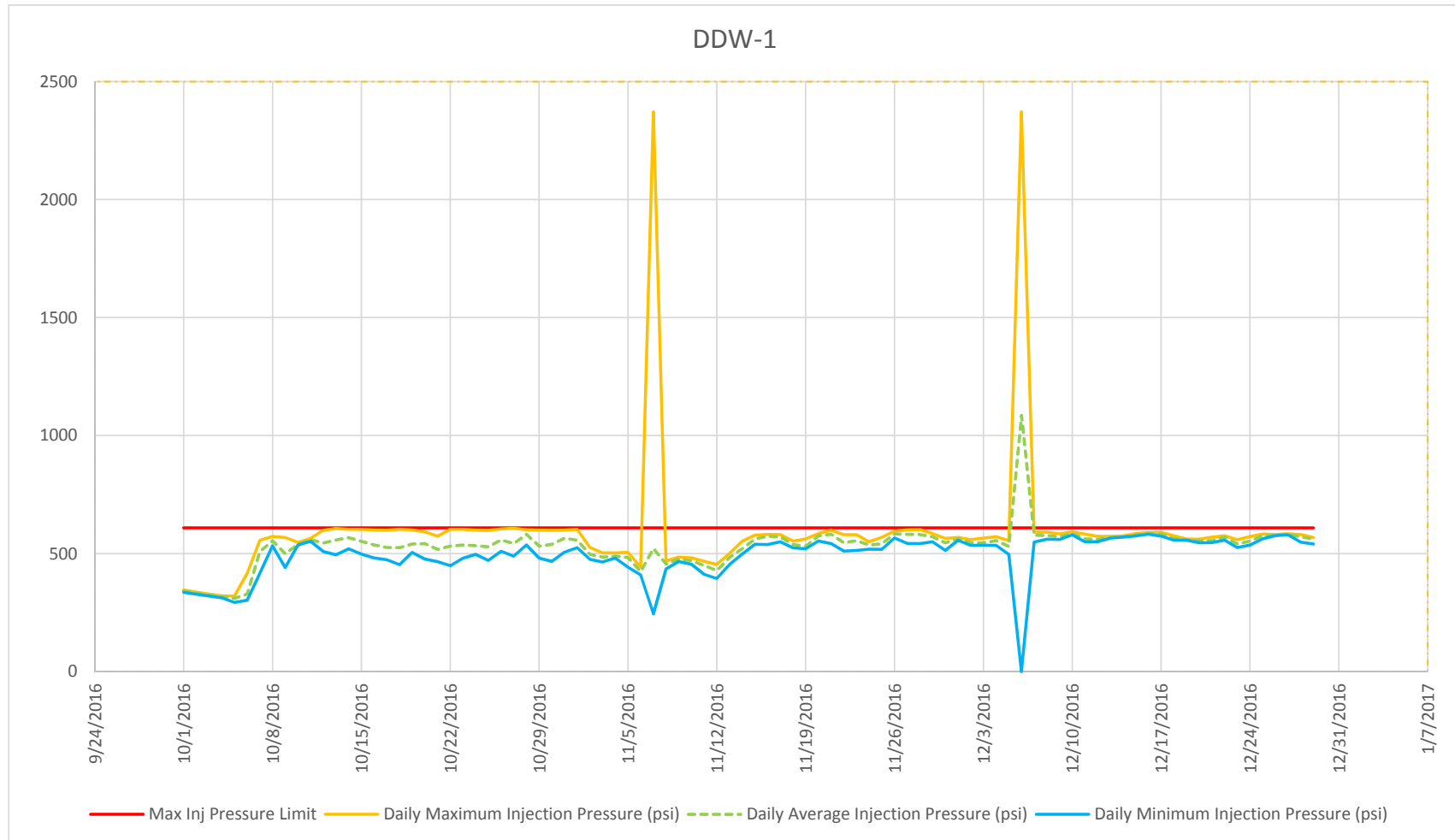
Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
11/12/2016	395	428	454	600	609	
11/13/2016	454	484	501	600	609	
11/14/2016	498	521	552	600	609	
11/15/2016	539	562	578	600	609	
11/16/2016	538	574	581	600	609	
11/17/2016	550	571	581	600	609	
11/18/2016	525	539	553	600	609	
11/19/2016	520	531	562	600	609	
11/20/2016	553	576	585	600	609	
11/21/2016	542	582	599	600	609	
11/22/2016	510	546	580	600	609	
11/23/2016	513	555	580	600	609	
11/24/2016	519	536	550	600	609	
11/25/2016	518	542	569	600	609	
11/26/2016	566	584	595	600	609	
11/27/2016	543	582	600	600	609	
11/28/2016	542	581	602	600	609	
11/29/2016	550	571	584	600	609	
11/30/2016	513	546	564	600	609	
12/1/2016	556	563	568	600	609	
12/2/2016	535	546	559	600	609	
12/3/2016	535	546	566	600	609	
12/4/2016	535	555	571	600	609	
12/5/2016	496	531	555	600	609	
12/6/2016	0	1086	2371	600	609	Pressure anomaly
12/7/2016	549	578	591	600	609	
12/8/2016	561	576	591	600	609	
12/9/2016	560	572	584	600	609	
12/10/2016	580	586	591	600	609	
12/11/2016	550	563	583	600	609	
12/12/2016	550	561	573	600	609	
12/13/2016	566	569	573	600	609	
12/14/2016	570	572	575	600	609	
12/15/2016	575	579	585	600	609	
12/16/2016	582	586	589	600	609	
12/17/2016	574	584	589	600	609	
12/18/2016	557	564	575	600	609	
12/19/2016	557	559	561	600	609	
12/20/2016	546	554	561	600	609	
12/21/2016	546	555	570	600	609	
12/22/2016	557	570	576	600	609	
12/23/2016	525	542	559	600	609	

APPENDIX 1: Daily Injection Pressures
DDW-1 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
12/24/2016	536	553	572	600	609	
12/25/2016	562	577	583	600	609	
12/26/2016	576	578	581	600	609	
12/27/2016	579	583	584	600	609	
12/28/2016	548	571	581	600	609	
12/29/2016	541	562	568	600	609	
12/30/2016	549	573	581	600	609	
12/31/2016	569	574	576	600	609	

psi: pounds per square inch

APPENDIX 1: Daily Injection Pressures
DDW-1 4th Quarter 2016
Lost Creek ISR Project 13-409



APPENDIX 1: Daily Injection Pressures
DDW-3 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
10/1/2016	818	844	860	900	915	
10/2/2016	848	868	886	900	915	
10/3/2016	848	873	897	900	915	
10/4/2016	862	867	882	900	915	
10/5/2016	852	874	887	900	915	
10/6/2016	831	866	883	900	915	
10/7/2016	831	849	862	900	915	
10/8/2016	821	831	839	900	915	
10/9/2016	824	849	867	900	915	
10/10/2016	817	832	854	900	915	
10/11/2016	822	863	894	900	915	
10/12/2016	736	822	891	900	915	
10/13/2016	720	789	834	900	915	
10/14/2016	761	822	874	900	915	
10/15/2016	826	839	874	900	915	
10/16/2016	847	859	882	900	915	
10/17/2016	834	859	881	900	915	
10/18/2016	791	828	880	900	915	
10/19/2016	750	795	852	900	915	
10/20/2016	737	751	772	900	915	
10/21/2016	727	780	845	900	915	
10/22/2016	789	821	833	900	915	
10/23/2016	826	837	846	900	915	
10/24/2016	784	805	846	900	915	
10/25/2016	807	833	853	900	915	
10/26/2016	804	827	876	900	915	
10/27/2016	791	814	834	900	915	
10/28/2016	811	830	841	900	915	
10/29/2016	835	847	857	900	915	
10/30/2016	826	847	885	900	915	
10/31/2016	822	841	878	900	915	
11/1/2016	783	821	863	900	915	
11/2/2016	785	831	867	900	915	Fall-off test
11/3/2016	0	252	879	900	915	Fall-off test
11/4/2016	0	0	1	900	915	Fall-off test
11/5/2016	0	433	815	900	915	Fall-off test
11/6/2016	813	849	863	900	915	
11/7/2016	767	843	875	900	915	
11/8/2016	782	787	796	900	915	
11/9/2016	789	814	868	900	915	
11/10/2016	802	824	846	900	915	
11/11/2016	816	825	831	900	915	

APPENDIX 1: Daily Injection Pressures
DDW-3 4th Quarter 2016
Lost Creek ISR Project 13-409

