1R - 426-153

Annual GW Mon. REPORTS

DATE:

2009

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS U.S., Inc.
1004 N. Big Spring Street
Suite 300
Midland Texas 79701
Tel 432.687.5400
Fax 432.687.5401
www.arcadis-us.com

Mr. Edward Hansen
New Mexico Oil Conservation Division
1220 So. Saint Francis Drive
Santa Fe, New Mexico 87505

Certified Mail Receipt No. 7002 2410 0001 5813 3814

Subject:
MONITOR WELL REPORT/SAMPLING SUMMARY and ANNUAL GROUNDWATER REPORT
NMOCD Case # 1R426-153
Blinebry-Drinkard (BD) Jct. N-32 Vent
T21S, R37E, Section 32, Unit N, Lea County, New Mexico

Date:
January 25, 2010

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@arcadis-us.com

Dear Mr. Hansen,

On behalf of Rice Operating Company (ROC), ARCADIS respectfully submits this Monitor Well Report for the BD Jct. N-32 Vent site located in the Blinebry-Drinkard (BD) Salt Water Disposal (SWD) System.

An Investigation Characterization Plan (ICP) was submitted to New Mexico Oil Conservation Division (NMOCD) on May 21, 2008 and was approved by NMOCD on May 28, 2008. Per the approved ICP, four soil borings and one monitoring well were drilled at the site on October 6 and 7, 2008. A groundwater sample collected from the monitoring well on November 13, 2008 exhibited elevated chloride and total dissolved solids concentrations.

An ICP Report was submitted to NMOCD on April 22, 2009. The report recommended that based on the fact that elevated chloride concentrations in groundwater have been reported in the area since the early 1950s, one upgradient and one downgradient monitoring well be drilled at the site to assess groundwater quality. NMOCD approved the drilling of the two monitoring wells on June 24, 2009. The monitoring wells were drilled on July 9, 2009 and sampled on July 24, 2009.

A Monitor Well Report/Sampling Summary was submitted to NMOCD on September 22, 2009. The report recommended drilling one upgradient and one downgradient monitoring well to further delineate elevated chlorides near the site. NMOCD approved drilling the wells on September 30, 2009. The wells were drilled on September 21 and 22, 2009. The attached tables summarize the analytical results

from groundwater samples collected from the monitor wells at the site. The groundwater laboratory report is also attached.

The junction box has been replaced with a new, watertight junction box, impacted soils have been removed from a 40 foot by 45 foot by 12 foot excavation and a clay liner has been installed at the site. Based on the fact that ROC has undergone these actions to mitigate leaching of chlorides to groundwater, and historical regional impacts to groundwater are documented in this area, ROC proposes to prepare and submit a chloride mass removal from groundwater as a Corrective Action Plan (CAP).

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 or Hack Conder.

Best Regards,

ARCADIS U.S, Inc.

Sharon E. Hall

Sharon E. Hall
Associate Vice President

Copies: Hack Conder- ROC

Attachments:
Monitor Well Summary Table
Monitor Well Location Figure
Monitor Well logs
Laboratory Analytical Results

ROC BD N-32 vent

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
1	97.17	102.6	3.5	15	11/13/2008	2500	4970	<0.001	<0.001	<0.001	<0.003	187
1	97.18	102.68	3.6	15	1/21/2009	1540	3010	<0.001	<0.001	<0.001	<0.003	130
1	97.13	102.58	3.5	15	4/22/2009	1020	2210	<0.001	<0.001	<0.001	<0.003	119
1	97.1	102.58	3.6	15	7/24/2009	930	2090	<0.001	<0.001	<0.001	<0.003	112
1	97.05	102.58	3.6	15	10/2/2009	1230	2440	<0.001	<0.001	<0.001	<0.003	120

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
2	99.78	105.96	1	4	7/24/2009	800	1920	<0.001	<0.001	<0.001	<0.003	190
2	98.73	105.96	1.2	4	10/2/2009	770	1970	<0.001	<0.001	<0.001	<0.003	186

