GTHT -___001___

G-103s

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☒
5.a State Lease No.

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☐ Temp. Observation ☐ Monitoring ☒ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name

2. Name of Operator: Lightning Dock Geothermal HI-01, LLC
8. Farm or Lease Name: Federal NM-34790

3. Address of Operator: Kearns Bldg. 136 S Main Street, Ste. 600 Salt Lake City, UT 84101
9. Well No.: LDG 47-7

4. Location of Well
Unit Letter N 1155 Feet From The South Line and 2266 Feet From The West Line, Section 7 Township 25 South Range 19 West NMPM.
10. Field and Pool, or Wildcat: Lightning Dock KGRA

15. Elevation (*Show whether DF, RT, GR, etc.*): 4200 GR
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☐	PLUG & ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER Conduct airlift/cleanout of LDG 47-7	☒			OTHER			☐

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

An Airlift /Injection procedure will be performed on LDG 47-7 to clean out producing formations. It is believed that formation cuttings and debris are clogging the fractures and preventing geothermal fluid flow into the well casing. The airlift portion of this procedure is intended to clean out producing formations. The injection procedure is intended to demonstrate whether or not the fractures were cleaned out during the flowing portion of the remedial work.

Tubing will be hung from surface to a depth no greater than 1400' inside the casing. An air compressor will be used to inject high-pressure air into the well and lift geothermal fluid out of the well. The fluid will flow from the wellhead through a flow line to a series of closed top tanks. Sediment will be allowed to settle at the bottom of the tanks.

Fluid from the tanks will be re-injected into LDG 47-7. Injection will continue until all fluid has been re-injected into the well. Any cuttings or sediment at the bottom of the tank will be disposed of in a proper manner on-site. The Airlift/Injection process may be repeated multiple times to cycle the well and aid in additional cleanup.

A detailed description of the procedures are included in the attached LDG 47-7 Airlift/Injection Procedure prepared by Capuano Engineering Company (CEC).

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED David A. Janney, PG TITLE Agent for Lightning Dock Geothermal, HI-01, LLC DATE 09/24/2014

APPROVED BY Carl J. Chavez TITLE Environmental Engineer DATE 10/7/2014

CONDITIONS OF APPROVAL, IF ANY: See Attached COAs.

Lightning Dock
Geothermal (HI-01) LLC Project
Airlift-Flow Into Injection Well
LDG 47-07 (GTHT-001)

G-103 Form
OCD Santa Fe Office
Conditions of Approval
(10/7/2014)

1) Any cuttings or sediment at the bottom of tanks at the end of procedure(s) shall be contained and sampled for OCD approval of operator's proposed final disposition of waste.

Please be advised that OCD's approval does not relieve Lightning Dock Geothermal HI-01, L.L.C. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/ diversion, surface water, human health or the environment. In such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Lightning Dock Geothermal HI-01, L.L.C. from compliance with any other federal, state, or local laws and/or regulations.

Mr. Carl Chavez, CHMM
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
505-476-3490
CarlJ.Chavez@state.nm.us

June 9, 2014

RE: Attached Form G-103 describing the emergency shutdown of the Lightning Dock Geothermal power plant located in Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Lightning Dock Geothermal HI-01, LLC, AMEC Environment & Infrastructure, Inc. hereby submits the attached Form G-103. This is a subsequent notice of an emergency shutdown of the geothermal power plant which was followed by the startup of the new submersible pump set in well LDG 45-7.

On May 9, 2014, the Lightning Dock Geothermal Power Plant had a power outage followed by an emergency plant shutdown that resulted in an emergency discharge of geothermal fluid from the power plant into the LDG 45-7 blow-down pond. Geothermal fluid was never discharged to the land surface. Power outages routinely trigger this type of emergency discharge.

On May 19, 2014, LDG installed a new submersible pump into production well LDG 45-7. In order to balance plant flows, LDG personnel discharged geothermal fluid into the LDG 45-7 and LDG 55-7 blow-down ponds for a short period of time during pump start up. Geothermal fluid was never discharged to the land surface. This type of discharge is routine during pump replacement and start-up. The fluid in the LDG 45-7 pond was subsequently sampled and the samples were submitted to Hall Environmental Analytical Laboratory for analysis according to the current Discharge Permit and the preliminary laboratory analytical results are attached.

The geothermal fluid was removed from the blow down ponds with a pump, and returned to the geothermal aquifer by injection into LDG 55-7. The total consumptive water use due to flashing and evaporation are estimated to be 8386.25 gallons (0.0257 acre-feet). The calculation sheet for this number is also attached.

Mr. Randy Dade in your Artesia office received an electronic copy and a single hard copy of these documents. Thank you very much for your assistance in the development of this important energy project. The final laboratory analytical results will be sent to you as soon as they are available. Should you have questions regarding this form and its attachments, please do not hesitate to contact me by email at David.Janney@amec.com or by phone at (505) 821-1801.

Respectfully submitted,

David W. Janney, PG
Agent for Lightning Dock Geothermal HI-01, LLC

Cc: Mr. Randy Dade, - NMOCD
Mr. Mike Gipson – Lightning Dock Geothermal HI-01, LLC
Ms. Michelle Henrie – Attorney for Lightning Dock Geothermal HI-01, LLC

Attachments

Two (2) Forms G-103 for a subsequent notice of a power plant shutdown
Two (2) Sets of evaporative and flashing loss calculations for the events
Two (2) Sets of preliminary laboratory analytical data

AMEC Environment & Infrastructure, Inc.
8519 Jefferson, NE
Albuquerque, New Mexico 87113
(505) 821-1801
www.amec.com

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☐

5.a State Lease No. Federal NM34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit –" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☑ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name

2. Name of Operator: Lightning Dock Geothermal HI-01, LLC

8. Farm or Lease Name

3. Address of Operator: 136 South Main Street, Ste. 600, Salt Lake City, Utah 84101

9. Well No. LDG 45-7

4. Location of Well
Unit Letter K 2360 Feet From The South Line and 2278 Feet From The West Line, Section 7 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Lightning Dock Geothermal

15. Elevation (Show whether DF, RT, GR, etc.): 4198 GR

12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER Plant shutdown and pump replacement discharge to blow down ponds ☑	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work) SEE RULE 203.

No changes were made to the existing well casing or well bore.

On May 9, 2014, the Lightning Dock Geothermal Power Plant had a power outage followed by an emergency plant shutdown that resulted in an emergency discharge of geothermal fluid into the LDG 45-7 blow-down pond. LDG personnel opened the return line and monitored the release of geothermal fluid into the blow-down pond in order to prevent unsafe pressure build up caused by the power outage. Geothermal fluid was never discharged to the land surface. Power outages routinely trigger this type of emergency discharge.

On May 19, 2014, LDG installed a new submersible pump into production well LDG 45-7. In order to balance plant flows, LDG personnel discharged geothermal fluid into the LDG 45-7 and LDG 55-7 blow-down ponds for a short period of time during start up. All discharges were monitored by LDG personnel. Geothermal fluid was never discharged to the land surface. This type of discharge is routine during pump replacement and start-up. The fluid in the LDG 45-7 pond was subsequently sampled and the samples were submitted to Hall Environmental Analytical Laboratory for analysis according to the current Discharge Permit. The preliminary laboratory analytical results are attached.

As much of the water as possible was removed from the blow down pond with a pump, placed into a water truck, and injected into the geothermal aquifer through LDG 55-7. The total consumptive water use due to flashing and evaporation are estimated to be 8386.25 gallons (0.0257 acre-feet). The calculation sheet for the consumptive use of water is also attached.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED David Withamey TITLE Agent for Lightning Dock Geothermal HI-01, LLC DATE June 9, 2014

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Consumptive Use of Water During 5/9/2014 to 5/21/2014

Date	Initial Volume (gal)	Height of Fluid (in)	Flash Loss (gal)	Final Fluid Level (in)	Evaporative Loss (gal)	Remaining Volume (gal)
9-May	19000	15.2	1900	13.68	N/A	17100
10-May	17100	13.68	N/A	13.281	498.75	16601.25
11-May	16601.25	13.281	N/A	12.882	498.75	16102.5
12-May	16102.5	12.882	N/A	12.483	498.75	15603.75
13-May	15603.75	12.483	N/A	12.084	498.75	15105
14-May	15105	12.084	N/A	11.685	498.75	14606.25
15-May	14606.25	11.685	N/A	11.286	498.75	14107.5
16-May	14107.5	11.286	N/A	10.887	498.75	13608.75
17-May	13608.75	10.887	N/A	10.488	498.75	13110
18-May	13110	10.488	N/A	10.089	498.75	12611.25
19-May	6000	4.8	600	4.32	N/A	5400
19-May	18011.25	14.889	N/A	14.49	498.75	17512.5
20-May	17512.5	14.49	N/A	14.091	498.75	17013.75

Constants

.399" of Evaporative loss each day.