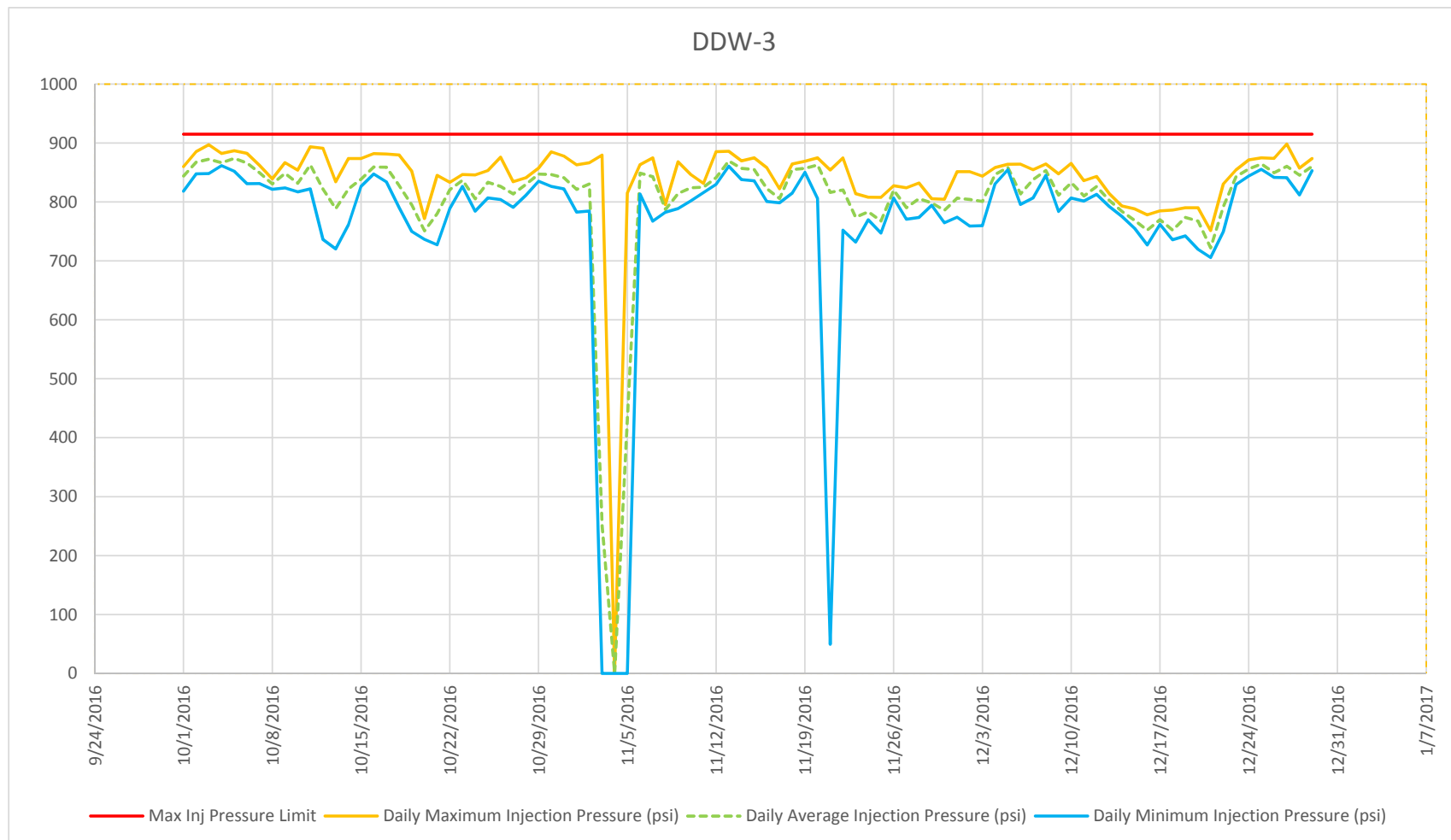
Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
11/12/2016	830	842	885	900	915	
11/13/2016	861	870	886	900	915	
11/14/2016	838	857	870	900	915	
11/15/2016	836	855	875	900	915	
11/16/2016	801	822	858	900	915	
11/17/2016	798	806	822	900	915	
11/18/2016	815	855	864	900	915	
11/19/2016	850	857	869	900	915	
11/20/2016	806	863	875	900	915	
11/21/2016	50	816	854	900	915	
11/22/2016	752	820	875	900	915	
11/23/2016	732	774	814	900	915	
11/24/2016	770	783	808	900	915	
11/25/2016	747	768	808	900	915	
11/26/2016	807	820	828	900	915	
11/27/2016	771	790	824	900	915	
11/28/2016	774	806	832	900	915	
11/29/2016	794	798	806	900	915	
11/30/2016	765	786	805	900	915	
12/1/2016	774	807	852	900	915	
12/2/2016	759	804	852	900	915	
12/3/2016	760	801	844	900	915	
12/4/2016	831	847	858	900	915	
12/5/2016	855	859	864	900	915	
12/6/2016	796	814	864	900	915	
12/7/2016	807	838	855	900	915	
12/8/2016	845	853	865	900	915	
12/9/2016	784	812	848	900	915	
12/10/2016	807	833	865	900	915	
12/11/2016	801	810	836	900	915	
12/12/2016	813	826	843	900	915	
12/13/2016	792	803	814	900	915	
12/14/2016	776	784	793	900	915	
12/15/2016	755	769	788	900	915	
12/16/2016	727	752	778	900	915	
12/17/2016	762	770	785	900	915	
12/18/2016	736	752	786	900	915	
12/19/2016	743	774	790	900	915	
12/20/2016	720	768	790	900	915	
12/21/2016	706	722	751	900	915	
12/22/2016	750	792	831	900	915	
12/23/2016	830	843	854	900	915	

APPENDIX 1: Daily Injection Pressures
DDW-3 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
12/24/2016	844	856	871	900	915	
12/25/2016	855	865	875	900	915	
12/26/2016	842	850	874	900	915	
12/27/2016	841	861	898	900	915	
12/28/2016	812	846	857	900	915	
12/29/2016	853	861	874	900	915	
12/30/2016	800	824	863	900	915	
12/31/2016	809	856	885	900	915	

psi: pounds per square inch

APPENDIX 1: Daily Injection Pressures
DDW-3 4th Quarter 2016
Lost Creek ISR Project 13-409



APPENDIX 1: Daily Injection Pressures
DDW-4 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
10/1/2016	698	710	741	825	838	
10/2/2016	741	744	746	825	838	
10/3/2016	680	736	748	825	838	
10/4/2016	723	734	746	825	838	
10/5/2016	732	751	764	825	838	
10/6/2016	673	717	763	825	838	
10/7/2016	699	713	727	825	838	
10/8/2016	614	660	701	825	838	
10/9/2016	600	649	687	825	838	
10/10/2016	632	665	687	825	838	
10/11/2016	699	708	717	825	838	
10/12/2016	631	662	688	825	838	
10/13/2016	582	627	670	825	838	
10/14/2016	626	703	734	825	838	
10/15/2016	683	697	725	825	838	
10/16/2016	688	738	756	825	838	
10/17/2016	690	748	758	825	838	
10/18/2016	637	693	740	825	838	
10/19/2016	628	667	724	825	838	
10/20/2016	644	692	738	825	838	
10/21/2016	691	736	766	825	838	
10/22/2016	674	708	735	825	838	
10/23/2016	695	732	750	825	838	
10/24/2016	695	718	752	825	838	
10/25/2016	732	744	756	825	838	
10/26/2016	684	725	741	825	838	
10/27/2016	685	720	730	825	838	
10/28/2016	674	721	759	825	838	
10/29/2016	664	705	729	825	838	
10/30/2016	701	724	760	825	838	
10/31/2016	651	687	729	825	838	Fall-off test
11/1/2016	622	635	651	810	838	Fall-off test
11/2/2016	611	643	712	810	838	Fall-off test
11/3/2016	671	719	735	810	838	
11/4/2016	653	665	697	810	838	
11/5/2016	674	687	737	810	838	
11/6/2016	706	745	755	810	838	
11/7/2016	645	708	756	810	838	
11/8/2016	631	679	726	810	838	
11/9/2016	684	703	754	810	838	
11/10/2016	644	684	735	810	838	
11/11/2016	594	616	644	810	838	

APPENDIX 1: Daily Injection Pressures
DDW-4 4th Quarter 2016
Lost Creek ISR Project 13-409