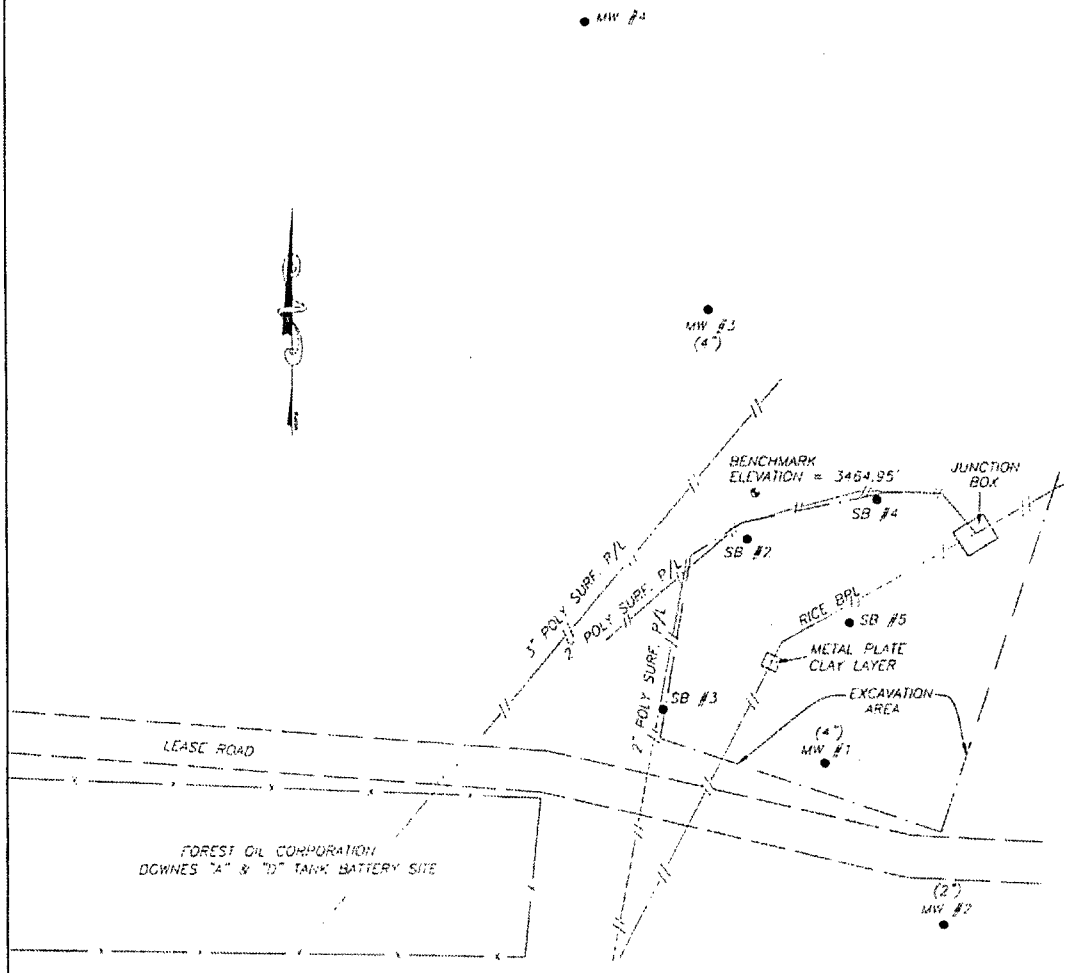
MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
3	99.74	138.48	25.2	150	7/24/2009	2340	5220	<0.001	<0.001	<0.001	<0.003	106
3	99.74	138.48	25.2	200	10/2/2009	6400	12,400	<0.001	<0.001	<0.001	<0.003	127

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
4	138.80	98.90	25.9	200	10/2/2009	420	1170	<0.001	<0.001	<0.001	<0.003	115

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
5	98.09	110.2	1.9	6	10/2/2009	164	706	<0.001	<0.001	<0.001	<0.003	83.7