90,000 gal = 6' of fluid depth

Estimated 10% flash for fluids over 175°F

Total Flash Loss (gal)	2500
Total Evaporative Loss (gal)	5486.25
Remaining Water (gal)	400
Total Consumptive Use (gal)	**8386.25**

Analytical Report
Lab Order 1405C59
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Lightning Dock Geothermal
Client Sample ID: LDG T4 45-7 BP MAY '14
Project: LDG T4 45-7 BP MAY '14
Collection Date: 5/29/2014 1:50:00 PM
Lab ID: 1405C59-001 **Matrix:** AQUEOUS **Received Date:** 5/30/2014 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	12	2.0	*	mg/L	20	5/30/2014 12:42:47 PM	R18974
Chloride	89	10		mg/L	20	5/30/2014 12:42:47 PM	R18974
Bromide	0.29	0.10		mg/L	1	5/30/2014 12:05:33 PM	R18974
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	5/30/2014 12:05:33 PM	R18974
Sulfate	540	10	*	mg/L	20	5/30/2014 12:42:47 PM	R18974
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Aluminum	0.18	0.020		mg/L	1	6/5/2014 1:24:29 PM	R19064
Barium	0.064	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Boron	0.44	0.040		mg/L	1	6/4/2014 5:03:46 PM	R19051
Cadmium	ND	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Calcium	29	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Chromium	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Cobalt	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Copper	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Iron	0.12	0.020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Magnesium	ND	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Manganese	0.041	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Molybdenum	0.027	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Nickel	ND	0.010		mg/L	1	6/4/2014 5:03:46 PM	R19051
Potassium	33	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Silver	ND	0.0050		mg/L	1	6/5/2014 1:24:29 PM	R19064
Sodium	320	5.0		mg/L	5	6/5/2014 1:26:27 PM	R19064
Zinc	0.012	0.010		mg/L	1	6/4/2014 5:03:46 PM	R19051
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	0.018	0.0010	*	mg/L	1	6/5/2014 1:47:28 PM	R19065
Lead	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
Selenium	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
Uranium	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	6/6/2014 11:10:31 AM	13552
SM4500-H+B: PH						Analyst: **JML**	
pH	6.78	1.68	H	pH units	1	5/30/2014 11:44:06 AM	R18981
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1340	20.0	*	mg/L	1	6/2/2014 3:55:00 PM	13457

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 10, 2014

Kacie Peterson

Lightning Dock Geothermal
PO Box 86
Animas, NM 88020
TEL: (575) 548-0301
FAX

RE: LDG T4 45-7 BP MAY '14 OrderNo.: 1405C59

Dear Kacie Peterson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/30/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Lightning Dock Geothermal
Client Sample ID: LDG T4 45-7 BP MAY '14
Project: LDG T4 45-7 BP MAY '14
Collection Date: 5/29/2014 1:50:00 PM
Lab ID: 1405C59-001
Matrix: AQUEOUS
Received Date: 5/30/2014 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	12	2.0	*	mg/L	20	5/30/2014 12:42:47 PM	R18974
Chloride	89	10		mg/L	20	5/30/2014 12:42:47 PM	R18974
Bromide	0.29	0.10		mg/L	1	5/30/2014 12:05:33 PM	R18974
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	5/30/2014 12:05:33 PM	R18974
Sulfate	540	10	*	mg/L	20	5/30/2014 12:42:47 PM	R18974
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Aluminum	0.18	0.020		mg/L	1	6/5/2014 1:24:29 PM	R19064
Barium	0.064	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Boron	0.44	0.040		mg/L	1	6/4/2014 5:03:46 PM	R19051
Cadmium	ND	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Calcium	29	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Chromium	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Cobalt	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Copper	ND	0.0060		mg/L	1	6/4/2014 5:03:46 PM	R19051
Iron	0.12	0.020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Magnesium	ND	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Manganese	0.041	0.0020		mg/L	1	6/4/2014 5:03:46 PM	R19051
Molybdenum	0.027	0.0080		mg/L	1	6/4/2014 5:03:46 PM	R19051
Nickel	ND	0.010		mg/L	1	6/4/2014 5:03:46 PM	R19051
Potassium	33	1.0		mg/L	1	6/4/2014 5:03:46 PM	R19051
Silver	ND	0.0050		mg/L	1	6/5/2014 1:24:29 PM	R19064
Sodium	320	5.0		mg/L	5	6/5/2014 1:26:27 PM	R19064
Zinc	0.012	0.010		mg/L	1	6/4/2014 5:03:46 PM	R19051
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	0.018	0.0010	*	mg/L	1	6/5/2014 1:47:28 PM	R19065
Lead	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
Selenium	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
Uranium	ND	0.0010		mg/L	1	6/5/2014 1:47:28 PM	R19065
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	6/6/2014 11:10:31 AM	13552
SM4500-H+B: PH						Analyst: **JML**	
pH	6.78	1.68	H	pH units	1	5/30/2014 11:44:06 AM	R18961
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1340	20.0	*	mg/L	1	6/2/2014 3:55:00 PM	13457

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	**Batch #:**	140604006
Address:	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	**Project Name:**	1405C59
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number	140604006-001	**Sampling Date**	5/29/2014	**Date/Time Received**	6/3/2014 12:40 PM
Client Sample ID	1405C59-001B / LDG T4 45-7 BP MAY 14			**Sampling Time**	1:50 PM
Matrix	Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Dissolved Lithium	0.712	mg/L	0.01	6/10/2014	ETL	EPA 200.8	
Dissolved Rubidium	0.373	mg/L	0.01	6/10/2014	ETL	EPA 200.8	
Dissolved Tungsten	0.0964	mg/L	0.05	6/10/2014	ETL	EPA 200.8	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal
Project: LDG T4 45-7 BP MAY '14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R19051**	RunNo: **19051**
Prep Date:	Analysis Date: **6/4/2014**	SeqNo: **550421** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Potassium	ND	1.0								
Zinc	ND	0.010								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R19051**	RunNo: **19051**
Prep Date:	Analysis Date: **6/4/2014**	SeqNo: **550422** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	101	85	115			
Boron	0.52	0.040	0.5000	0	104	85	115			
Cadmium	0.50	0.0020	0.5000	0	100	85	115			
Calcium	51	1.0	50.00	0	102	85	115			
Chromium	0.52	0.0060	0.5000	0	103	85	115			
Cobalt	0.49	0.0060	0.5000	0	98.0	85	115			
Copper	0.50	0.0060	0.5000	0	99.9	85	115			
Iron	0.54	0.020	0.5000	0	108	85	115			
Magnesium	52	1.0	50.00	0	104	85	115			
Manganese	0.53	0.0020	0.5000	0	105	85	115			
Molybdenum	0.51	0.0080	0.5000	0	102	85	115			
Nickel	0.49	0.010	0.5000	0	97.0	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Zinc	0.49	0.010	0.5000	0	97.0	85	115			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R19064**	RunNo: **19064**
Prep Date:	Analysis Date: **6/5/2014**	SeqNo: **550882** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R19064**	RunNo: **19064**
Prep Date:	Analysis Date: **6/5/2014**	SeqNo: **550882** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R19064**	RunNo: **19064**
Prep Date:	Analysis Date: **6/5/2014**	SeqNo: **550883** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.57	0.020	0.5000	0	114	85	115			
Silver	0.10	0.0050	0.1000	0	103	85	115			
Sodium	48	1.0	50.00	0	95.9	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID	**1405C59-001CMS**	SampType:	**MS**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**LDG T4 45-7 BP MA**	Batch ID:	**R19065**	RunNo:	**19065**
Prep Date:		Analysis Date:	**6/5/2014**	SeqNo:	**550919** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.042	0.0010	0.02500	0.01820	95.0	70	130			
Lead	0.026	0.0010	0.02500	0.0002022	103	70	130			
Selenium	0.026	0.0010	0.02500	0.0006806	102	70	130			
Uranium	0.027	0.0010	0.02500	0.0002686	106	70	130			

Sample ID	**1405C59-001CMSD**	SampType:	**MSD**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**LDG T4 45-7 BP MA**	Batch ID:	**R19065**	RunNo:	**19065**
Prep Date:		Analysis Date:	**6/5/2014**	SeqNo:	**550920** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.043	0.0010	0.02500	0.01820	98.4	70	130	1.96	20	
Lead	0.026	0.0010	0.02500	0.0002022	103	70	130	0.482	20	
Selenium	0.026	0.0010	0.02500	0.0006806	103	70	130	0.438	20	
Uranium	0.027	0.0010	0.02500	0.0002686	107	70	130	1.22	20	

Sample ID	**LCS**	SampType:	**LCS**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**LCSW**	Batch ID:	**R19065**	RunNo:	**19065**
Prep Date:		Analysis Date:	**6/5/2014**	SeqNo:	**550921** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.1	85	115			
Lead	0.025	0.0010	0.02500	0	100	85	115			
Selenium	0.025	0.0010	0.02500	0	99.4	85	115			
Uranium	0.025	0.0010	0.02500	0	98.8	85	115			

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA 200.8: Dissolved Metals**
Client ID:	**PBW**	Batch ID:	**R19065**	RunNo:	**19065**
Prep Date:		Analysis Date:	**6/5/2014**	SeqNo:	**550922** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								
Uranium	ND	0.0010								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID	**MB-13552**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**13552**	RunNo:	**19091**					
Prep Date:	**6/5/2014**	Analysis Date:	**6/6/2014**	SeqNo:	**551578**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-13552**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**13552**	RunNo:	**19091**					
Prep Date:	**6/5/2014**	Analysis Date:	**6/6/2014**	SeqNo:	**551579**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	96.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID **A6**	SampType: **CCV_6**	TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548297** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	0.10	2.400	0	94.5	90	110			
Chloride	12	0.50	12.00	0	101	90	110			
Bromide	12	0.10	12.00	0	101	90	110			
Phosphorus, Orthophosphate (As P	12	0.50	12.00	0	99.4	90	110			
Sulfate	31	0.50	30.00	0	103	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548299** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	96.1	90	110			
Chloride	4.7	0.50	5.000	0	93.9	90	110			
Bromide	2.4	0.10	2.500	0	96.1	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.3	90	110			
Sulfate	9.6	0.50	10.00	0	96.1	90	110			