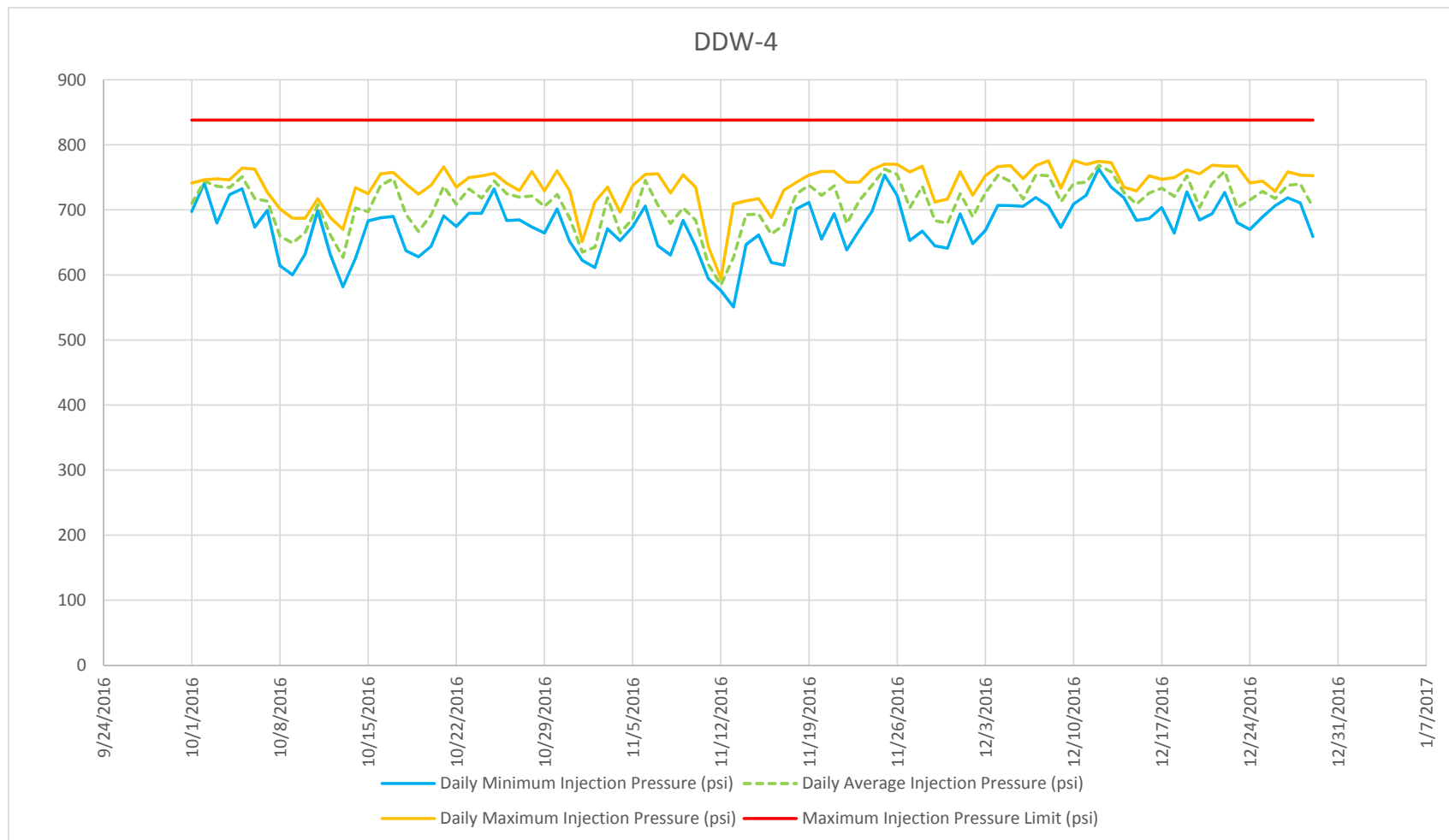
Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
11/12/2016	576	585	594	810	838	
11/13/2016	551	627	709	810	838	
11/14/2016	647	693	714	810	838	
11/15/2016	661	693	717	810	838	
11/16/2016	619	663	688	810	838	
11/17/2016	615	677	730	810	838	
11/18/2016	701	725	742	810	838	
11/19/2016	711	738	753	810	838	
11/20/2016	655	722	759	810	838	
11/21/2016	694	737	759	810	838	
11/22/2016	638	679	742	810	838	
11/23/2016	669	715	743	810	838	
11/24/2016	698	738	762	810	838	
11/25/2016	753	763	770	810	838	
11/26/2016	722	754	770	810	838	
11/27/2016	653	703	758	810	838	
11/28/2016	667	736	767	810	838	
11/29/2016	645	684	712	810	838	
11/30/2016	641	680	717	810	838	
12/1/2016	694	725	759	810	838	
12/2/2016	648	690	723	810	838	
12/3/2016	668	726	752	810	838	
12/4/2016	707	753	767	810	838	
12/5/2016	707	744	768	810	838	
12/6/2016	705	717	748	810	838	
12/7/2016	719	754	768	810	838	
12/8/2016	706	752	775	810	838	
12/9/2016	673	713	733	810	838	
12/10/2016	709	741	776	810	838	
12/11/2016	722	743	770	810	838	
12/12/2016	763	769	775	810	838	
12/13/2016	735	758	773	810	838	
12/14/2016	719	727	735	810	838	
12/15/2016	684	709	729	810	838	
12/16/2016	687	726	752	810	838	
12/17/2016	704	733	747	810	838	
12/18/2016	664	721	750	810	838	
12/19/2016	727	752	762	810	838	
12/20/2016	684	704	755	810	838	
12/21/2016	694	741	768	810	838	
12/22/2016	727	760	767	810	838	
12/23/2016	680	703	767	810	838	

APPENDIX 1: Daily Injection Pressures
DDW-4 4th Quarter 2016
Lost Creek ISR Project 13-409

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
12/24/2016	670	716	741	810	838	
12/25/2016	689	728	744	810	838	
12/26/2016	706	718	728	810	838	
12/27/2016	718	738	759	810	838	
12/28/2016	711	740	753	810	838	
12/29/2016	659	704	753	810	838	
12/30/2016	623	655	746	810	838	
12/31/2016	687	706	735	810	838	

psi: pounds per square inch

APPENDIX 1: Daily Injection Pressures
DDW-4 4th Quarter 2016
Lost Creek ISR Project 13-409





APPENDIX 2



ANALYTICAL SUMMARY REPORT

January 12, 2017

UR Energy USA Inc
10758 W Centennial Rd Ste 200
Ken Caryl Ranch, CO 80127

Work Order: C16120490

Project Name: Lost Creek Wastewater

Energy Laboratories, Inc. Casper WY received the following 1 sample for UR Energy USA Inc on 12/15/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16120490-001	DDW - Injectate	12/15/16 10:15	12/15/16	Aqueous	Metals by ICP/ICPMS, Total Alkalinity Conductivity Gravimetric Tests E300.0 Anions pH Metals Preparation by EPA 200.2 Radium 226, Total Solids, Total Dissolved Sulfide, Iodine Titrimetric

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:



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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

CLIENT: UR Energy USA Inc
Project: Lost Creek Wastewater
Work Order: C16120490

Report Date: 01/12/17

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: UR Energy USA Inc
Project: Lost Creek Wastewater
Lab ID: C16120490-001
Client Sample ID: DDW - Injectate

Report Date: 01/12/17
Collection Date: 12/15/16 10:15
Date Received: 12/15/16
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO ₃	ND	mg/L		5		A2320 B	12/16/16 19:42 / jcg
Bicarbonate as HCO ₃	707	mg/L		5		A2320 B	12/16/16 19:42 / jcg
Chloride	3610	mg/L	D	10		E300.0	12/19/16 23:05 / jcg
Sulfate	875	mg/L	D	40		E300.0	12/19/16 23:05 / jcg
INORGANICS							
Sulfide	ND	mg/L		1		A4500-S F	12/21/16 08:47 / eli-b
Sulfide as Hydrogen Sulfide (H ₂ S)	ND	mg/L		1		A4500-S F	12/21/16 08:47 / eli-b
PHYSICAL PROPERTIES							
Specific Gravity 60/60F	1.006	unitless		0.001		D1429	12/21/16 11:22 / bah
pH	6.48	s.u.	H	0.01		A4500-H B	12/19/16 09:30 / bah
Solids, Total Dissolved TDS @ 180 C	7730	mg/L	D	100		A2540 C	12/21/16 10:31 / bah
Conductivity @ 25 C	13600	umhos/cm		5		A2510 B	12/19/16 09:30 / bah
METALS, TOTAL							
Arsenic	0.010	mg/L		0.001		E200.8	01/06/17 14:37 / sf
Selenium	0.170	mg/L		0.001		E200.8	01/06/17 14:37 / sf
Uranium	4.29	mg/L		0.0003		E200.8	01/06/17 14:37 / sf
Vanadium	ND	mg/L		0.01		E200.8	01/06/17 14:37 / sf
RADIONUCLIDES - TOTAL							
Radium 226	2150	pCi/L				E903.0	12/28/16 14:39 / dmf
Radium 226 precision (±)	402	pCi/L				E903.0	12/28/16 14:39 / dmf
Radium 226 MDC	0.14	pCi/L				E903.0	12/28/16 14:39 / dmf

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix.



