



Infrastructure, buildings, environment, communications

Dr. Tomas Oberding
New Mexico Oil Conservation Division
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Santa Fe, New Mexico 87505

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Subject:
2015 ANNUAL GROUNDWATER REPORT
NMOCD Case # 1R0459
Blinebry-Drinkard (BD) K-4 Release
T22S, R37E, Section 4, Unit K, Lea County, New Mexico

Dr. Oberding,

On behalf of Rice Operating Company (ROC), ARCADIS respectfully submits this 2015 Annual Groundwater Report for the BD K-4 site located in the Blinebry-Drinkard (BD) Salt Water Disposal (SWD) System.

ROC completed the Corrective Action Plan (CAP) dated April 23, 2007, which was granted verbal approval by the New Mexico Oil Conservation Division (NMOCD) on December 16, 2009. The CAP was implemented in February 2010. A site Termination Request was submitted to the NMOCD on September 23, 2010 and denied by the NMOCD on October 13, 2010, requiring ROC to continue removing chloride impacted groundwater from MW-1 and to continue monitoring MW-1, MW-2 and MW-3 on a quarterly basis. Based on the completed CAP work, NMOCD granted 'Soil Closure' on October 11, 2012.

All wells were sampled quarterly per NMOCD guidelines. The attached tables summarize the analytical results from groundwater samples collected from the monitor wells at the site.

During 2015, approximately 3,720 gallons of chloride impacted groundwater were removed from MW-1 and quarterly sampling of the three monitor wells was completed. Since the removal of liquids that began on September 3, 2009, a total of 24,999 gallons of chloride impacted groundwater have been removed at the site. Results indicate the site chloride and TDS concentrations have overall decreased around MW-1 while remaining stable and below 250 milligrams per liter in MW-2 and MW-3. This indicates the removal of chloride impacted groundwater from MW-1 is decreasing the chloride plume. Removed groundwater was utilized for pipeline maintenance. Chloride impacted groundwater removal and quarterly monitoring well sampling will continue in 2016.

Date:
March 25, 2016

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@arcadis-us.com

ROC is the service provider (agent) for the BD Salt Water Disposal System and has no ownership of any portion of the pipelines, wells or facilities. The BD System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Thank you for your consideration concerning this summary of groundwater monitoring information. If you have any questions please do not hesitate to contact me at 432 687-5400 or Katie Jones at 575 393-9174.

Best Regards,

ARCADIS U.S, Inc.