Sample ID **1405C59-001AMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LDG T4 45-7 BP MA**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548306** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	2.7	0.10	2.500	0.2942	95.3	85.1	108			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	92.0	81.3	101			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID **1405C59-001AMSD** SampType: **MSD** TestCode: **EPA Method 300.0: Anions**

Client ID: **LDG T4 45-7 BP MA** Batch ID: **R18974** RunNo: **18974**

Prep Date: Analysis Date: **5/30/2014** SeqNo: **548307** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	2.7	0.10	2.500	0.2942	94.4	85.1	108	0.840	20	
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.9	81.3	101	0.104	20	

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R18974** RunNo: **18974**

Prep Date: Analysis Date: **5/30/2014** SeqNo: **548309** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.94	0.10	1.000	0	93.7	90	110			
Chloride	4.7	0.50	5.000	0	93.7	90	110			
Bromide	4.9	0.10	5.000	0	97.4	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.1	90	110			
Sulfate	12	0.50	12.50	0	96.4	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R18974** RunNo: **18974**

Prep Date: Analysis Date: **5/30/2014** SeqNo: **548321** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	96.6	90	110			
Chloride	7.8	0.50	8.000	0	97.7	90	110			
Bromide	7.9	0.10	8.000	0	99.1	90	110			
Phosphorus, Orthophosphate (As P	7.8	0.50	8.000	0	97.7	90	110			
Sulfate	20	0.50	20.00	0	100	90	110			

Sample ID **A6** SampType: **CCV_6** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R18974** RunNo: **18974**

Prep Date: Analysis Date: **5/30/2014** SeqNo: **548333** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.4	0.10	2.400	0	98.9	90	110			
Chloride	12	0.50	12.00	0	101	90	110			
Bromide	12	0.10	12.00	0	101	90	110			
Phosphorus, Orthophosphate (As P	12	0.50	12.00	0	101	90	110			
Sulfate	31	0.50	30.00	0	103	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID **A4**	SampType: **CCV_4**	TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548345** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.95	0.10	1.000	0	95.1	90	110			
Chloride	4.7	0.50	5.000	0	93.0	90	110			
Bromide	4.9	0.10	5.000	0	97.5	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.9	90	110			
Sulfate	12	0.50	12.50	0	95.6	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548353** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								

Sample ID **A5**	SampType: **CCV_5**	TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/30/2014**	SeqNo: **548357** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	93.6	90	110			

Sample ID **A6**	SampType: **CCV_6**	TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/31/2014**	SeqNo: **548369** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	0.10	2.400	0	97.5	90	110			

Sample ID **A4**	SampType: **CCV_4**	TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC**	Batch ID: **R18974**	RunNo: **18974**
Prep Date:	Analysis Date: **5/31/2014**	SeqNo: **548375** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.97	0.10	1.000	0	97.0	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1405C59**

10-Jun-14

Client: Lightning Dock Geothermal

Project: LDG T4 45-7 BP MAY '14

Sample ID	**MB-13457**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**13457**	RunNo:	**18986**					
Prep Date:	**6/1/2014**	Analysis Date:	**6/2/2014**	SeqNo:	**548520**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-13457**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**13457**	RunNo:	**18986**					
Prep Date:	**6/1/2014**	Analysis Date:	**6/2/2014**	SeqNo:	**548521**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: LIGHTNING DOCK GEO Work Order Number: 1405C59 RcptNo: 1

Received by/date: L.M. 05/30/14

Logged By: **Michelle Garcia** 5/30/2014 7:45:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 5/30/2014 8:31:34 AM Michelle Garcia

Reviewed By: 05/30/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	UPS		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

MG 06/04

# of preserved bottles checked for pH: 3 4 (<2 or >12 unless noted)

Adjusted? ~~No~~ Yes

Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks: Poured off from 500 mL unp. for Total Hg analysis. Added 0.5mL HNO3 for acceptable pH. MG 06/04/14

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: LIGHTNING DOCK GEOTHERMAL

Mailing Address: 18 GREENHOUSE DR
ANIMAS, NM 88020

Phone #: 575.548.0301

email or Fax#: KACIE.PETERSON@CYRQ ENERGY.COM

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☐ EDD (Type) ______

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: LDG T4 45-7 BP MAY'14

Project #:

Project Manager: KACIE PETERSON

Sampler: KACIE PETERSON/MIKE GIBSON

On Ice: ☑ Yes ☐ No

Sample Temperature: 3.6

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1405C59	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	SEE ATTACHED LIST	~~[illegible]~~ 05/30/14		Total Hg 05/09/14	Air Bubbles (Y or N)
5/29	13:50	AQ	LDGT4 45-7 BP MAY'14 ~~See Attached~~ 05/30/14	4-PLASTIC	HNO_3/H_2SO_4/-	-001												X			X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/29	14:00	Kacie Peterson	[signature]	05/30/14	0745
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

LIGHTNING DOCK GEOTHERMAL "TABLE 4"
WQCC CONTAINERS FOR ONE SAMPLING EVENT

SAMPLING EFFORT LDG T4 15-7 BP MAY '14

TEST	BOTTLE TYPE / PRESERVATIVE	SHIPPED FROM LAB	LABELED AT LDG	SAMPLED AT LDG	SHIPPED TO LAB	TEST RESULTS FROM LAB
Anions, TDS, pH	1 x 500 mL unpreserved plastic	X	X	X	X	
	1 x 125 mL H_2SO_4 plastic	X	X	X	X	
Dissolved Metals + Li, Rb, W, Br	2 x 125 mL HNO_3 plastics + filter ☒	X	X	X	X	
		X	X	X	X	

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, April 23, 2014 4:22 PM
To: Janney, David (david.janney@amec.com)
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; Griswold, Jim, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: LDG 45-7 G-103 Pump Installation
Attachments: LDG 45-7 Pump Install 4-23-2014.pdf

David:

Please find attached the New Mexico Oil Conservation Division's (OCD) approval of the G-103 Sundry with attachments.

A hardcopy was placed in the U.S. Mail this afternoon.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
O: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Web: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee ☐

5.a State Lease No.: Federal NM34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☑ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name:

2. Name of Operator: Lightning Dock Geothermal HI-01, LLC

8. Farm or Lease Name:

3. Address of Operator: 136 South Main Street, Ste. 600, Salt Lake City, Utah 84101

9. Well No.: LDG 45-7

4. Location of Well
Unit Letter K 2360 Feet From The South Line and 2278 Feet From The West Line, Section 7 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Lightning Dock Geothermal

15. Elevation (*Show whether DF, RT, GR, etc.*): 4198 GR

12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Replace pump ☑		OTHER ☐	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

No changes to existing well. Pump replacement only. Existing 400 horsepower (hp) line shaft turbine pump is set at 900 feet.

Replace existing line shaft turbine pump with a new Schlumberger submersible pump rated at 700 hp. The new pump will be set at 1,000 feet. Pump specifications are attached.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED David W. Mahoney, PG TITLE Agent for Lightning Dock Geothermal HI-01, LLC. DATE April 18, 2014

APPROVED BY Carl J. Chavez TITLE Environmental Engineer DATE 4/23/2014

CONDITIONS OF APPROVAL, IF ANY:

Company:	Cyrq Energy	**Project:**	ESP Design
Engineer:	Jeremy Kuhn	**Date:**	3/3/2014

Technical Design

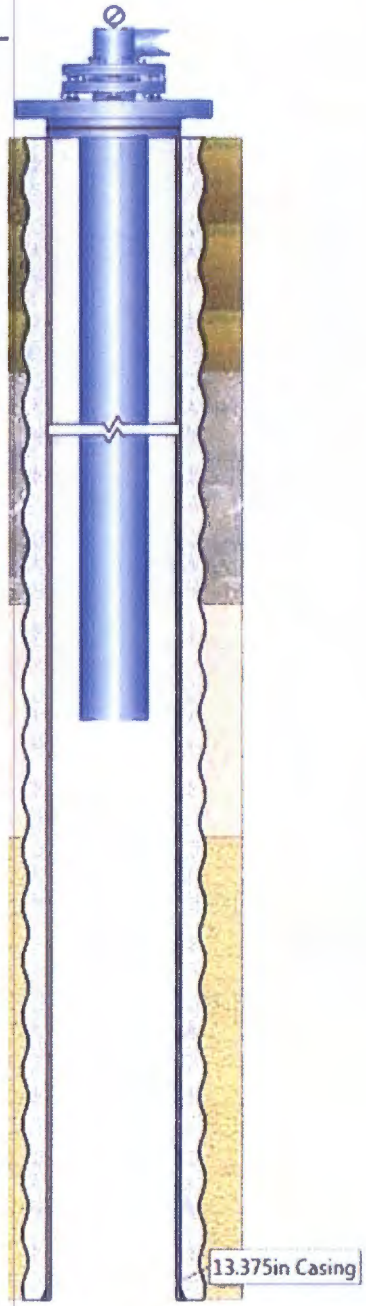
General Information

Contact Details

Project	*ESP Design*
Prepared by	*Jeremy Kuhn*
Date	*3/3/2014 12:00:00 AM*
Corporate	*Cyrq Energy*
Customer	
Country	*United States*
Location	*Lordsburgh, New Mexico*
Field & Lease	*Lightning Dock Geothermal*
Well Name	*45-7*
API Well Reg. #	
Company	
Engineer	
Contact	
Address	
E-Mail	*Mike.Gipson@cyrqenergy.com; Frank.Peach@cyrqenergy.com*
Phone	
Fax	

Comment

WHP = 85



Company:	Cyrq Energy	**Project:**	ESP Design
Engineer:	Jeremy Kuhn	**Date:**	3/3/2014