QA/QC Summary Report

Prepared by Billings, MT Branch

Client: UR Energy USA Inc

Report Date: 12/22/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-S F								Batch: ttrsulfide161221B		
Lab ID: MBLK	2	Method Blank				Run: MISC-WC_161221D		12/21/16 08:47		
Sulfide		ND	mg/L	0.5						
Sulfide as Hydrogen Sulfide (H ₂ S)		ND	mg/L	0.6						
Lab ID: LCS		Laboratory Control Sample				Run: MISC-WC_161221D		12/21/16 08:47		
Sulfide		20.5	mg/L	1.0	100	90	110			
Lab ID: C16120490-001DMS		Sample Matrix Spike				Run: MISC-WC_161221D		12/21/16 08:47		
Sulfide		20.8	mg/L	1.0	102	70	130			
Lab ID: C16120490-001DMSD		Sample Matrix Spike Duplicate				Run: MISC-WC_161221D		12/21/16 08:47		
Sulfide		20.8	mg/L	1.0	102	70	130	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc
Project: Lost Creek Wastewater

Report Date: 01/12/17
Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: D1429								Batch: 161221A-GRAV-SP-G-W		
Lab ID: C16120490-001ADUP		Sample Duplicate		Run: CRUDEOIL-ASHPARA_1612				12/21/16 11:22		
Specific Gravity 60/60F		1.006	unitless	0.0010				0.0	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc
Project: Lost Creek Wastewater

Report Date: 01/12/17
Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS4-C_170106A		
Lab ID: ICV	4	Initial Calibration Verification Standard								01/06/17 11:41
Arsenic		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
Vanadium		0.0476	mg/L	0.0010	95	90	110			
Method: E200.8								Batch: 49016		
Lab ID: MB-49016	4	Method Blank								01/06/17 13:10
Arsenic		ND	mg/L	2E-05						
Selenium		6E-05	mg/L	2E-05						
Uranium		1E-05	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
Lab ID: LCS3-49016	4	Laboratory Control Sample								01/06/17 13:16
Arsenic		0.468	mg/L	0.0010	94	85	115			
Selenium		0.462	mg/L	0.0010	92	85	115			
Uranium		0.473	mg/L	0.00030	95	85	115			
Vanadium		0.445	mg/L	0.010	89	85	115			
Lab ID: C16120271-003CMS3	4	Sample Matrix Spike								01/06/17 13:57
Arsenic		0.556	mg/L	0.0010	87	70	130			
Selenium		0.364	mg/L	0.0011	69	70	130			S
Uranium		0.472	mg/L	0.00030	94	70	130			
Vanadium		0.410	mg/L	0.010	82	70	130			
Lab ID: C16120271-003CMSD	4	Sample Matrix Spike Duplicate								01/06/17 14:03
Arsenic		0.567	mg/L	0.0010	90	70	130	2.0	20	
Selenium		0.389	mg/L	0.0011	74	70	130	6.6	20	
Uranium		0.487	mg/L	0.00030	97	70	130	3.1	20	
Vanadium		0.425	mg/L	0.010	85	70	130	3.6	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc

Report Date: 12/29/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Analytical Run: MANTECH_161216B
Lab ID: ICV-9186	Initial Calibration Verification Standard									
pH		6.89	s.u.	0.010	100	98	102			12/16/16 15:19
Method: A2320 B										Batch: R218223
Lab ID: MBLK	Method Blank									
Alkalinity, Total as CaCO ₃		1	mg/L	1						Run: MANTECH_161216B 12/16/16 18:47
Lab ID: LCS_160316	Laboratory Control Sample									
Alkalinity, Total as CaCO ₃		271	mg/L	5.0	108	90	110			Run: MANTECH_161216B 12/16/16 18:58
Lab ID: C16120489-001ADUP	Sample Duplicate									
Alkalinity, Total as CaCO ₃		671	mg/L	5.0				1.9	10	Run: MANTECH_161216B 12/16/16 19:16
Lab ID: C16120489-002AMS	Sample Matrix Spike									
Alkalinity, Total as CaCO ₃		930	mg/L	5.2	107	80	120			Run: MANTECH_161216B 12/16/16 19:34

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc

Report Date: 12/29/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R218216
Lab ID: SC 100	Initial Calibration Verification Standard					Run: PHSC_101-C_161219A				12/19/16 08:49
Conductivity @ 25 C		102	umhos/cm	5.0	102	90	110			
Lab ID: SC 5000	Initial Calibration Verification Standard					Run: PHSC_101-C_161219A				12/19/16 08:53
Conductivity @ 25 C		5210	umhos/cm	5.0	104	90	110			
Lab ID: SC 20000	Initial Calibration Verification Standard					Run: PHSC_101-C_161219A				12/19/16 08:56
Conductivity @ 25 C		20600	umhos/cm	5.0	103	90	110			
Lab ID: SC 50000	Initial Calibration Verification Standard					Run: PHSC_101-C_161219A				12/19/16 08:59
Conductivity @ 25 C		50200	umhos/cm	5.0	100	90	110			
Lab ID: MBLK	Method Blank					Run: PHSC_101-C_161219A				12/19/16 09:21
Conductivity @ 25 C		ND	umhos/cm	4						
Lab ID: C16120514-001ADUP	Sample Duplicate					Run: PHSC_101-C_161219A				12/19/16 09:36
Conductivity @ 25 C		974	umhos/cm	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc

Report Date: 12/29/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS161221A
Lab ID: MB-1_161221A	Method Blank									
Solids, Total Dissolved TDS @ 180 C	10	mg/L	8							Run: BAL-18_161221A 12/21/16 10:28
Lab ID: LCS-2_161221A										Run: BAL-18_161221A 12/21/16 10:29
Solids, Total Dissolved TDS @ 180 C	1110	mg/L	11	99	90	110				
Lab ID: C16120415-001A DUP										Run: BAL-18_161221A 12/21/16 10:30
Solids, Total Dissolved TDS @ 180 C	113	mg/L	10					3.5	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc

Report Date: 12/29/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A4500-H B							Analytical Run: PHSC_101-C_161219A		
Lab ID:	pH 6.86		Initial Calibration Verification Standard						12/19/16 08:46	
pH		6.85	s.u.	0.010	100	98	102			
Method:	A4500-H B							Batch: R218216		
Lab ID:	C16120514-001ADUP		Sample Duplicate			Run: PHSC_101-C_161219A			12/19/16 09:36	
pH		7.49	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc

Report Date: 12/29/16

Project: Lost Creek Wastewater

Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0								Analytical Run: IC2-C_161219A		
Lab ID: ICV	2	Initial Calibration Verification Standard								12/19/16 11:43
Chloride		9.95	mg/L	1.0	99	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Method: E300.0								Batch: R218281		
Lab ID: ICB	2	Method Blank								12/19/16 12:02
Chloride		0.04	mg/L	0.04						
Sulfate		0.07	mg/L	0.05						
Lab ID: LFB	2	Laboratory Fortified Blank								12/19/16 12:20
Chloride		9.81	mg/L	1.0	98	90	110			
Sulfate		39.3	mg/L	1.0	98	90	110			
Lab ID: C16120488-011AMS	2	Sample Matrix Spike								12/19/16 21:51
Chloride		154	mg/L	1.0	98	80	120			
Sulfate		1100	mg/L	4.2	96	80	120			
Lab ID: C16120488-011AMSD	2	Sample Matrix Spike Duplicate								12/19/16 22:10
Chloride		154	mg/L	1.0	98	80	120	0.0	20	
Sulfate		1090	mg/L	4.2	94	80	120	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: UR Energy USA Inc
Project: Lost Creek Wastewater