Sample results in milligrams per liter

SECTION 32, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



COORDINATES VALUES SHOWN ARE RELATIVE TO THE NORTH AMERICAN DATUM 1927, "NEW MEXICO EAST ZONE"
ELEVATIONS ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM 1988

WELL	COORDINATES	ELEVATIONS
MW #1	522577.9 N 853356.1 E	NATURAL GROUND - 3463.02' TOP OF PVC - 3465.45' TOP OF CONCRETE - 3463.26'
MW #2	522523.6 N 853395.4 E	NATURAL GROUND - 3464.42' TOP OF PVC - 3466.95' TOP OF CONCRETE - 3464.77'
MW #3	522729.5 N 853318.0 E	NATURAL GROUND - 3465.70' TOP OF PVC - 3468.49' TOP OF CONCRETE - 3465.89'
MW #4	522826.3 N 853277.5 E	NATURAL GROUND - 3465.35' TOP OF PVC - 3467.90' TOP OF CONCRETE - 3465.60'
MW #5	522466.0 N 853459.6 E	NATURAL GROUND - 3463.42' TOP OF PVC - 3466.16' TOP OF CONCRETE - 3463.58'

LEGEND

- ● – *DENOTES MONITOR WELL*
- ⊕ – *DENOTES BENCHMARK – SET 1/2" STL. ROD W/ALUMINUM CAP*
- ——x—— – *DENOTES FENCE LINE*

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO

RONALD J. EIDSON, NEW MEXICO, 3239, REGISTERED PROFESSIONAL SURVEYOR

Ronald J. Eidson 11-03-09

RONALD J. EIDSON N.M.P.S. No. 3239

40 0 40 80 FEET

Scale: 1" = 40'

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

RICE OPERATING COMPANY

SURVEY TO LOCATE MONITOR WELLS AND FACILITIES AT THE BD N-32 VENT IN SECTION 32, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 10/26/09	Sheet: 1 of 1 Sheets
W.O. Number: 09.11.0950	Drawn By: LA
Date: 11/3/09	09110950

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-01

WELL DEPTH: 101 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 10/7/08
DATE COMPLETED: 10/7/08
SAMPLE METHOD: Split spoon and air rotary
DRILLING CO.: Harrison & Cooper, Inc. Drilling
DRILLER:
DRILLING METHOD: Rotary

LOCATION INFORMATION

TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING:
EASTING:
DEPTH TO WATER: 95 ft bgs
GW ELEVATION:
DATE MEASURED: 10/7/08
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 100 feet

WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 4 inch

ANNULUS SEAL
Seal Material: Bentonite

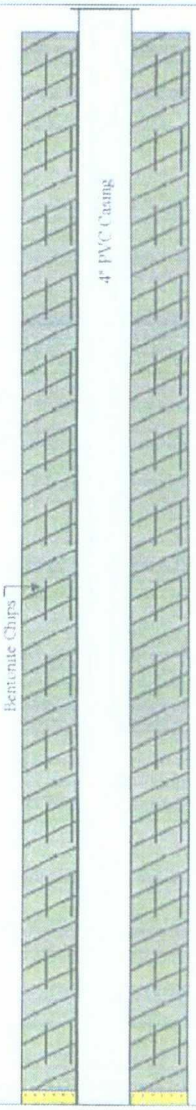
GROUT
Grout Material: Portland Cement

SAND PACK
Filter Material: Silica Sand

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 4 inches
Screen Opening: 0.010 inches
Screened Interval: 80 - 100

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	SAMPLING DETAIL: DEPTH (ft bgs)
0		SP		**Fine Sand** Reddish-orange, very fine to fine sand, slightly clayey, dry		Field Chlorides		
5		SP		**Fine Sand** Light brown, very fine to fine sand, caliche, dry		317	0	5
10		SP		**Fine Sand** Light brown, very fine to fine sand, dry		Lab 928 1085	0	10
15		SP		**Fine Sand** Light brown, very fine to fine sand, caliche, dry		676	0	15
20		SP		**Fine Sand** Light brown, very fine to fine sand, rocky, dry		672	0	20
25						632		25
30						545		30
35						458		35
40		SP		**Fine Sand** Orangey-brown, very fine to fine sand, slightly moist		491		40
45						526		45
50		SP		**Fine Sand** Orangey-brown, very fine to fine sand, rocky, slightly moist		478		50
55						471		55
60		SS		**Sandstone** Orangey-brown, very fine to fine sandstone, slightly moist		520		60
65		SP		**Fine Sand** Orangey-brown, very fine to fine sand, rocky, slightly moist		453		65
70						483		70
75						503		75