Sharon E. Hall

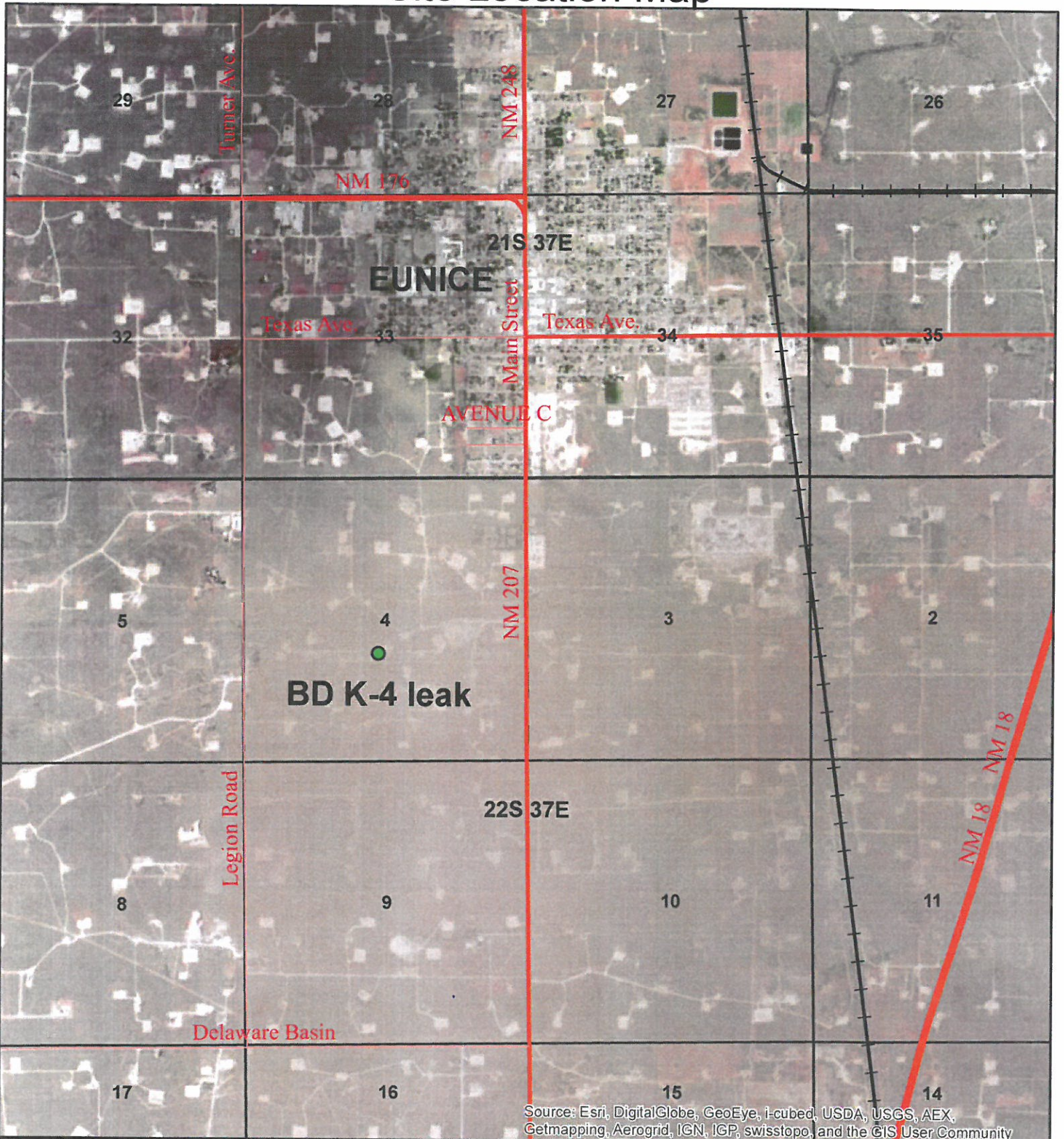
Sharon E. Hall
Associate Vice President

Copies: Katie Jones- ROC

Attachments:

Site Location Map
Monitor Well Location Figure
Monitor Well Summary Tables
October 2015 Monitor Well Lab Results