Report Date: 12/29/16
Work Order: C16120490

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8347
Lab ID: LCS-RA226-8347		Laboratory Control Sample				Run: TENNELEC-3_161220A				12/28/16 09:55
Radium 226		9.3	pCi/L		89	80	120			
Lab ID: MB-RA226-8347	3	Method Blank				Run: TENNELEC-3_161220A				12/28/16 09:55
Radium 226		0.1	pCi/L							
Radium 226 precision (±)		0.10	pCi/L							
Radium 226 MDC		0.1	pCi/L							
Lab ID: C16110950-034AMS		Sample Matrix Spike				Run: TENNELEC-3_161220A				12/28/16 13:05
Radium 226		23	pCi/L		82	70	130			
Lab ID: C16110950-034AMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_161220A				12/28/16 13:05
Radium 226		24	pCi/L		89	70	130	7.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



Work Order Receipt Checklist

UR Energy USA Inc

C16120490

Login completed by: Corinne Wagner

Date Received: 12/15/2016

Reviewed by: Kasey Vidick

Received by: tjp

Reviewed Date: 12/19/2016

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.8°C From Field		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None



Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

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Page 1 of 1

Account Information (Billing Information)

Company/Name	UR - ENERGY
Contact	MIKE GARDNER
Phone	(301) 245 2373 X 321
Mailing Address	5850 BUREAU DR SUITE 200
City, State, Zip	CASPER WY 82409
Email	MIKE.GARDNER@UR-ENERGY.COM
Receive Invoice	<input type="checkbox"/> Hard Copy <input type="checkbox"/> Email
Purchase Order	Quote
	Bottle Order

Report Information (if different than Account Information)

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	<input type="checkbox"/> Hard Copy <input type="checkbox"/> Email
Special Report/Formats:	<input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC <input type="checkbox"/> EDD/EDT (contact laboratory) <input type="checkbox"/> Other

Comments

--

Project Information

Project Name, PWSID, Permit, etc.	LOST CREEK WASTE WATER
Sampler Name	MY
Sampler Phone	
Sample Origin State	WY
EPA/State Compliance	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINING CLIENTS, please indicate sample type. *If ore has been processed or refined, call before sending. <input type="checkbox"/> Byproduct 11 (e)2 material <input type="checkbox"/> Unprocessed ore (NOT ground or refined)*	

Matrix Codes

A - Air
W - Water
S - Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

PH / COND.	<input checked="" type="checkbox"/>
BICARB / CARB	<input checked="" type="checkbox"/>
SULFATE, TOTAL	<input checked="" type="checkbox"/>
CHLORIDE, TOTAL	<input checked="" type="checkbox"/>
HYDROGEN SULFIDE	<input checked="" type="checkbox"/>
SPECIFIC GRAVITY	<input checked="" type="checkbox"/>
TOTAL DISSOLVED SOLIDS	<input checked="" type="checkbox"/>
AS, SE, V, U (TMM)	<input checked="" type="checkbox"/>
D4-226 (TMM)	<input checked="" type="checkbox"/>

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)		Collection		Matrix (See Codes Above)	Number of Containers	See Attached		ELI LAB ID Laboratory Use Only
	Relinquished by (print)	Relinquished by (print)	Date	Time			RUSH	TAT	
1	DDW - INJECTATE	M. Gardner	12/15/2016	1015	W				C16120490
2									
3									
4									
5									
6									
7									
8									
9									
10									

Custody	Relinquished by (print)	Signature	Date/Time	Received by (print)	Signature	Date/Time	Amount \$	Receipt Number (cash/check only)
Record MUST be signed	M. Gardner		12/15/2016 1630	Mike Gardner		12/15/2016 1630		
Shipped By	Hand	Cooler ID(s)	Custody Seals	Intact	Received Temp	Temp Blank	Payment Type	
			Y N C B	Y N	3-8 °C	Y N	CC Cash Check	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