WELL CONSTRUCTION



Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: MW-01

Monitoring Well Log Prepared By: Jasmin Talbert

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-01

WELL DEPTH: 101 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 10/7/08
DATE COMPLETED: 10/7/08
SAMPLE METHOD: Split spoon and air rotary
DRILLING CO.: Harrison & Cooper, Inc. Drilling
DRILLER:
DRILLING METHOD: Rotary

LOCATION INFORMATION

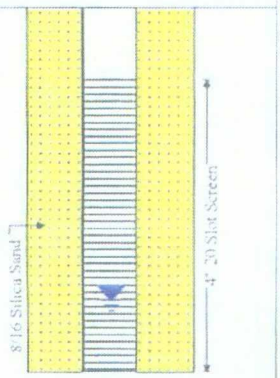
TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING:
EASTING:
DEPTH TO WATER: 95 ft bgs
GW ELEVATION:
DATE MEASURED: 10/7/08
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 100 feet

WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 4 inch
ANNULUS SEAL
Seal Material: Bentonite
GROUT
Grout Material: Portland Cement
SAND PACK
Filter Material: Silica Sand

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 4 inches
Screen Opening: 0.010 inches
Screened Interval: 80 - 100

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	SAMPLING DETAIL: DEPTH (ft bgs)	WELL CONSTRUCTION
80				Not Logged		Lab: 384 450		80	
85							0	85	
90							0	90	
95							0	95	
100							0	100	
105								105	
110								110	
115								115	
120								120	
125								125	
130								130	
135								135	
140								140	
145								145	
150								150	



Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: MW-01

Monitoring Well Log Prepared By: Jasmin Talbert

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-02

WELL DEPTH: 104 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 7/9/09
DATE COMPLETED: 7/9/09
SAMPLE METHOD: Splitspoon and Rotary cuttings
DRILLING CO.: Harrison Cooper Inc.
DRILLER:
DRILLING METHOD: Air Rotary

LOCATION INFORMATION

TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING: N32 25.877'
EASTING: W103 11.286'
DEPTH TO WATER: 90 ft bgs
GW ELEVATION:
DATE MEASURED: 7/9/09
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 104 feet

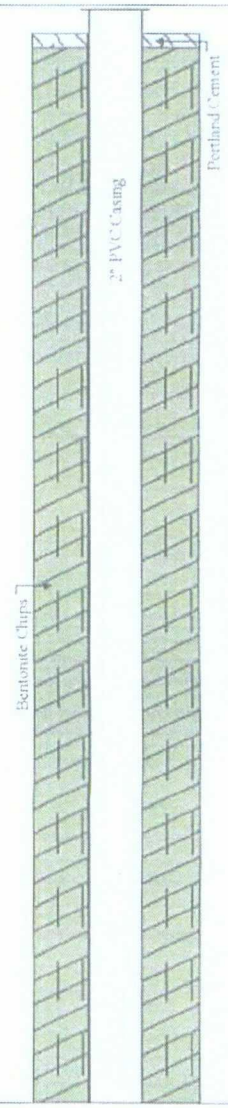
WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 2 inch
ANNULUS SEAL
Seal Material: Bentonite
GROUT
Grout Material: Portland Cement
SAND PACK
Filter Material: Silica Sand 8/16

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 2 inches
Screen Opening: 0.010 inches
Screened Interval: 84-104