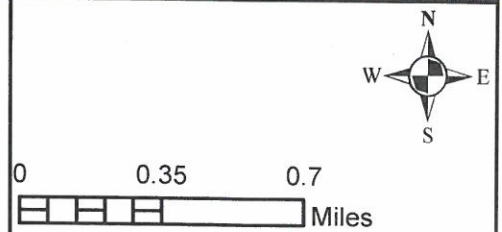
Site Location Map



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

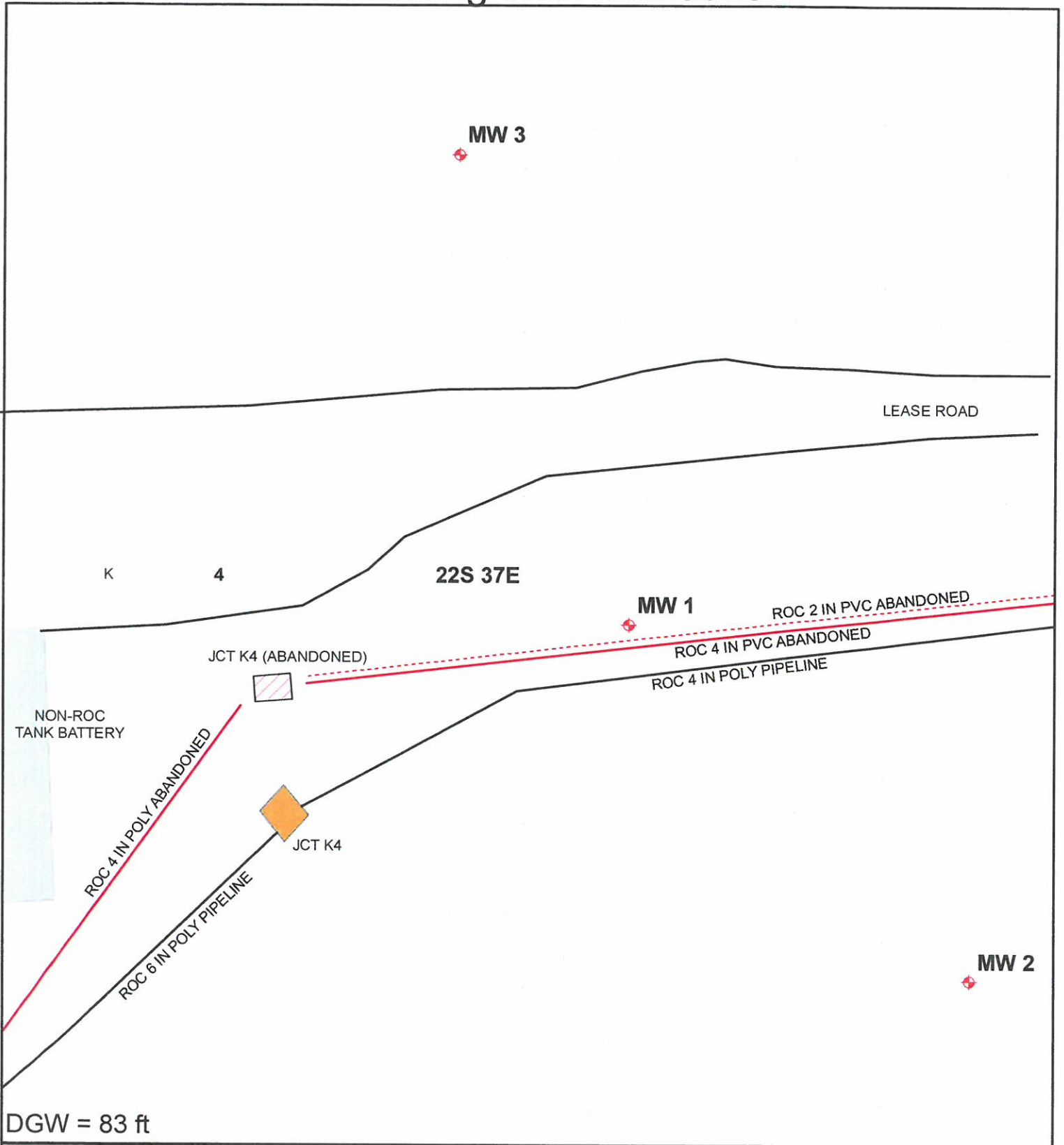


BD
K-4 leak
Legals: UL/K sec. 4
T-22-S R-37-E
LEA COUNTY, NM
NMOCD Case #: 1R0459



Drawing date: 3/26/14
Drafted by: L. Flores

Monitoring Well Locations



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

BD
K-4 leak
Legals: UL/K sec. 4
T-22-S R-37-E
LEA COUNTY, NM
NMOCD Case #: 1R0459