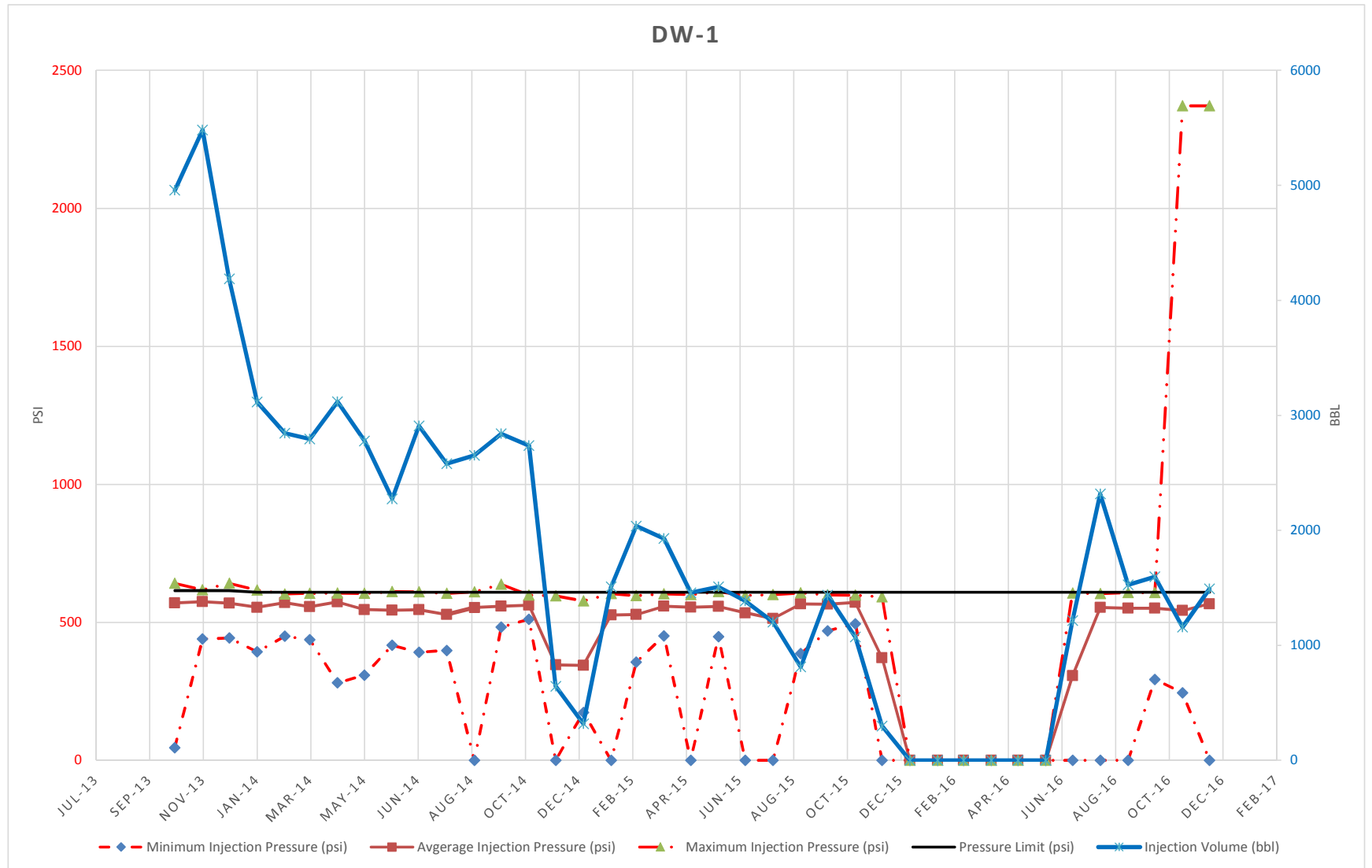


APPENDIX 3

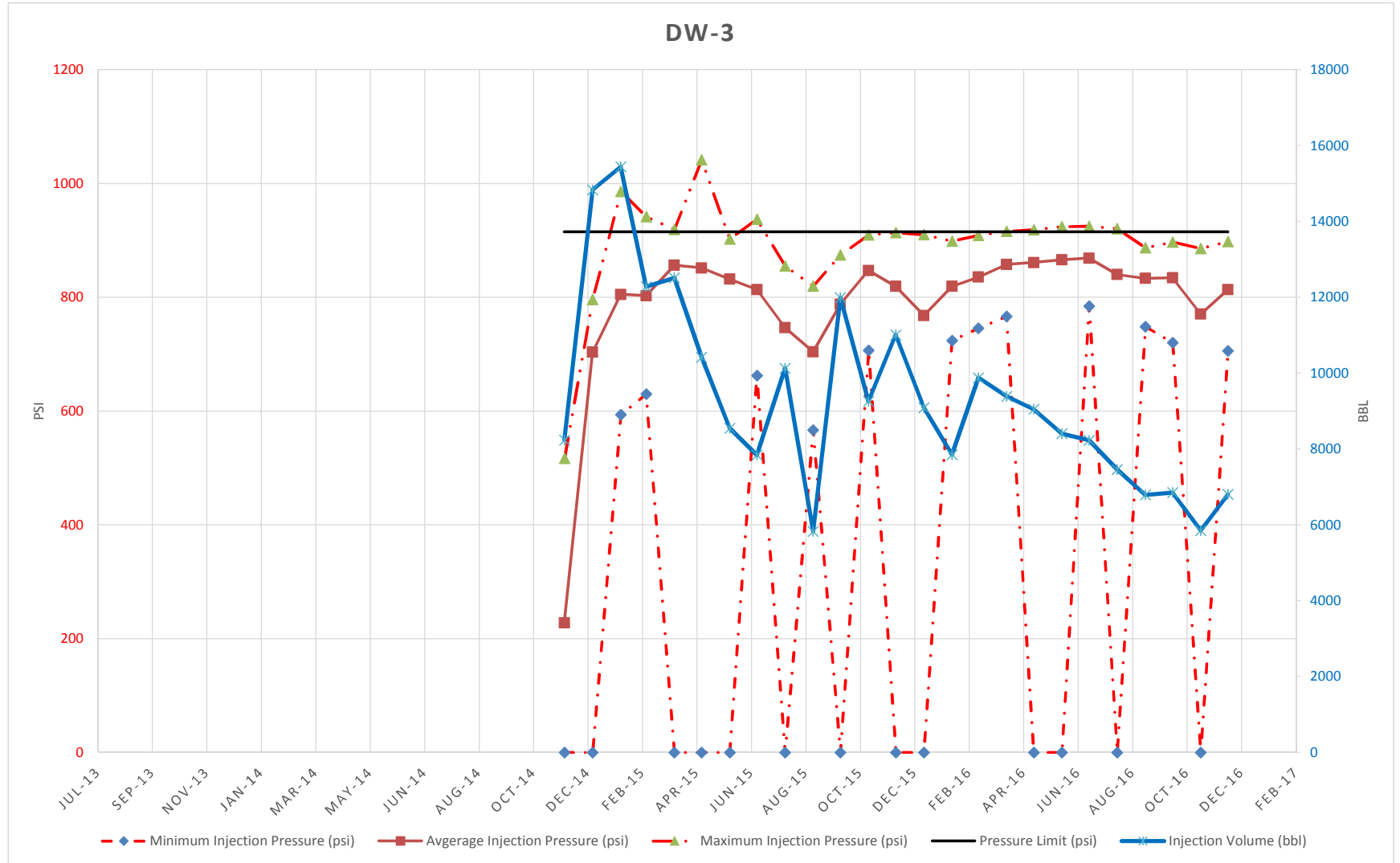
**APPENDIX 3a: 5-Year Summary of Monthly
Injection Pressures and Volumes
2016 Annual Report
Lost Creek ISR Project 13-409**

Date	DW-1					DW-3					DW-4				
	Minimum Injection Pressure (psi)	Avgerage Injection Pressure (psi)	Maximum Injection Pressure (psi)	Pressure Limit (psi)	Injection Volume (bbl)	Minimum Injection Pressure (psi)	Avgerage Injection Pressure (psi)	Maximum Injection Pressure (psi)	Pressure Limit (psi)	Injection Volume (bbl)	Minimum Injection Pressure (psi)	Avgerage Injection Pressure (psi)	Maximum Injection Pressure (psi)	Pressure Limit (psi)	Injection Volume (bbl)
Oct-13	46	570	641	615	4958										
Nov-13	440	575	618	615	5480										
Dec-13	443	569	641	615	4187						0	266	473	838	6471
Jan-14	393	554	617	609	3115						170	631	886	838	25430
Feb-14	450	571	602	609	2844						509	747	827	838	17769
Mar-14	437	556	605	609	2794						593	772	815	838	18937
Apr-14	281	574	606	609	3118						542	768	848	838	16846
May-14	308	546	605	609	2777						0	723	833	838	13994
Jun-14	417	544	611	609	2274						0	755	898	838	13163
Jul-14	392	545	611	609	2907						656	769	837	838	13333
Aug-14	398	528	605	609	2579						632	764	826	838	12700
Sep-14	0	554	610	609	2651						651	783	861	838	12977
Oct-14	483	558	637	609	2839						0	783	850	838	12416
Nov-14	511	562	599	609	2737						697	789	842	838	2369
Dec-14	0	346	596	609	643	0	228	517	915	8239	0	742	850	838	4760
Jan-15	174	344	577	609	317	0	704	796	915	14836	0	730	816	838	4020
Feb-15	0	526	604	609	1509	594	805	986	915	15442	0	777	830	838	8565
Mar-15	356	528	597	609	2037	630	803	942	915	12283	0	734	809	838	7117
Apr-15	451	559	603	609	1928	0	856	919	915	12514	0	667	761	838	5429
May-15	0	555	600	609	1457	0	852	1042	915	10422	614	760	819	838	12190
Jun-15	448	557	612	609	1509	0	832	903	915	8551	8	772	831	838	10164
Jul-15	0	534	597	609	1386	662	814	937	915	7843	0	710	814	838	7073
Aug-15	0	514	600	609	1203	0	747	855	915	10130	578	740	819	838	7090
Sep-15	387	567	606	609	811	567	704	820	915	5833	0	779	833	838	12210
Oct-15	469	566	599	609	1437	0	788	875	915	11992	148	765	854	838	10293
Nov-15	495	572	599	609	1073	707	847	910	915	9257	0	758	838	838	10993
Dec-15	0	371	592	609	297	0	819	914	915	11011	0	778	827	838	10855
Jan-16	0	0	0	609	0	0	768	910	915	9090	604	741	801	838	10085
Feb-16	0	0	0	609	0	724	819	899	915	7851	633	758	814	838	9129
Mar-16	0	0	0	609	0	746	836	909	915	9878	607	738	807	838	10625
Apr-16	0	0	0	609	0	767	858	916	915	9391	0	767	815	838	9893
May-16	0	0	0	609	0	0	861	919	915	9048	691	790	843	838	11805
Jun-16	0	0	0	609	0	0	866	924	915	8405	683	794	844	838	10842
Jul-16	0	306	606	609	1215	785	869	925	915	8233	610	774	830	838	9956
Aug-16	0	554	604	609	2316	0	840	920	915	7457	554	664	751	838	5598
Sep-16	0	551	608	609	1526	748	833	887	915	6790	573	679	752	838	6854
Oct-16	293	551	607	609	1595	720	834	897	915	6853	582	708	766	838	7443
Nov-16	245	542	2371	609	1158	0	770	886	915	5851	551	710	770	838	7081
Dec-16	0	567	2371	609	1490	706	814	898	915	6805	623	731	776	838	7945