Input Data and Information

Production and Fluid Data

Oil Gravity	*30*	*°API*	**Water Specific Gravity**	*0.94*	
Water Cut	*100*	*%*			

Wellbore Information

Wellhead Temperature	*311*	*°F*	**Bottom Hole Temperature**	*315*	*°F*

Casing	Length (ft)	OD (in)	ID (in)	Roughness (in)
1	*3000*	*13.375*	*12.715*	*0.00065*

Tubing	Length (ft)	OD (in)	ID (in)	Roughness (in)
1	*993.61*	*7*	*6.538*	*0.00065*

Desired Operating Conditions

Pump Depth	*1000*	*ft*	**Frequency**	*57*	*Hz*
Design Rate	*2000*	*GPM*	**Wellhead Pressure**	*85*	*psig*
Pump Speed	*3289*	*RPM*	**TDH**	*798*	*ft*

Company:	Cyrq Energy	**Project:**	ESP Design
Engineer:	Jeremy Kuhn	**Date:**	3/3/2014

Equipment and Results

Pumping Conditions

Production Rate	*1978.52*	*GPM*	**TDH**	*797.94*	*ft*
Pump Speed	*3289*	*RPM*			

Pump Information

Device Information	*REDA I 125 P2500A*				
Stages	*4*				
Staging Configuration			**Staging Type**		

Pump Intake

Device Information			**Power**		

Motor Nameplate Information

Device Information	*REDA 738 E142*				
Volts	*3126.9*	*Volts*	**Power**	*700*	*hp*
Speed	*3289*	*RPM*	**Amp**	*136.1*	*Amps*
Rating Factor	*100*	*%*	**Winding Number**	*E142*	
Instrument Tube OD					

Motor Lead Extension

Type	*KELB*		**Connection Type**	*TAPE-IN*	
Length	*40*	*ft*	**KV**	*4*	
Minor Armor OD	*0.523*	*in*	**Major Armor OD**	*1.382*	*in*
Conductor Size	*2*	*AWG*	**Material/Armor**	*M*	

Cable Information

Type	*EL*	
Conductor Size	*1*	
Length	*1100*	*ft*
KV	*5*	*kV*
Temperature Rating	*450*	*°F*

Protector

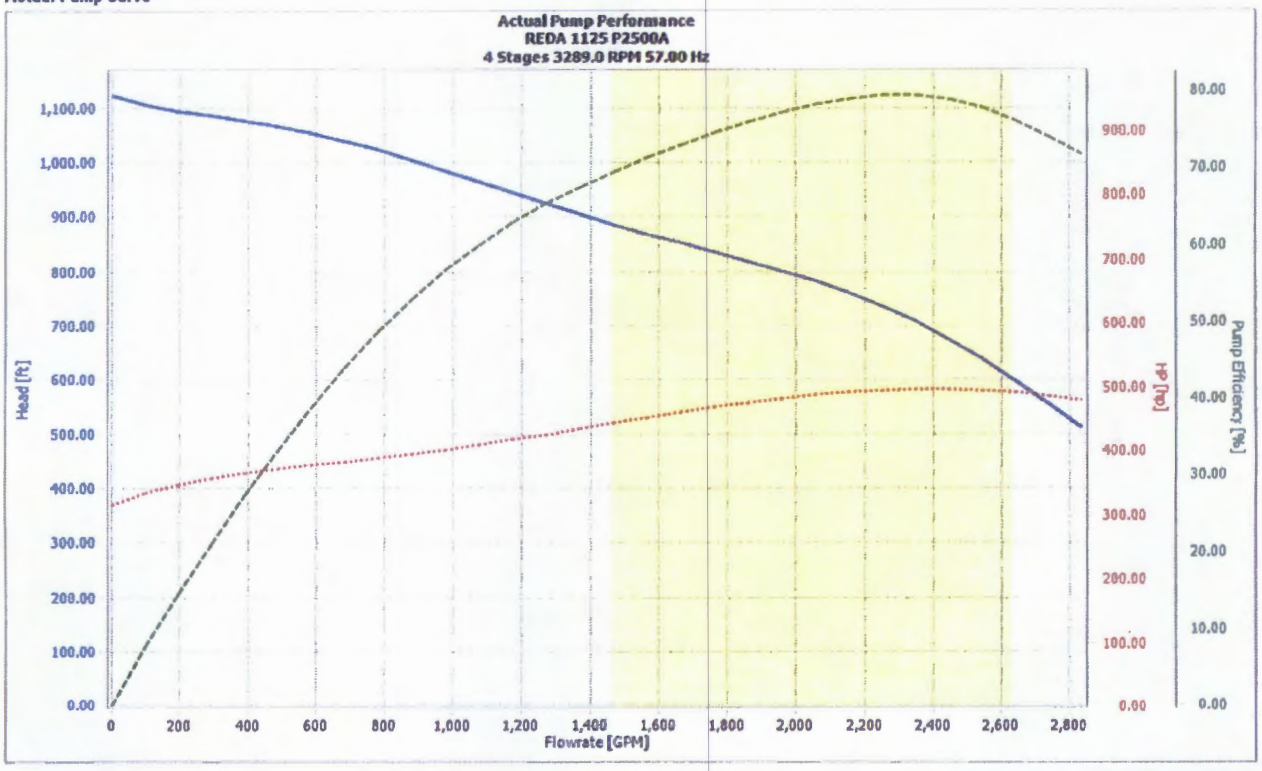
Thrust Bearing Type	*738 KTB*		**Oil Type**	*REDA OIL #5*	
Number of Seals	*4*				
Configuration	*66L 66L*				
Number of Chambers	*4*				
Components	*TANDEM*				

Conditions at Operating Frequency

Operating Frequency	*57*	*Hz*	**Volts @ Junction Box**	*3004.9*	*Volts*
Motor Amp	*103.5*	*Amps*	**KVA @ Junction Box**	*538.22*	
Total Motor Load	*484.2*	*hp*	**Motor Volts**	*2970.6*	*Volts*

Company:	Cyrq Energy	**Project:**	ESP Design
Engineer:	Jeremy Kuhn	**Date:**	3/3/2014

Actual Pump Curve



Chavez, Carl J, EMNRD

From: Sanchez, Daniel J., EMNRD
Sent: Wednesday, August 22, 2012 7:11 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: G-103 Forms

Good Morning,

Yesterday Carl brought up the issue of how to proceed with the G-103 form approvals. Since these forms are required to be reviewed by Santa Fe, they will be coming here and being reviewed and approved/denied by Carl. Carl should be working with the Artesia office to confirm that any other forms submitted to the district and the G-103's do not conflict with each other. Please copy me on all issues concerning this issue. Thanks.

Daniel

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Adopted 10-1-78
Revised 10-1-70

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. O. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee ☐
5.a State Lease No.: NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☒ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name: NA
2. Name of Operator: Lightning Dock Geothermal HI-01, LLC
8. Farm or Lease Name:
3. Address of Operator: 136 S. Main Street, Ste 600, Salt Lake City, UT 84101
9. Well No.: LDG 45-7
4. Location of Well: Unit Letter 2360 Feet From The South Line and 2278 Feet From The West Line, Section 7 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat: Lightning Dock Geothermal
15. Elevation (Show whether DF, RT, GR, etc.)
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☒		OTHER	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

RECEIVED
MAR 16 2012
NMOCD ARTESIA

Move on location and rig-up pump pull rig
Pull pump for reconditioning
Rig-down and move off pump pull rig
Move on and rig-up drilling rig
Clean out well
Rig-up geophysical loggers and log well
Rig-down loggers
Run slotted liner
close master valve, rig-down and move off location

Please see the attached LDG 45-7 Cleanout & Completion Program by Capuano Engineering Consultants for the details of this program.

This G-103 has been accepted with "Like Approval by BLM" After the BLM Change on Page 7, with that correction, This G-101 is accepted and Approved.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [signature] TITLE Attorney for Operator DATE 3/16/2012

APPROVED BY [signature] TITLE Dist II Supervisor DATE 03/16/2012

CONDITIONS OF APPROVAL, IF ANY:

amec

RECEIVED OCD

March 1, 2012

2012 MAR -6 P 12:47

Mr. Randy Dade
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
District 2 Supervisor
811 South First Street
Artesia, NM 88210
575-748-1283
Randy.Dade@state.nm.us

RECEIVED
MAR - 2 2012
NMOCD ARTESIA

RE: Sundry Notice Form G-103 for Geothermal Production Well LDG 45-7 for Los Lobos Renewable Power, LLC, Section 7, Twp. 25S, Rng. 19W, Hidalgo County, New Mexico

Dear Mr. Dade:

On behalf of Los Lobos Renewable Power, LLC, AMEC Environment & Infrastructure respectfully submits the attached Sundry Notice for the cleanout and completion of LDG 45-7 located on federal geothermal lease NM 34790 in Hidalgo County, New Mexico. There are one original and one copy of the form included in this submittal. Mr. Carl Chavez indicated that you will retain a copy of the Sundry Notice for your records and forward the remainder to him in Santa Fe. We have also submitted a Sundry Notice for this work to Mr. Michael smith with the Bureau of Land Management in Las Cruces, New Mexico.

Thank you very much for your assistance in the development of this important energy project. Should you have questions regarding these applications, please do not hesitate to contact me by email at David.Janney@amec.com or by phone at (505) 821-1801.