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	SAMPLING DETAIL: DEPTH (ft bgs)
0-10		SP		**Fine Sand** Reddish-orange, very fine to fine sand, dry, no odor		Field Chlorides 87 Lab 272 315	0.1 0	5 10
10-40		SP		**Fine Sand** Reddish-tan, very fine to fine sand with caliche, dry, no odor		146 179 144 149 147 144	0 0	15 20 25 30 35 40
40-75		SP		**Fine Sand** Reddish-brown, very fine to fine sand with consolidated rock, dry, no odor		114 156 88 84 112 87 93		45 50 55 60 65 70 75

WELL CONSTRUCTION



Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: K27-MW-05

Monitoring Well Log Prepared By: Jasmin Talbert

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-02

WELL DEPTH: 104 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 7/9/09
DATE COMPLETED: 7/9/09
SAMPLE METHOD: Splitspoon and Rotary cuttings
DRILLING CO.: Harrison Cooper Inc.
DRILLER:
DRILLING METHOD: Air Rotary

LOCATION INFORMATION

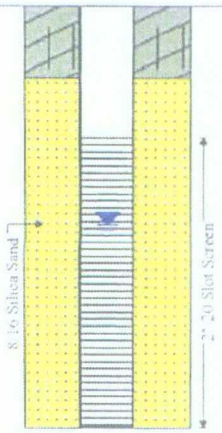
TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING: N32 25.877'
EASTING: W103 11.286'
DEPTH TO WATER: 90 ft bgs
GW ELEVATION:
DATE MEASURED: 7/9/09
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 104 feet

WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 2 inch
ANNULUS SEAL
Seal Material: Bentonite
GROUT
Grout Material: Portland Cement
SAND PACK
Filter Material: Silica Sand 8/16

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 2 inches
Screen Opening: 0.010 inches
Screened Interval: 84-104

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	DEPTH (ft bgs)	WELL CONSTRUCTION
80						115		80	
85		SP		**Fine Sand** Orangey-brown, very fine to fine sand, slightly moist, no odor		89		85	
90				**No Recovery**		Lab - 16 86		90	
95								95	
100								100	
105								105	
110								110	
115								115	
120								120	
125								125	
130								130	
135								135	
140								140	
145								145	
150								150	



Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: K27-MW-05

Monitoring Well Log Prepared By: Jasmin Talbert

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-03

WELL DEPTH: 135 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 7/9/09
DATE COMPLETED: 7/9/09
SAMPLE METHOD: Split Spoon and Air Rotary
DRILLING CO.: Harrison & Cooper, Inc. Drilling
DRILLER:
DRILLING METHOD: Rotary

LOCATION INFORMATION

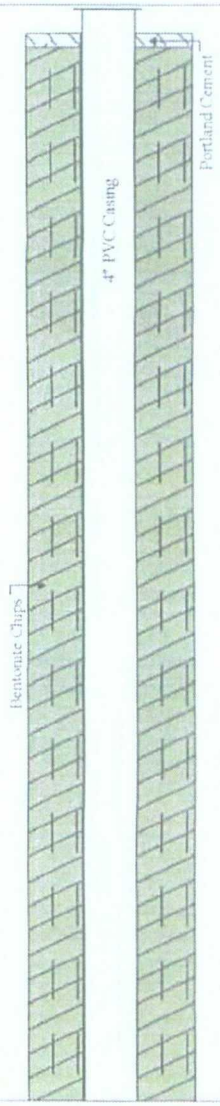
TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING: N32 25.915
EASTING: W103 11.302
DEPTH TO WATER: 90 ft bgs
GW ELEVATION:
DATE MEASURED: 7/9/09
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 135 feet

WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 4 inch
ANNULUS SEAL
Seal Material: Bentonite
GROUT
Grout Material: Portland Cement
SAND PACK
Filter Material: Silica Sand

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 4 inches
Screen Opening: 0.030 inches
Screened Interval: 85-125