0 15 30 60 Feet
Drawing date: 3/22/12
Drafted by: L. Weinheimer

ROC - BD K-4 (1R-459)
Unit Letter K, Section 4, T22S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	85.02	93.63	1.4	5	11/13/2006	1040	2120	<0.001	<0.001	<0.001	<0.001	152	Silt to clear No odor
1	84.99	93.62	1.4	6	3/8/2007	916	2100	<0.001	<0.001	<0.001	<0.001	148	Silt to clear No odor
1	84.96	93.62	1.4	6	4/23/2007	917	1950	<0.001	<0.001	<0.001	<0.001	339	Silt to clear No odor
1	XXX	XXX	XXX	XXX	8/7/2007	XXX	XXX	XXX	XXX	XXX	XXX	XXX	converted from a 2 in well to a 4 in well
1	86.06	97.7	7.6	6	9/14/2007	760	2028	<0.001	<0.001	<0.001	<0.003	159	Silt to clear No odor
1	86.06	97.7	7.6	20	10/31/2007	736	1770	<0.002	<0.002	<0.002	<0.006	124	Silt to clear No odor
1	85.93	98.6	8.2	30	2/15/2008	760	1880	<0.002	<0.002	<0.002	<0.006	157	Clear No odor
1	85.73	98.6	8.4	30	5/5/2008	720	1880	<0.002	<0.002	<0.002	<0.006	195	Clear No odor
1	85.81	98.6	8.3	30	8/11/2008	620	1590	<0.001	<0.001	<0.001	<0.003	106	Clear No odor
1	85.65	98.6	8.4	30	11/13/2008	570	1470	<0.001	<0.001	<0.001	<0.003	148	Clear No odor
1	85.64	98.4	8.3	30	1/21/2009	630	1560	<0.001	<0.001	<0.001	<0.003	143	Clear No odor
1	85.61	98.4	8.3	30	4/22/2009	600	1680	<0.001	<0.001	<0.001	<0.003	123	Clear No odor
1	85.48	98.4	8.4	30	7/20/2009	520	1380	<0.001	<0.001	<0.001	<0.003	113	Clear No odor
1	85.49	98.4	8.4	30	10/13/2009	700	1700	<0.001	<0.001	<0.001	<0.003	131	Clear No odor
1	85.32	98.41	8.5	30	1/19/2010	780	1860	<0.001	<0.001	<0.001	<0.003	173	Clear No odor
1	85.31	98.41	8.5	30	4/15/2010	680	1610	<0.001	<0.001	<0.001	<0.003	155	Clear No odor
1	85.23	98.41	8.6	30	7/20/2010	610	1550	<0.001	<0.001	<0.001	<0.003	143	Clear No odor
1	85.15	98.41	8.6	30	10/15/2010	600	1460	<0.001	<0.001	<0.001	<0.003	125	Clear No odor
1	85.14	98.4	8.6	30	1/26/2011	680	1580	<0.001	<0.001	<0.001	<0.003	164	Clear No odor
1	84.97	98.4	8.7	30	4/22/2011	740	1620	<0.001	<0.001	<0.001	<0.003	144	Clear No odor
1	84.96	98.4	8.7	30	7/29/2011	640	1530	<0.001	<0.001	<0.001	<0.001	108	Clear No odor
1	85.07	98.4	8.7	30	10/24/2011	650	1510	<0.001	<0.001	<0.001	<0.003	122	Clear No odor
1	84.88	98.4	8.8	30	1/31/2012	660	1500	<0.001	<0.001	<0.001	<0.003	140	Clear No odor
1	84.82	98.4	8.8	125	5/3/2012	670	1440	<0.001	<0.001	<0.001	<0.003	143	Clear No odor
1	XXX	98.4	0	Running	7/25/2012	730	1670	<0.001	<0.001	<0.001	<0.003	165	Clear No odor
1	XXX	98.4	0	Running	10/25/2012	870	1960	<0.001	<0.001	<0.001	<0.003	182	Clear No odor
1	84.58	98.4	9	80	3/26/2013	520	1240	<0.001	<0.001	<0.001	<0.003	129	Clear No odor
1	85.65	98.4	8.3	80	4/24/2013	524	1290	<0.001	<0.001	<0.001	<0.003	143	Clear No odor

ROC - BD K-4 (1R-459)

Unit Letter K, Section 4, T22S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	84.61	98.4	9	80	7/30/2013	500	1300	<0.001	<0.001	<0.001	<0.003	129	Clear No odor
1	84.5	98.4	9	80	10/23/2013	500	1320	<0.001	<0.001	<0.001	<0.003	131	Clear No odor
1	84.39	98.4	9.1	80	2/7/2014	470	1160	<0.001	<0.001	<0.001	<0.003	122	Clear No odor
1	84.53	98.4	9	80	4/10/2014	510	1210	<0.001	<0.001	<0.001	<0.003	131	Clear No odor
1	84.36	98.4	9.1	80	7/28/2014	424	1170	<0.001	<0.001	<0.001	<0.003	116	Clear No odor
1	84.34	98.4	9.1	100	10/30/2014	770	1900	<0.001	<0.001	<0.001	<0.003	136	Clear No odor
1	84.28	98.4	9.2	100	2/9/2015	780	1780	<0.001	<0.001	<0.001	<0.003	131	Clear No odor
1	84.34	98.4	9.1	100	4/23/2015	529	1450	<0.001	<0.001	<0.001	<0.003	95.7	Clear No odor
1	84.24	98.4	9.2	100	7/31/2015	220	788	<0.001	<0.001	<0.001	<0.003	80	Clear No odor
1	84.21	98.4	9.22	100	10/26/2015	570	1690	<0.001	<0.001	<0.001	<0.003	119	Clear No odor

November 09, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD K-4 RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 10/30/15 11:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 KATIE JONES
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

Received:	10/30/2015	Sampling Date:	10/26/2015
Reported:	11/09/2015	Sampling Type:	Water
Project Name:	BD K-4 RELEASE	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC4K - LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H502853-01)

BTEX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	11/03/2015	ND	0.022	109	0.0200	0.376		
Toluene*	<0.001	0.001	11/03/2015	ND	0.023	114	0.0200	0.145		
Ethylbenzene*	<0.001	0.001	11/03/2015	ND	0.021	105	0.0200	0.491		
Total Xylenes*	<0.003	0.003	11/03/2015	ND	0.066	110	0.0600	0.435		
Total BTEX	<0.006	0.006	11/03/2015	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	570	4.00	11/05/2015	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	119	25.0	11/05/2015	ND	21.2	106	20.0	6.21		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1690	5.00	11/06/2015	ND	544	103	527	0.752		