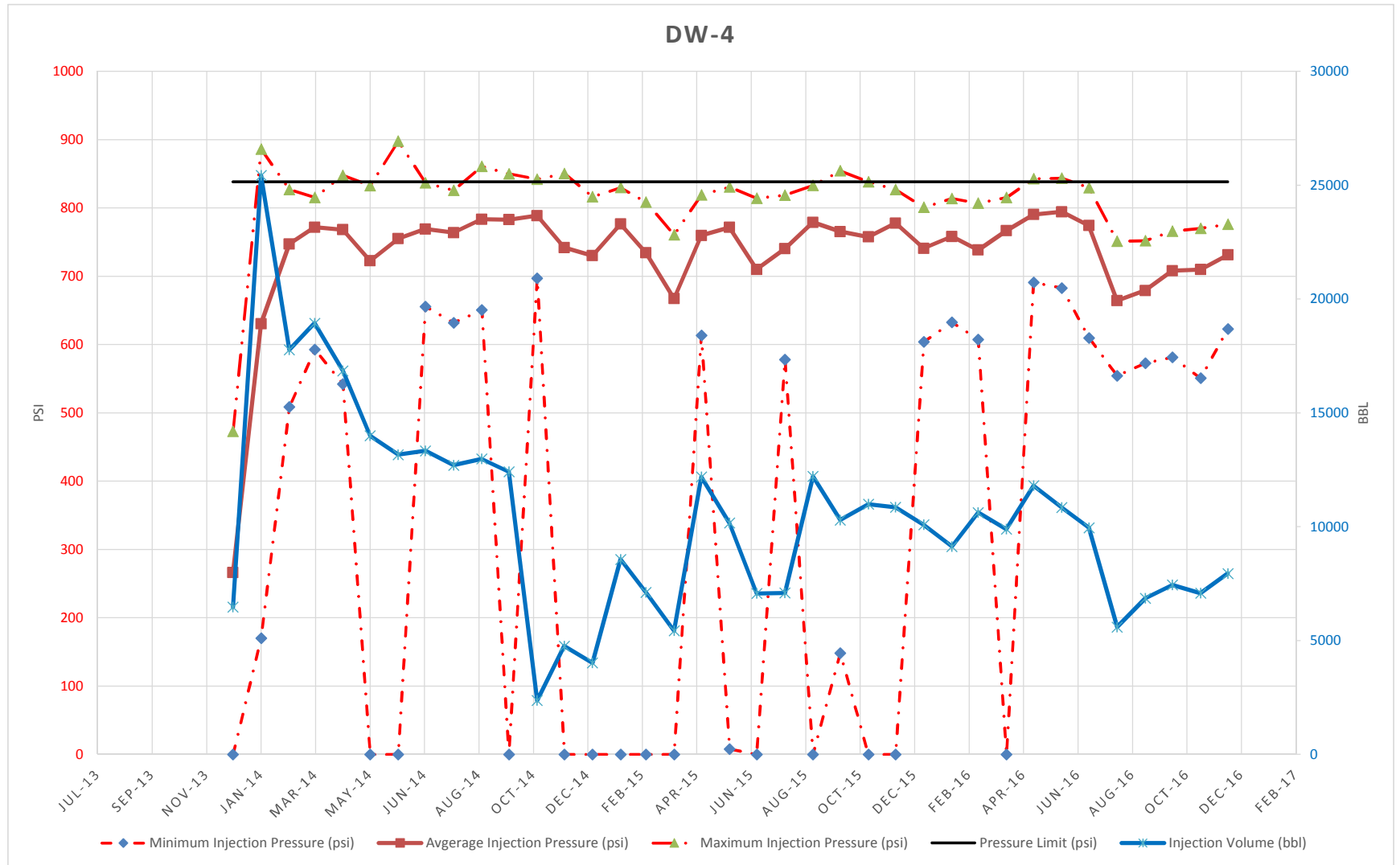
**APPENDIX 3a: 5-Year Summary of Monthly
Injection Pressures and Volumes
2016 Annual Report
Lost Creek ISR Project 13-409**



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Injection Pressures and Volumes
2016 Annual Report
Lost Creek ISR Project 13-409**



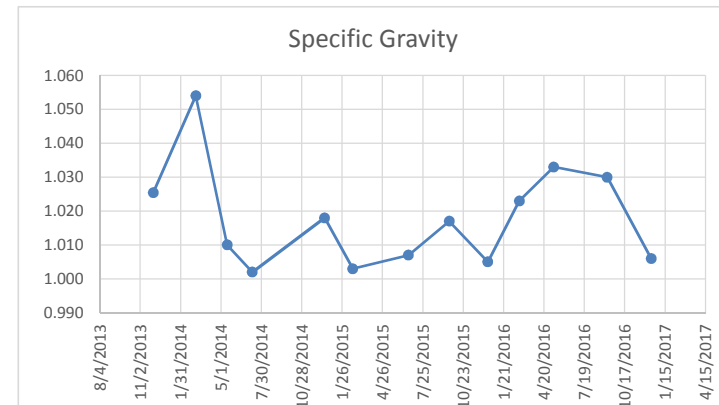
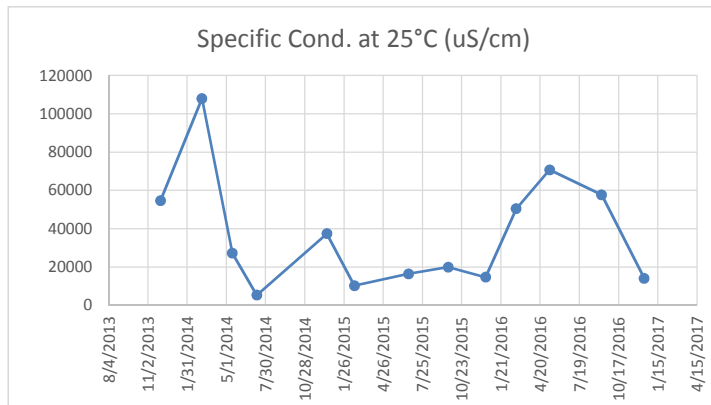
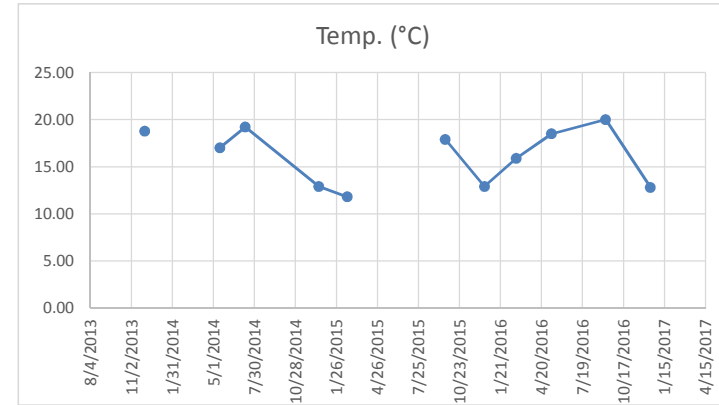
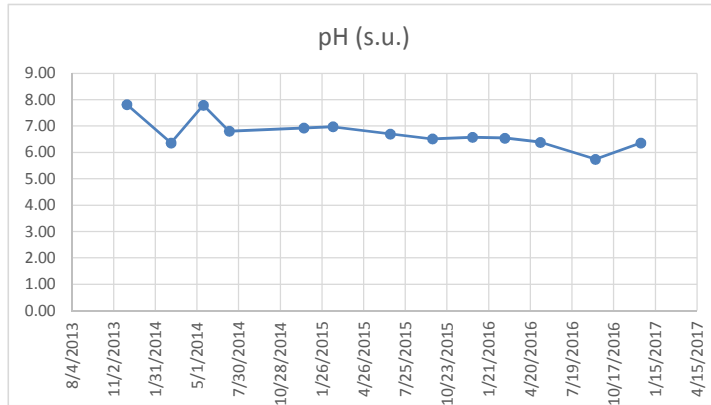
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Injection Pressures and Volumes
2016 Annual Report
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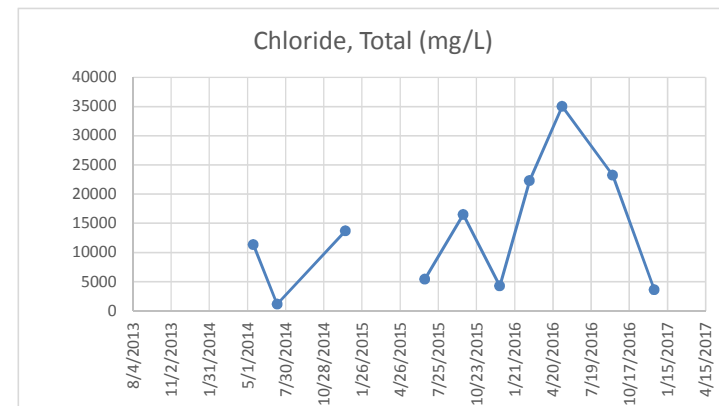
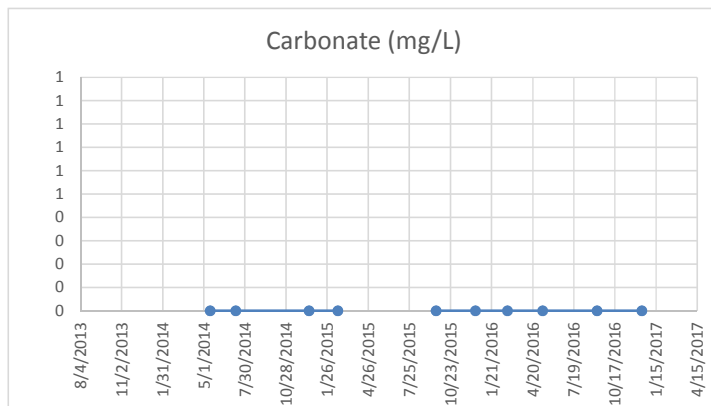
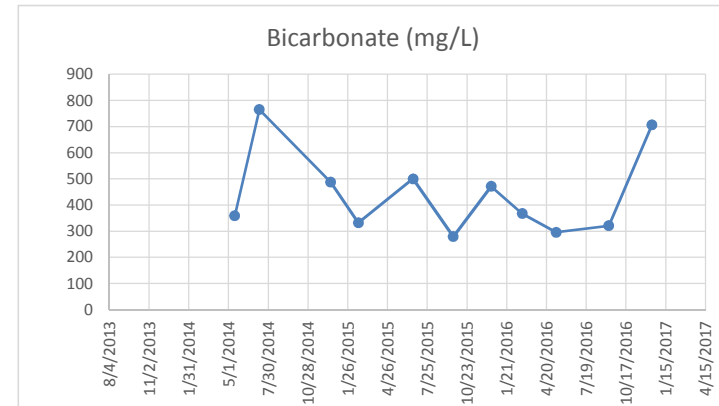
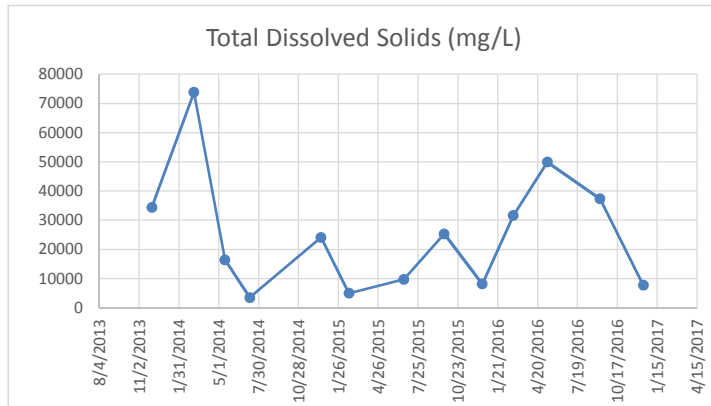
**APPENDIX 3b: 5-Year Summary of
Water Quality Data
2016 Annual Report
Lost Creek ISR Project 13-409**