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	SAMPLING DETAIL: DEPTH (ft bgs)	WELL CONSTRUCTION
0						Field Chlorides		0	
5		SP		**Fine Sand** Reddish-orange, very fine to fine sand, dry, no odor		120	0.5	5	
10						112	0.1	10	
15		SP		**Fine Sand** Orangey-tan very fine to fine sand with caliche, dry, no odor		114	0.1	15	
20						183	0	20	
25		SP		**Fine Sand** Tan, very fine to fine sand with caliche, dry, no odor		148	0	25	
30						183	0	30	
35						Lab: 48 183	0	35	
40				**Fine Sand** Reddish-brown, very fine to fine sand with consolidated rock, dry, no odor		183	0	40	
45						142		45	
50						123		50	
55						89		55	
60		SP				88		60	
65						84		65	
70						84		70	
75						91		75	



Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: MW-03

Monitoring Well Log Prepared By: Jasmin Talbert

ARCADIS U.S., Inc.
8725 Rosehill
Suite 350
Lenexa, Kansas 66215

MONITORING WELL LOG

WELL IDENTIFICATION: MW-03

WELL DEPTH: 135 ft

PROJECT INFORMATION

PROJECT: Rice Operating
SITE LOCATION: BD-N-32 Vent
PROJECT NUMBER: MT000834.0001
GEOLOGIST: Lara Weinheimer
DATE STARTED: 7/9/09
DATE COMPLETED: 7/9/09
SAMPLE METHOD: Split Spoon and Air Rotary
DRILLING CO.: Harrison & Cooper, Inc. Drilling
DRILLER:
DRILLING METHOD: Rotary

LOCATION INFORMATION

TOC ELEVATION:
DATUM CP:
CP ELEVATION.:
NORTHING: N32 25.915
EASTING: W103 11.302
DEPTH TO WATER: 90 ft bgs
GW ELEVATION:
DATE MEASURED: 7/9/09
BORING DIAMETER: 7 3/8 inches
BORING DEPTH: 135 feet

WELL CONSTRUCTION

WELL CASING
Casing Material: Sch 40 PVC
Casing Diameter: 4 inch

WELL SCREEN
Screen Material: Sch 40 PVC
Screen Diameter: 4 inches
Screen Opening: 0.030 inches
Screened Interval: 85-125

ANNULUS SEAL
Seal Material: Bentonite

GROUT
Grout Material: Portland Cement

SAND PACK
Filter Material: Silica Sand

DEPTH (ft bgs)	RECOVERY (ft)	LITHOLOGY: USCS	LITHOLOGY: SYMBOL	LITHOLOGY: SOIL DESCRIPTION	SAMPLING DETAIL: SAMPLE COLLECTED	SAMPLING DETAIL: ANALYTES	SAMPLING DETAIL: PID (ppm)	DEPTH (ft bgs)	WELL CONSTRUCTION
80						S7		80	
85				No Recovery		Lab 16 58		85	
90								90	Silica Sand
95								95	
100								100	
105								105	
110								110	
115								115	
120								120	
125								125	4" 30 Slot Screen
130								130	
135								135	
140								140	
145								145	
150								150	

Notes: in - inches, ft bgs - feet below ground surface, ppm - parts per million
USCS - United Soil Classification System Datum
CP - Datum Control Point, GW - Groundwater

Monitoring Well: MW-03

Monitoring Well Log Prepared By: Jasmin Talbert

Logger:	Lara Weinheimer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Arcadis
Drilling Method:	Air rotary
Start Date:	9-21-2009
End Date:	9-21-2009

RICE OPERATING COMPANY ROC SINCE 1955

Project Name: BD N-32 vent

Well ID: MW-4

Comments: No sampling completed on monitor well.
Located 222 ft NW of former junction box site.
4 inch monitor well
TD = 138 ft GW = 98 ft

Location: UL/N sec. 32 T21S R37E
Lat: N32°25'56.242" County: LEA
Long: W103°11'19.725" State: NM

Depth (feet)	chloride field tests (ppm)	LAB	PID	Description	Lithology	Well Construction
				NO SAMPLES TAKEN		3 x 3 ft concrete pad on surface; bentonite seal; 4 in diameter PVC; sand pack; screen = 0.03"
20						
40						
60						
80						
100						
120						
140						