Respectfully submitted,

David W. Janney

David W. Janney, PG
Agent for Los Lobos Renewable Power, LLC

Cc: Michael Hayter – Los Lobos Renewable Power, LLC (Lightning Dock Geothermal HI-01, LLC)

Attachments

Two (2) Forms G-103 Sundry Notice for LDG 45-7
Two (2) Cleanout & Completion program for LDG 45-7 by Capuano Engineering Consultants

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

5. Indicate Type of Lease: State ☐ Fee ☐
5.a State Lease No.: Federal NM34790

1. Type of well: Geothermal Producer ☑ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name:

2. Name of Operator: Los Lobos Renewable Power, LLC (261071)
8. Farm or Lease Name:

3. Address of Operator: 136 South Main Street, Ste. 600, Salt Lake City, Utah 84101
9. Well No.: LDG 45-7

4. Location of Well
Unit Letter K 2360 Feet From The South Line and 2278 Feet From The West Line, Section 7 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat: Lightning Dock Geothermal

15. Elevation (Show whether DF, RT, GR, etc.): 4198 GR
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☐	PLUG & ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER Pull pump, clean well and run slotted liner	☑			OTHER			☐

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 203.

Move on location and rig-up pump pull rig
Pull pump for reconditioning
Rig-down and move off pump pull rig
Move on and rig-up drilling rig
Clean out well
Rig-up geophysical loggers and log well
Rig-down loggers
Run slotted liner
Close master valve, rig-down and move off location

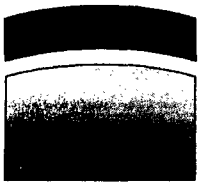
Please see attached LDG 45-7 Cleanout & Completion Program by Capuano Engineering Consultants for the details of this program.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED David A. Ramsey, PE TITLE Agent for Los Lobos Renewable Power, LLC DATE Feb 27, 2012

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:



CyrQ

Lightning Dock
geothermal

LDG 45-7
Cleanout &
Completion Program

Designed and Prepared By:

CAPUANO
ENGINEERING
CONSULTANTS

CAPUANO ENGINEERING CONSULTANTS

3883 Airway Drive
Suite 210
Santa Rosa, CA 95403
TELEPHONE: (707) 575-8740

Drilling Program	
Operating Company	Los Lobos Renewable Power, LLC
Field	Lightning Dock
Well	45-7
Location	Hidalgo County, NM
Well Type	Production Well
Drilling Engineer	Louis Capuano III
Date of Issue	February 29, 2012

		Signature	Date
Prepared	Louis Capuano III		
	Drilling Engineer	Capuano Engineering Consultants	
Accepted	Michael Hayter		
	Project Management	Cyrq Energy	

Table of Contents

Section:

Section A: General Well Information

Well Information Table	
Los Lobos Renewable Power, LLC	45-7
Location	Section: 7, Township: 25S, Range: 19W County: Hidalgo County State: NM
Elevation	GL: 4202'
	KB: 13'
Final Total Depth	2900' MD
Surface UTM Coordinates	32° 8'39.89" N, 108°50'16.15" W
Bottom Hole Target	64.4'S and 1.9' E of surface location
Target Zone:	Volcanic Tuff

Section	Maximum Depth of Section		Casing
OH	MD	TVD	
36"	48'	48'	30", 139 ppf, J-55 Welded Line Pipe
26"	411'	411'	20", 94 ppf, J-55, BTC Casing
17-1/2"	1680'	1679'	13-3/8", 54.5 ppf, K-55, BTC Casing
12-1/4"	2900'	2899'	9-5/8", 36 ppf, K-55, BTC Slotted Liner w/ TOL at 1600'

Wellhead Information	
Flange Size	Pressure Test (psi)
13-3/8" SOW x ANSI 12", 400 Series	1000

Overview:

LDG 45-7 is a pumped production well. The well was drilled from Dec 2010 to Feb 2011. However, the completion was delayed by logging and wellbore problems. The object of this operation is to complete the original plan for the well. The bottom hole section from 1680' to TD at 2900' is open hole completion. There is a 12" line shaft pump installed in the wellbore to 960'. The pump has three different strings of pipe that are (starting with the inner most shaft) the drive shaft, the lubricator string and the pump casing. This workover operation will begin with the removal of the line shaft pump. Once the pump is removed a BOP stack including a master valve will be placed on the wellhead. The BOP will be tested before proceeding into the wellbore. The well will then be cleaned out to a total depth of 2900'. Once clean out has occurred the well will be logged for fracture identification. After logging the rig will complete the well with a slotted 9-5/8" liner. The liner will be set on bottom with a liner adapter on top.

Safety, Hazards and Special Considerations:

Section B: Pump Removal Program
During the removal of the pump cool water must be flowed down the backside of the wellbore in order to keep the well killed. If no water is kept flowing down the annular space, the well will become active and want to flow.

It is essential to handle the pump motor, bearings, seals and bells with the up most care. These pieces of equipment are very fragile and can be damaged easily.

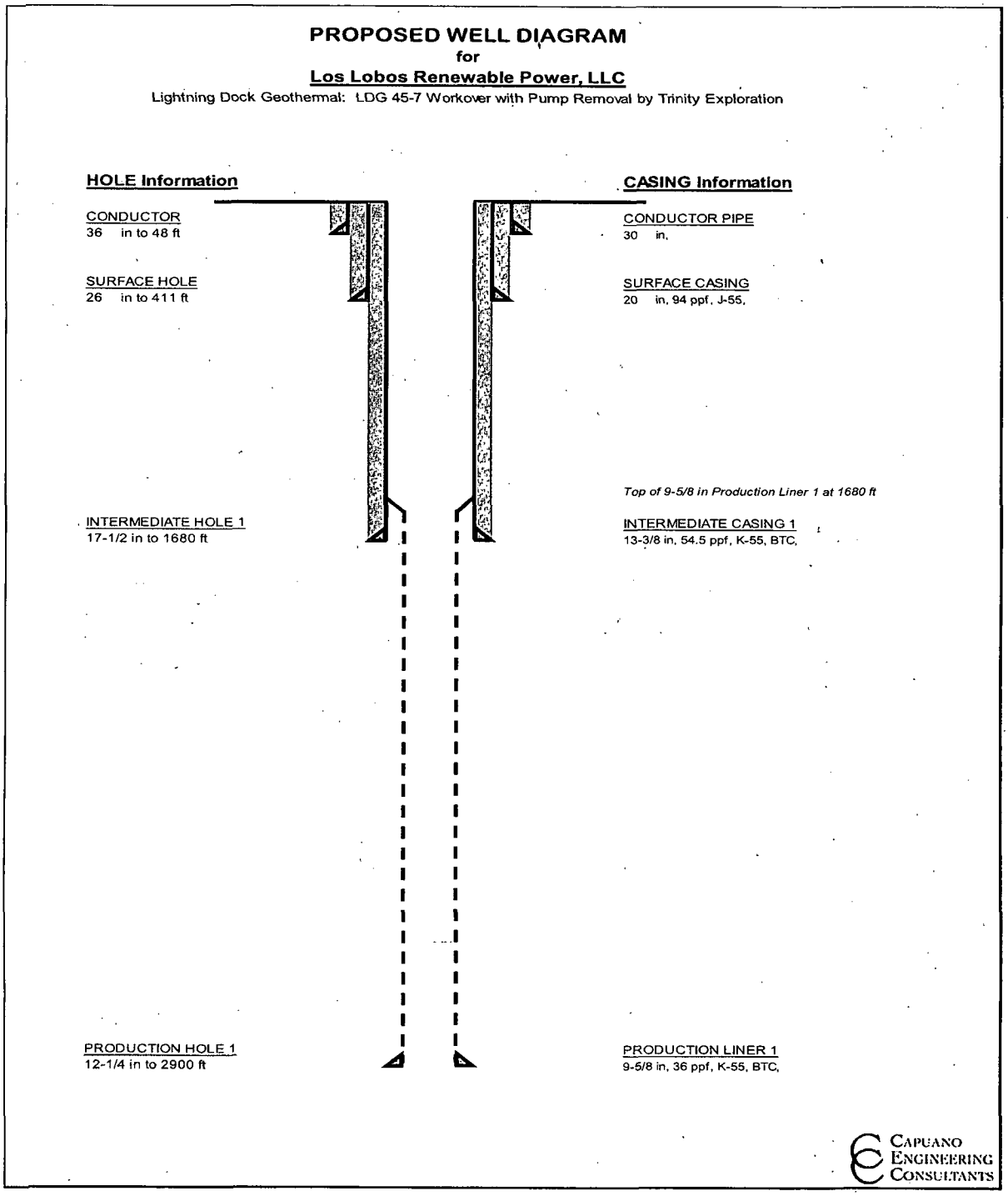
The lubrication string will be filled with oil. This oil needs to be collected and contained. Standard clamps, rings, hoses and storage containers should be utilized to prevent contamination. Be aware when breaking the connection that the string will be full of oil.

Section C: Cleanout of 12-1/4" Hole and Placement of 9-5/8" Slotted Liner Program
The original 12-1/4" hole section was not completed with any type of slotted or perforated casing. The potential of a bridge to exist in the wellbore is very high and as the well is flowed more often the potential of future bridges grows every day. So a clean out run to bottom is needed to ensure that the hole is in gage and the wellbore is clean.

The rig will encounter lost circulation and should expect to handle the problem with aerated water. At no time will mud be used during the clean out of the hole. Mud will plug the producing formation and could permanently damage the well. Aerated water should be used as the drilling fluid.