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 KATIE JONES
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

Received:	10/30/2015	Sampling Date:	10/26/2015
Reported:	11/09/2015	Sampling Type:	Water
Project Name:	BD K-4 RELEASE	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC4K - LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H502853-02)

BTEX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	11/03/2015	ND	0.022	109	0.0200	0.376		
Toluene*	<0.001	0.001	11/03/2015	ND	0.023	114	0.0200	0.145		
Ethylbenzene*	<0.001	0.001	11/03/2015	ND	0.021	105	0.0200	0.491		
Total Xylenes*	<0.003	0.003	11/03/2015	ND	0.066	110	0.0600	0.435		
Total BTEX	<0.006	0.006	11/03/2015	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	120	4.00	11/05/2015	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	65.0	25.0	11/05/2015	ND	21.2	106	20.0	6.21		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	622	5.00	11/03/2015	ND	544	103	527	0.752		

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 KATIE JONES
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

Received:	10/30/2015	Sampling Date:	10/26/2015
Reported:	11/09/2015	Sampling Type:	Water
Project Name:	BD K-4 RELEASE	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC4K - LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H502853-03)

BTEX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	11/03/2015	ND	0.022	109	0.0200	0.376		
Toluene*	<0.001	0.001	11/03/2015	ND	0.023	114	0.0200	0.145		
Ethylbenzene*	<0.001	0.001	11/03/2015	ND	0.021	105	0.0200	0.491		
Total Xylenes*	<0.003	0.003	11/03/2015	ND	0.066	110	0.0600	0.435		
Total BTEX	<0.006	0.006	11/03/2015	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	120	4.00	11/05/2015	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	240	50.0	11/05/2015	ND	21.2	106	20.0	6.21		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	892	5.00	11/03/2015	ND	544	103	527	0.752		

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240
 Tel (575) 393-2326
 Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

ANALYSIS REQUEST

(Circle or Specify Method No.)

- MTBE 8021B/602
- BTEX 8021B/602
- TPH 418.1/TX1005 / TX1005 Extended (C35)
- PAH 8270C
- Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7
- TCLP Metals Ag As Ba Cd Cr Pb Se Hg
- TCLP Volatiles
- TCLP Semi Volatiles
- TCLP Pesticides
- RCI
- GC/MS Vol. 8260B/624
- GC/MS Semi. Vol. 8270C/625
- PCB's 8082/608
- Pesticides 8081A/608
- BOD, TSS, pH
- Moisture Content
- Cations (Ca, Mg, Na, K)
- Anions (Cl, SO4, CO3, HCO3)
- Sulfates
- Total Dissolved Solids
- Chlorides

Turn Around Time ~ 24 Hours

Company Name: **RICE Operating Company** BILL TO Company: **RICE Operating Company** PO#
 Project Manager: **Katie Jones** Address: 122 W Taylor Street ~ Hobbs, New Mexico 88240 (Street, City, Zip)
 Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240 Phone#: (575) 393-9174 Fax#: (575) 397-1471
 Phone #: 122 W Taylor Street ~ Hobbs, New Mexico 88240 (575) 393-9174 Fax #: (575) 397-1471
 Project #: **BD K-4 Release** Project Name: **BD K-4 Release**

Project Location: **T22S R37E Sec4 K ~ Lea County New Mexico** Sampler Signature: *Rozanne Johnson* (575) 631-9310

LAB #	FIELD CODE	(G)rab or (C)omp	MATRIX				PRESERVATIVE METHOD				SAMPLING		
			WATER	SOIL	AIR	SLUDGE	HCL (2.40ml VOA)	HNO ₃	NaHSO ₄	H ₂ SO ₄	ICE (1-1-Liter HDPE)	NONE	DATE (2015)
H502853													
1	Monitor Well #1	G	3	X						2		1	10/26 13:45
2	Monitor Well #2	G	3	X						2		1	10/26 10:10
3	Monitor Well #3	G	3	X						2		1	10/26 11:20

Reinquinshed by:	Date:	Time:	Received by:	Date:	Time:
<i>Rozanne Johnson</i>	<i>10/30/15</i>	<i>11:20</i>	<i>Rozanne Johnson</i>	<i>10/30/15</i>	<i>11:20</i>

Reinquinshed by: *Rozanne Johnson* Date: *10/30/15* Time: *11:20*
 Received by: *Rozanne Johnson* Date: *10/30/15* Time: *11:20*