Sample Name	Date	pH (s.u.)	Specific Cond. at 25°C (uS/cm)	Temp. (°C)	Specific Gravity	Total Dissolved Solids (mg/L)	Bicarbon ate (mg/L)	Carbonate (mg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)	Hydrogen Sulfide (mg/L)	Arsenic, Total (mg/L)	Selenium, Total (mg/L)	Vanadium, Total (mg/L)	Uranium, Total (mg/L)	Radium-226, Total (pCi/L)
DW-Injectate	12/1/2013	7.81	54632	18.77	1.025	34411									266.0	108
DW-Injectate	3/6/2014	6.36	108000		1.054	73800									69.2	480
DW-Injectate	5/15/2014	7.79	27200	17.00	1.010	16400	359	ND(5)	11300	496	0.01	0.028	0.287	ND(0.02)	134.0	12
DW-Injectate	7/10/2014	6.80	5310	19.20	1.002	3520	765	ND(5)	1150	519	ND(1)	0.002	0.108	ND(0.01)	23.4	2020
DW-Injectate	12/18/2014	6.92	37400	12.90	1.018	24100	488	ND(5)	13700	917	ND(1)	0.013	0.240	ND(0.02)	87.0	1980
DW-Injectate	2/19/2015	6.97	10270	11.80	1.003	4950	332	ND(5)		356	ND(1)	0.028	0.128	ND(0.01)	10.3	1040
DW-Injectate	6/23/2015	6.70	16400		1.007	9770	500		5410	786	ND(1)	0.007	0.211	ND(0.01)	22.7	1740
DW-Injectate	9/22/2015	6.51	19900	17.90	1.017	25300	279	ND(5)	16500	586	ND(1)	ND(0.01)	0.180	ND(0.09)	10.6	3320
DW-Injectate	12/17/2015	6.57	14650	12.90	1.005	8180	471	ND(5)	4280	609	ND(1)	0.008	0.157	0.03	5.2	722
DW-Injectate	2/25/2016	6.54	50400	15.90	1.023	31600	367	ND(5)	22300	1020	ND(1)	0.039	0.365	0.03	24.8	2970
DW-Injectate	5/12/2016	6.38	70700	18.50	1.033	49900	296	ND(5)	35000	1400	ND(1)	0.052	0.602	0.03	16.9	2530
DW-Injectate	9/8/2016	5.74	57700	20.00	1.030	37300	321	ND(5)	23200	1190	ND(1)	0.049	0.796	0.05	18.1	5300
DW-Injectate	12/15/2016	6.36	14090	12.80	1.006	7730	707	ND(5)	3610	875	ND(1)	0.010	0.170	ND(0.01)	4.3	2150

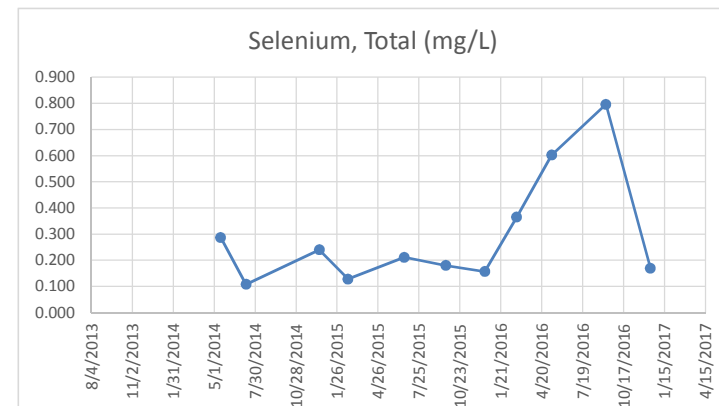
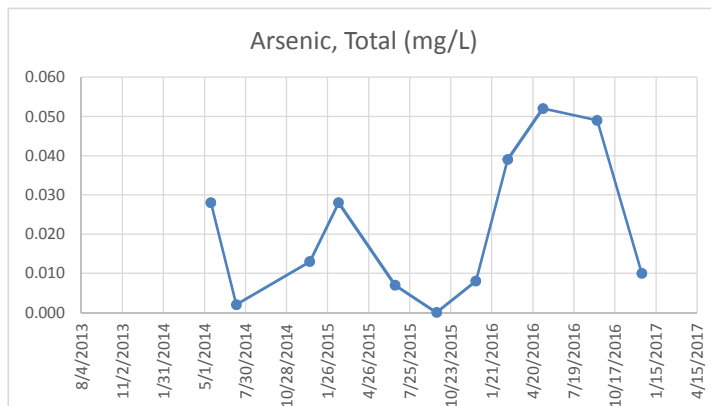
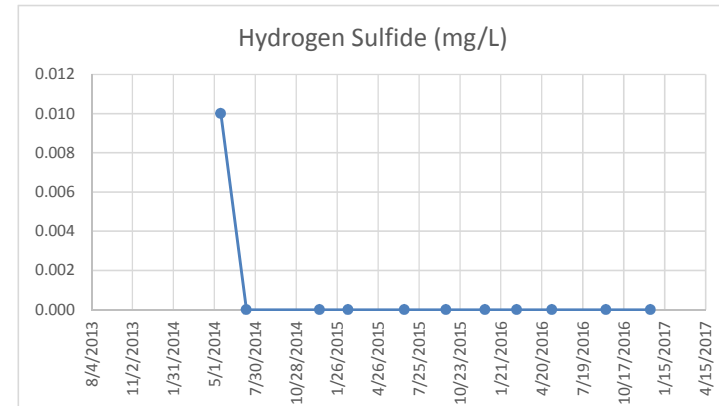
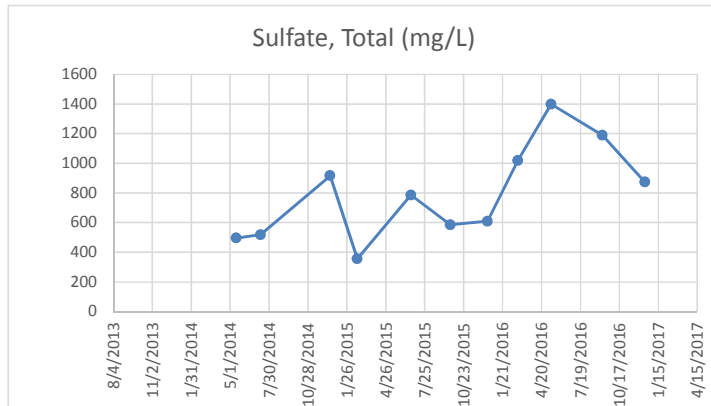
**APPENDIX 3b: 5-Year Summary of
Water Quality Data
2016 Annual Report
Lost Creek ISR Project 13-409**



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Water Quality Data
2016 Annual Report
Lost Creek ISR Project 13-409**



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Water Quality Data
2016 Annual Report
Lost Creek ISR Project 13-409**



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Water Quality Data
2016 Annual Report
Lost Creek ISR Project 13-409**