Wellbore Schematic

PROPOSED WELL DIAGRAM
for
Los Lobos Renewable Power, LLC
Lightning Dock Geothermal: LDG 45-7 Workover with Pump Removal by Trinity Exploration



Capuano Engineering Consultants

Section B: Pump Removal Program

12-1/4" Hole Section to 4000' MD / 3406' TVD (9-5/8" Slotted Liner):

Safety / Hazards Considerations in This Section:
During the removal of the pump cool water must be allowed to flow down the backside of the wellbore in order to keep the well killed. If no water is kept flowing down the annular space, the well will become active and want to flow.

It is essential to handle the pump motor, bearings, seals and bells with the up most care. These pieces of equipment are very fragile and can be damaged easily.

The lubrication string will be filled with oil. This oil needs to be collected and contained. Standard clamps, rings, hoses and storage containers should be utilized to prevent contamination. Be aware when breaking the connection that the string will be full of oil.

Program:

1. Rig up pump pulling unit on location and over the 45-7 pump head.
2. Remove pump motor and set aside.
   2.1. Secure shaft with dog collar.
3. Use power tongs to unscrew pump casing and shafts.
   3.1. Cut off strapped ¼" tubing and try to save on spool.
   3.2. Keep drive shaft inside of lubrication string and lubrication string inside of the pump casing.
      - Keep all shafts within each other and stack joints.
   3.3. Continue to remove pump until Bells are at surface.
   3.4. Lay down bells and housing.
4. Rig down pump pulling unit.
5. Carefully stack and haul off pump equipment for refurbishing.
6. At all times continue to flow cool water down the wellbore.

Section C: Cleanout of 12-1/4" Hole and Placement of 9-5/8" Slotted Liner

Safety / Hazards Considerations in This Section:
The original 12-1/4" hole section was not completed with any type of slotted or perforated casing. The potential of a bridge to exist in the wellbore is very high and as the well is flowed more often the potential of future bridges grows every day. So a clean out run to bottom is needed to ensure that the hole is in gage and the wellbore is clean.

The rig will encounter lost circulation and should expect to handle the problem with aerated water. At no time will mud be used during the clean out of the hole. Mud will plug the producing formation and could permanently damage the well. Aerated water should be used as the drilling fluid.

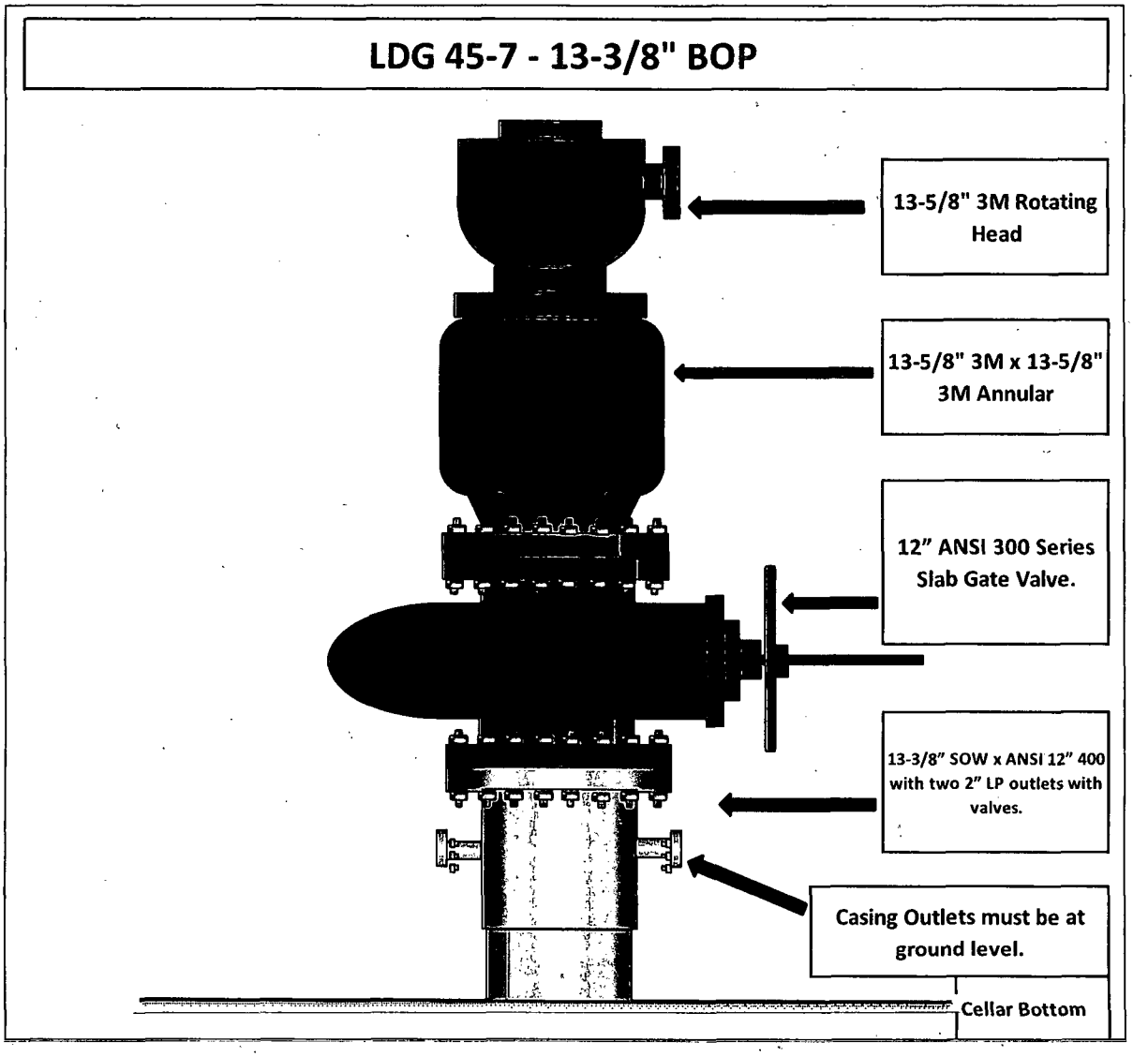
Bit & Hydraulics Program		**Mud Program**	
Bit Type	12-1/4" Tri-cone	Mud Weight	8.3
Nozzles	3 x 26	Mud Type	Water
IADC Code	5-1-7 to 6-1-7	Funnel Vis	< 40
RPM	75 – 100 RPM	YP	< 20
Pump Rate	300 – 600 gpm	PH	7
Expected Formations	Tuff, Limestone and Sandstone	Filtrate	< 5
		Solids	< 2% by Volume
12-1/4" Cleanout BHA	12-1/4" Bit, 1 x 6-3/4" DC, 12-1/4" String Stabilizer, 6 x 6-3/4" DC, Jar, 2 x 6-3/4" DC, XO, 10 x 4" HWDP		

Drilling:

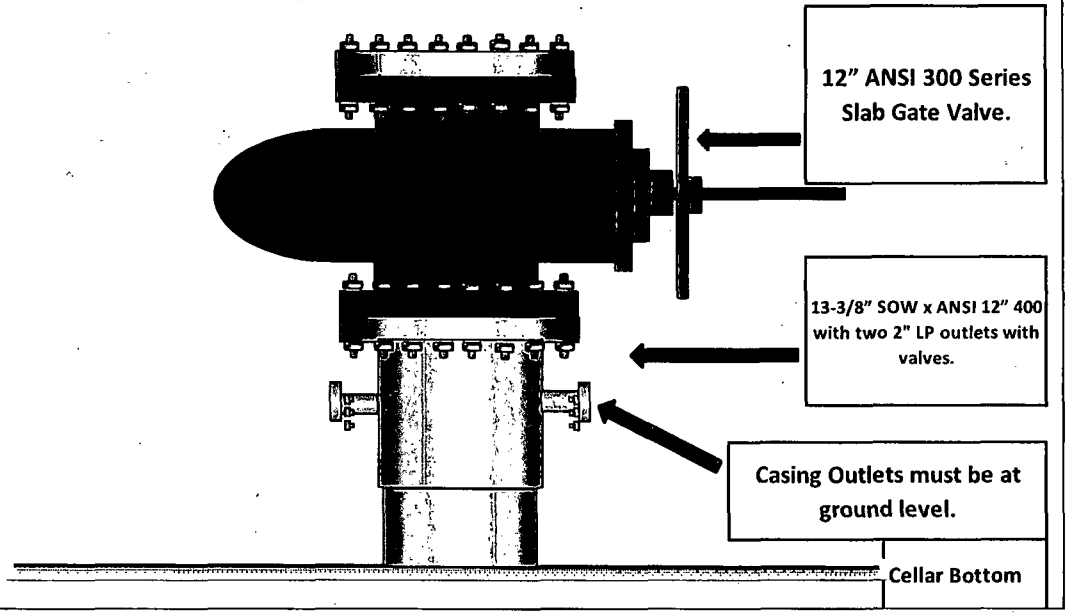
1. Rig up drilling rig over 45-7.
2. Nipple up BOP stack as follows:
   2.1. 12" 300 Series Master Valve.
   2.2. 12" 300 Series x 12" 900 Series Spool.
   2.3. 12" 900 Series Pipe Rams
   2.4. 12" 900 Series Flow Tee.
   2.5. 12" 900 Series Rotating Head
3. Function test BOPs.