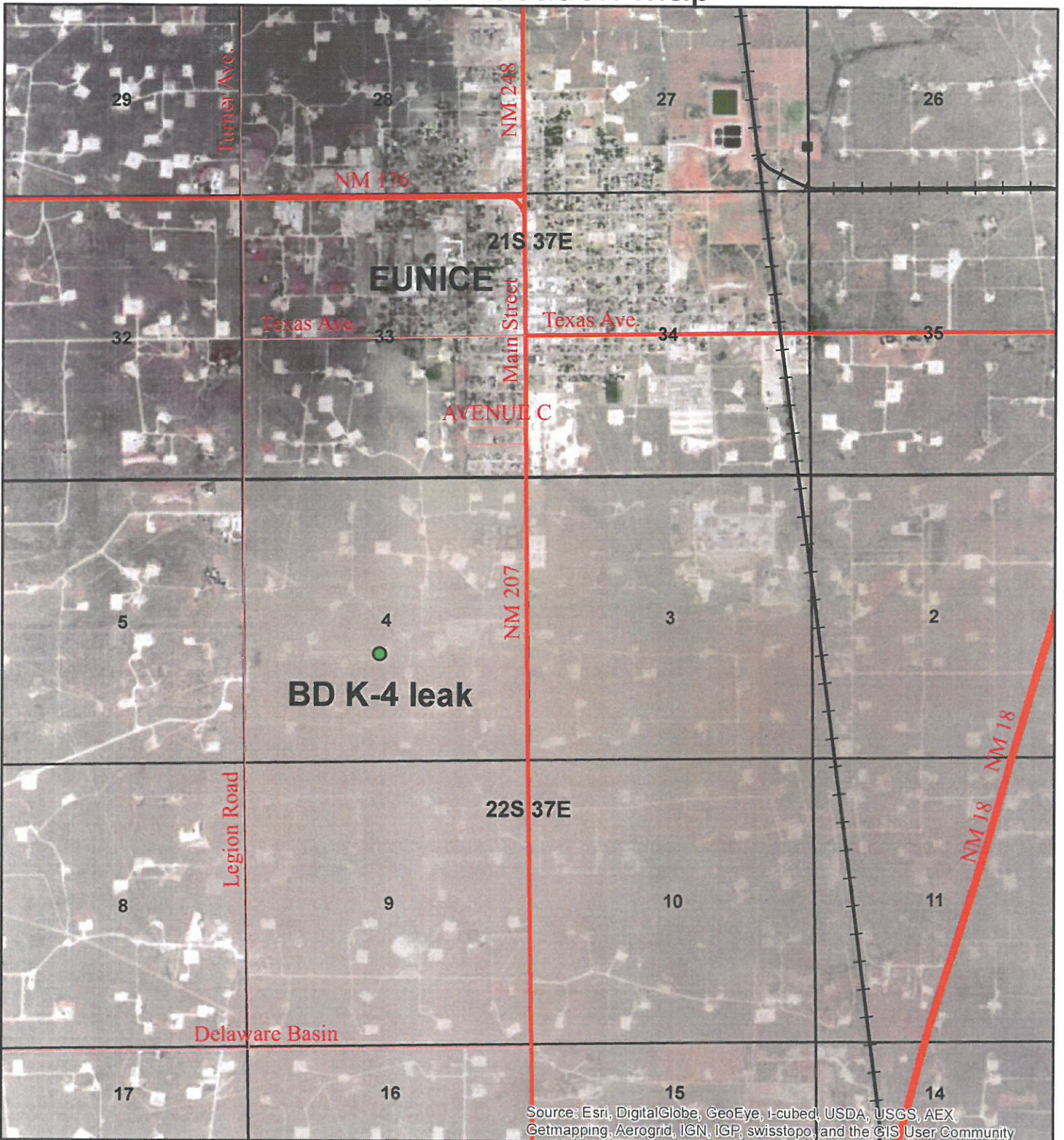
Delivered By: (Circle One) **Sampler** - UPS - Bus - Other:
 Sample Condition: Cool Yes No Intact Yes No
 CHECKED BY: *RJ* (Initials)
 Date: *10/30/15* Time: *11:20*

REMARKS:
 Email Results: kiones@riceswd.com
rozanne11@windstream.net

Phone Results: Yes No
 Fax Results: Yes No
 Additional Fax Number: _____

#54

Site Location Map



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



BD
K-4 leak
Legals: UL/K sec. 4
T-22-S R-37-E
LEA COUNTY, NM
NMOCD Case #: 1R0459