Logger:	Lara Weinheimer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Arcadis
Drilling Method:	Air rotary
Start Date:	9-22-2009
End Date:	9-22-2009

RICE OPERATING COMPANY ROC SINCE 1955

Project Name: BD N-32 vent

Well ID: MW-5

Comments: No sampling completed on monitor well.
Located 190 ft SE of former junction box site.
2 inch monitor well
TD = 107 ft GW = 98 ft

Location: UL/N sec. 32 T21S R37E
Lat: N32°25'52.662" County: LEA
Long: W103°17'19.648" State: NM

Depth (feet)	chloride field tests (ppm)	LAB	PID	Description	Lithology	Well Construction
				NO SAMPLES TAKEN		2 x 2 ft concrete pad; bentonite seal; 2 in diameter PVC; sand pack; screen = 0.01"
20						
40						
60						
80						
100						

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 10/05/09
Reporting Date: 10/07/09
Project Number: NOT GIVEN
Project Name: BD N-32 VENT
Project Location: T21S R37E SEC32 N ~ LEA CO., N.M.

Sampling Date: 10/02/09
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM

LAB NO.	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	TDS (mg/L)
Analysis Date:		10/06/09	10/07/09	10/06/09
H18410-1	MONITOR WELL #1	1,230	120	2,440
H18410-2	MONITOR WELL #2	770	186	1,970
H18410-3	MONITOR WELL #3	6,400	127	12,400
H18410-4	MONITOR WELL #4	420	115	1,170
H18410-5	MONITOR WELL #5	164	83.7	706
Quality Control		500	37.1	NR
True Value QC		500	40.0	NR
% Recovery		100	92.8	NR
Relative Percent Difference		< 0.1	0.5	< 0.1
METHOD: Standard Methods, EPA		4500-Cl B	375.4	160.1

Not accredited for Chloride, Sulfate and TDS.

Chemist

10/13/09
Date

H18410 RICE

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 10/05/09
Reporting Date: 10/08/09
Project Number: NOT GIVEN
Project Name: BD N-32 VENT
Project Location: T21S-R37E-SEC32 N~ LEA CO., NM

Sampling Date: 10/02/09
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: ZL

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		10/07/09	10/07/09	10/07/09	10/07/09
H18410-1	MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
H18410-2	MONITOR WELL #2	<0.001	<0.001	<0.001	<0.003
H18410-3	MONITOR WELL #3	<0.001	<0.001	<0.001	<0.003
H18410-4	MONITOR WELL #4	<0.001	<0.001	<0.001	<0.003
H18410-5	MONITOR WELL #5	<0.001	<0.001	<0.001	<0.003
Quality Control		0.051	0.046	0.044	0.147
True Value QC		0.050	0.050	0.050	0.150
% Recovery		102	92.0	88.0	98.0
Relative Percent Difference		3.8	4.3	6.6	6.6

METHOD: EPA SW-846 8021

TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

10/13/09
Date

H18410 RWB RICE

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

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company — PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: BD N-32 Vent
Project Location: T21S R37E Sec32 N ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1 Liter HDPE)	NONE	SAMPLING: DATE (2009)	TIME
H15410-1	Monitor Well #1	G	3	X				2				1		10-2	9:45
-2	Monitor Well #2	G	3	X				2				1		10-2	8:40
-3	Monitor Well #3	G	3	X				2				1		10-2	11:40
-4	Monitor Well #4	G	3	X				2				1		10-2	13:40
-5	Monitor Well #5	G	3	X				2				1		10-2	7:50

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
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 10-5-09	Time: 7:10	Received by: Cathy Watkins
Relinquished by: Cathy Watkins	Date: 10-5-09	Time: 10:55	Received By: (Laboratory Staff) Date: 10/5/09 Time: 10:58

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

Delivered By: (Circle One) Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ☑ / No ☐ — Intact: Yes ☑ / No ☐

CHECKED BY: (Initials) MCKB

REMARKS:

Email Results to: hconder@riceswd.com, lweinheimer@riceswd.com, rozanne@valornet.com