4. Build Blooie Line and muffler system.
5. Hook up aerated drilling system.
6. Test Master Valve and Choke System.
7. Make up 12-1/4" Conventional BHA and run to the 1st joint of drill pipe.
8. Space out tool joint and test Pipe Rams and Casing.
9. Continue to RIH to the shoe of the 13-3/8" casing at 1680'.
10. Trip in to the well to 2900'.
    - 10.1. Cleanout and ream any tight sections or bridges that are encountered.
    - 10.2. Make all connections off bottom and never let the pipe sit on bottom without circulation and rotation.
    - 10.3. Continue to use clean water as a drilling fluid.
    - 10.4. Use aerated fluid for cuttings carrying capacity.
11. Once at 2900' pull out of the hole.
12. Rig up loggers and log the well.
    - 12.1. The loggers should be running a FMI log, Pressure/Temperature and possibly gamma or sonic.
13. Rig down loggers.
14. Trip back to bottom with assembly to ensure that the hole is still in gage.
15. Pull out of the hole.
16. Run approximately 1300' of 9-5/8", 36 ppf, K-55, BTC perforated liner on a 13-3/8" x 9-5/8" liner adapter.
    - 16.1. Plan liner for an 80' liner lap with blank casing.
      - The bottom 4 joints and the top 3 joints should be blank.
      - The rest of the liner is slotted.
    - 16.2. Adjust the amount of perforated liner based on the final TD.
    - 16.3. Equip liner with a drillable guide shoe.
    - 16.4. Weld the bottom four joints of casing.
    - 16.5. Run liner in the hole on 4" drill pipe.
    - 16.6. Tag bottom and pick up 3'.
    - 16.7. Set liner adapter, release running tool and pull out of the hole.
17. Close Master Valve and Rig Down.

Section D: BOP Wellhead Diagrams



LDG - 45-7 -Final Wellhead



Morning report for LDG 45-07

24 hour report.

Circulate and pump sweeps to clean hole at 2900'.POOH close master valve. Nipple down BOPs and load pipe trailers. Load up truck with subs monel spools hole opener and well head unload 2 7/8" EUE 8 rd tubing. Nipple down BOPs. Set in flow tee and work with welder to fab flow line in to baker tanks

Current Operation

Strap 2 7/8" tubing clean threads open master valve RIH with tubing change out rig gen set RIH to 974'.

Planned Operation.

Hang 2 7/8" tubing on top of flow tee move rasar drill bit to office clean location get sample from baker tank #1 release crews.

Steve Summit

Phone # (530) 304-5590

Morning report for LDG 45-07

24 hour report.

Rig on stand by Prep for demob Lay down 29 joints of 2 7/8" tubing nipple down flow-T remove rain rent test lines clean mud pits and location release rig at 00:00.

Current Operation

Demob rig

Planned Operation.

Determined rig requires additional equipment and repairs before continuing to drill. Released rig to stand by. Presently securing location against forecast gale-force winds. Reports will resume when ready to go back to drilling."

Steve Summit

Phone # (530) 304-5590

Chavez, Carl J, EMNRD

From: Ben Barker [Ben.Barker@cyrqenergy.com]
Sent: Monday, November 07, 2011 12:58 AM
To: Dade, Randy, EMNRD
Cc: Chavez, Carl J, EMNRD; Mike_Smith@blm.gov; Richard Estabrook; Michael Hayter; RigMgrCyrq
Subject: Sundry notice to amend drilling plan of LDG 53-7
Attachments: G-103-CF4K.pdf; 3260-3_4-2011_NR_CF4k.pdf; Ldg53-7-20111011-00150.jpg; Ldg53-7-20111011-00147.jpg

Dear Mr. Dade,

Thank you for taking time to talk with me about our well program on a Sunday evening. Please find attached the form G-103 to amend the plan of our currently-drilling well LDG 53-7. I will mail a signed paper copy on Monday. The corresponding BLM sundry notice is also attached for your reference. I am sorry to hear you no longer have Darold Gray on staff for inspections. While photos are not a substitute, I include a couple of the rig at work for your information.

This sundry notice addresses two points, well depth and use of formation water. It was the first point that I discussed with you Sunday evening, and I thank you for your verbal approval to proceed to 4000 ft depth. We are now drilling at 3400 ft and I doubt that we will get more than another 400 ft from this bit, at which point we plan to stop. The G-103 requests the same 4500 ft depth as the BLM sundry for consistency and to cover the unlikely possibility of encountering very rapid drilling.

The second point, use of formation water, is an addition to our geothermal drilling plan. As you know, the benefits of using native fluids in completing wells have been amply demonstrated in oil and gas. Since Lightning Dock Geothermal now has two wells capable of supplying formation water, we would like to begin using water from them to replace domestic fresh water in our drilling operation.

We will be happy to supply any additional information you might need to evaluate these amendments, including an opportunity to consult with our geologist. Thank you for your consideration.

Best regards,
Ben Barker

VP Resource Management
Lightning Dock Geothermal HI-01, LLC
Kearns Building, Suite 600
136 South Main Street
Salt Lake City, UT 84101-1684
801-875-4203 office
801-616-6193 mobile1
707-508-9963 mobile2
801-374-3314 fax

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee ☐
5.a State Lease No.: Federal

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit –" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☒ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name: N/A
2. Name of Operator: Los Lobos Renewable Power, LLC
8. Farm or Lease Name: NM34790 (BLM)
3. Address of Operator: 160 S. Main St., Ste. 600, Salt Lake City, UT 84101
9. Well No.: LDG 53-7
4. Location of Well: Unit Letter 2284 Feet From The East Line and 1742 Feet From The North Line, Section 07 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat: wildcat
15. Elevation (Show whether DF, RT, GR, etc.): 4100 GR
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☒	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

A. The approved drilling permit proposed a depth of 3400 ft. Operator requests approval to amend the maximum depth to 4500 ft. The well is now drilling at 3400 ft in mixed carbonates that extend deeper than 5000 ft in the nearest offset well, TFD 55-7. The effect of the additional footage will be a greater likelihood of developing adequate productivity for commercial use. There are no known or suspected zones of increased pressure or temperature in the area.

B. All drilling fluids to date have been mixed using fresh domestic drinking water purchased locally. LDG requests approval to use produced water from the geothermal reservoir in the drilling and completion of well 53-7. The formations penetrated include clay minerals that are susceptible to swelling and wellbore damage if exposed to fresh water. The use of produced fluids in drilling and completion operations follows industry best practice by exposing the wellbore to water which has naturally reached chemical equilibrium with the formation. Furthermore, using produced water will reduce the stress on local water supplies if lost circulation occurs while drilling or during wellbore cleanup and completion after the well reaches TD.

Produced water will come from wells TFD55-7 or LDG45-7, as permitted by Federal and New Mexico regulations and available equipment. Well TFD55-7 is presently equipped with a production pump and may be used initially. Well LDG45-7 will eventually be equipped with a pump, which may be moved from TFD55-7. Produced water will be subject to the same safeguards against surface discharge as drilling fluid.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED B.J. Barker TITLE VP, Resource Management DATE 06Nov2011

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Form 3260-3
(April 2011)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOTHERMAL SUNDRY NOTICE

FORM APPROVED
OMB NO. 1004-0132
Expires: December 31, 2013

The Bureau of Land Management (BLM) requires this form or other BLM approved forms to be prepared and filed in triplicate with requisite attachments. The BLM must approve this permit prior to any lease operations.

6. Lease Serial No.
NM 34790

7. Surface Manager: ☐ BLM ☐ FS ☑ Other private

8. Unit Agreement Name
N/A

1a. Well Type: ☑ Production ☐ Injection ☐ Heat Exchange ☐ Observation ☐ Other

9. Well No.
LDG 53-7

10. Permit No.
05

1b. Well Status:
drilling

11. Field or Area
Wildcat

2. Name of Lessee/Operator
Lightning Dock Geothermal HI-01, LLC

12. Sec., T., R., B. & M.
Sec.7, T25S, R19W NMBM

3. Address of Lessee/Operator
136 South Main Street, Suite 600
Salt Lake City, Utah 84101-1684

13. County
Hidalgo

4. Location of Well or Facility
2284 ft. west of the East line and 1742 ft. south of the North line of Sec.7, T25S, R19W NMBM

14. State
NM

5. Type of Work

☑ Change Plans	☐ Convert to Injection	☐ Pull or Alter Casing
☐ Site and Road Construction	☐ Fracture Test	☐ Multiple Complete
☐ Construct New Production Facilities	☐ Shoot or Acidize	☐ Abandon
☐ Alter Existing Production Facilities	☐ Repair Well	☐ Other

15. Describe Proposed Operations *(Use this space for well activities only. See instructions for current well conditions on page 2.)*

1. The Geothermal Drilling Permit (GDP, 3260-2) for this well specifies in Item 19 a maximum TVD of 3400 ft. Lessee/Operator (LDG) requests an increase in permitted total well vertical depth to 4500 ft to allow for an additional bit run. Well is presently drilling at 3100 ft in mixed limestones that extend to more than 5000 ft depth in the nearest offset well, TFD55-7. The effect of the additional footage will be a greater likelihood of developing adequate productivity for commercial use. There are no known or suspected zones of increased pressure or temperature in the area.

2. All drilling fluids to date have been mixed using fresh domestic drinking water purchased locally. LDG requests approval for the use of produced water from the geothermal reservoir in the drilling and completion of well 53-7. The formations penetrated include clay minerals that are susceptible to swelling and wellbore damage if exposed to fresh water. The use of produced fluids in drilling and completion operations follows industry best practice by exposing the wellbore to water which has naturally reached chemical equilibrium with the formation. Furthermore, using produced water will reduce the stress on local water supplies if lost circulation occurs while drilling or during wellbore cleanup and completion after the well reaches TD.

Produced water will come from wells TFD55-7 or LDG45-7, as permitted by Federal and New Mexico regulations and available equipment. Well TFD55-7 is presently equipped with a production pump and may be used initially. Well LDG45-7 will eventually be equipped with a pump, which may be moved from TFD55-7. Produced water will be subject to the same safeguards against surface discharge as drilling fluid.

16. Describe Proposed Operations *(Use this space for activities other than well work.)*

17. I hereby certify that the foregoing is true and correct.

Signed _____ Title VP Resource Management Date 11/03/2011

(This space for Federal use)

Approved by _____ Title _____ Date _____
Conditions of Approval, if any:

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212 make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

GENERAL INSTRUCTIONS

This form must be used for applications for well work, road, site and facilities construction and other miscellaneous activities performed on Federally leased lands which are related to operations performed under an approved Plan of Operation.

SPECIFIC INSTRUCTIONS

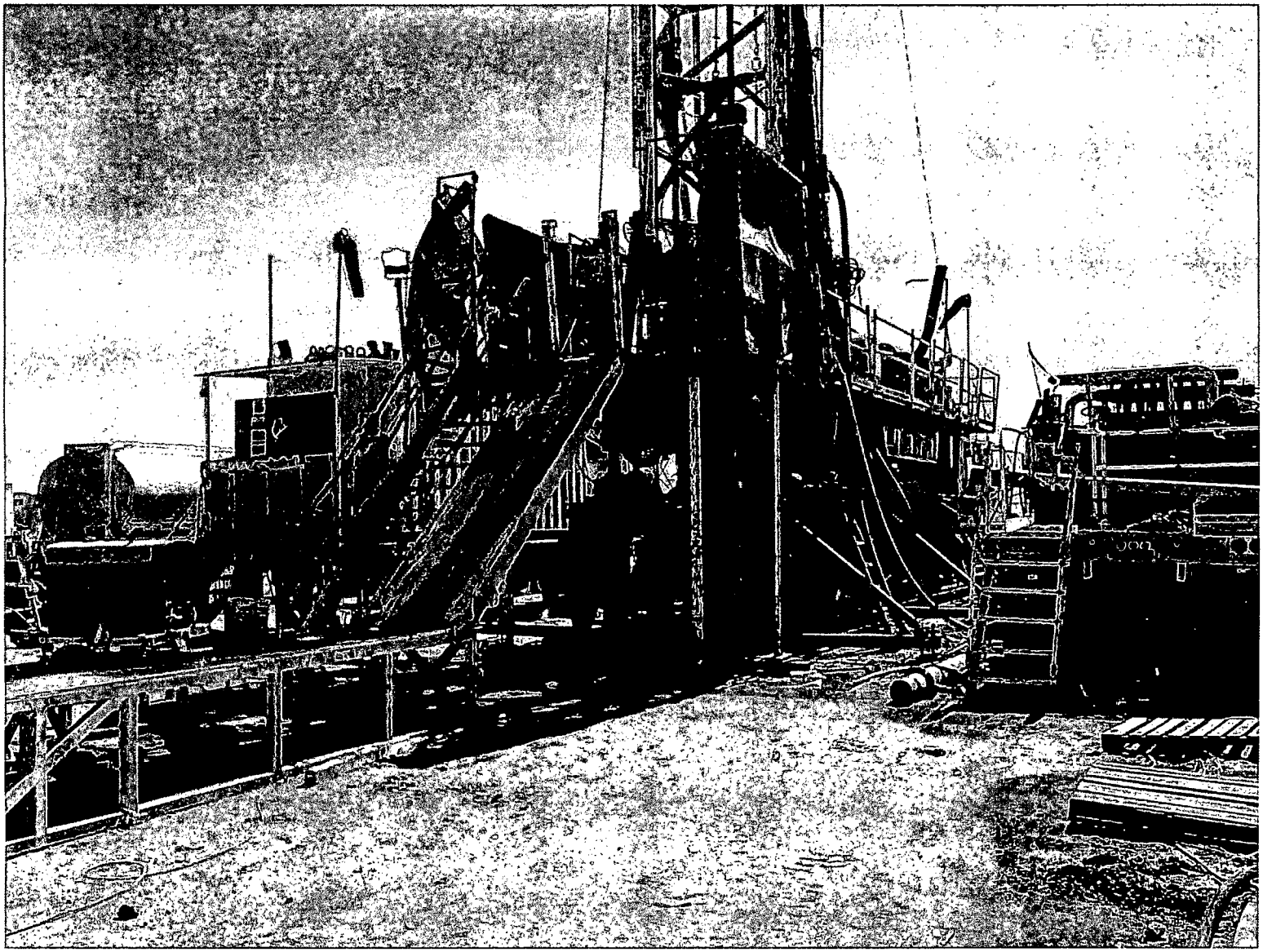
Item 1b: Show the current status for existing wells: I=injecting, F=flowing, P=pumping, HE=heat exchange, SI=shut-in, WS=water supply, OB=observation, O=other (explain).
Item 15: The latest well conditions (hole size, casing, cement, perforations, producing and injecting zones, etc.) along with all proposed additions/changes must be shown. When completing this section, list existing well program first, followed by the proposed program, and separate by a sufficient space to clearly distinguish the two programs. Current well conditions may be either listed in this section or may be shown by attaching a copy of the latest completion report on the subject well.
Item 16: Attach all pertinent engineering plans and specifications.
Completed Operations: Thirty days after completion of all operations other than construction activities, approved under this permit, a completion report must be submitted in duplicate, to the BLM. The completion report must include a copy of the approved Geothermal Sundry Notice with an attached report detailing all important activities performed and the completion and abandonment procedures undertaken. Copies of all records of the operations must accompany the report if not previously submitted.

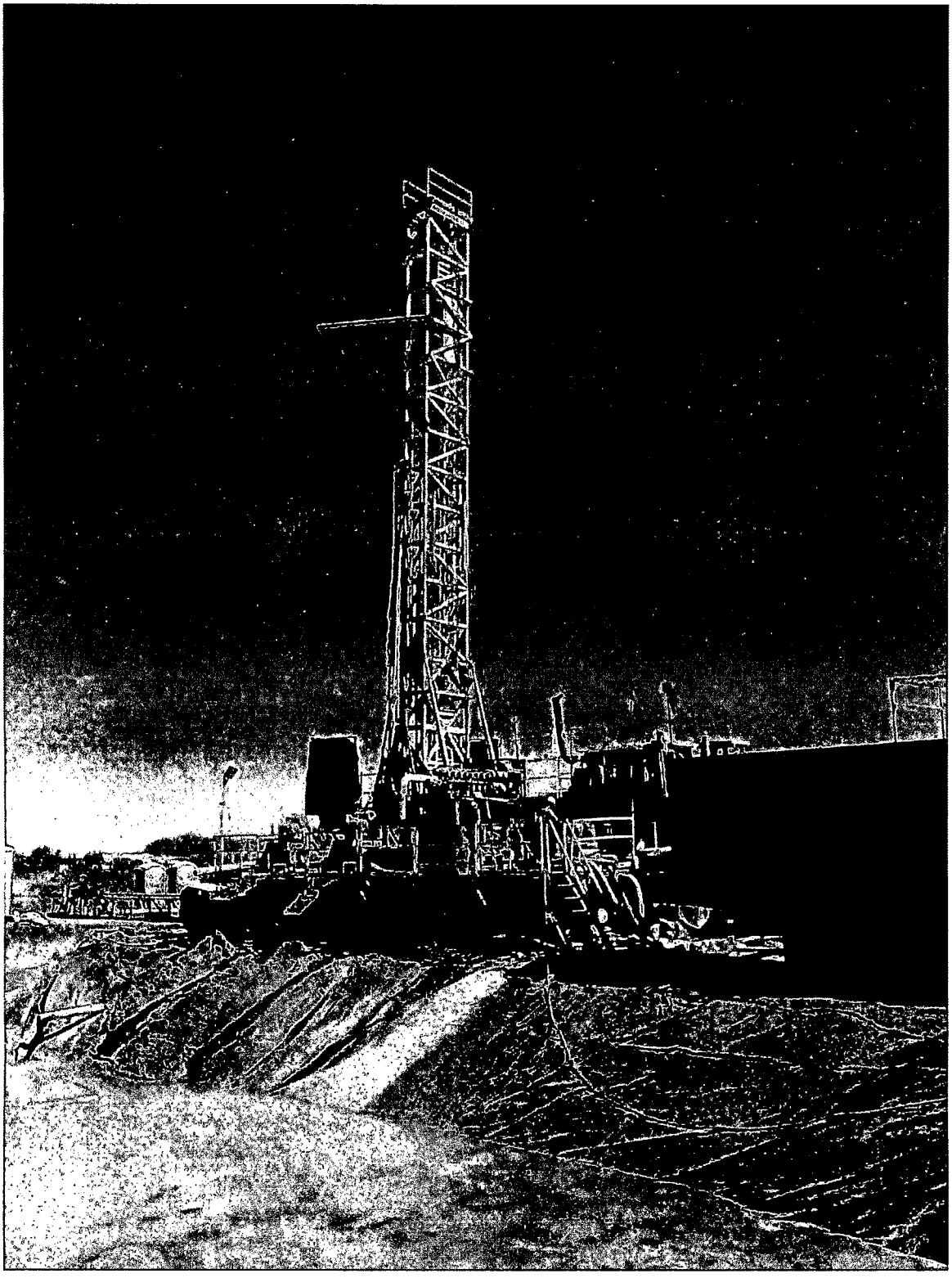
NOTICES

The Privacy Act of 1974 and the regulations in 43 CFR 2.48(d) require that you be furnished with the following information:
AUTHORITY: 30 U.S.C. 1001-1028; 43 CFR Part 3200.
PRINCIPAL PURPOSE: The BLM uses this information to evaluate the technical, safety and environmental factors involved with geothermal resources on Federal geothermal leases.
ROUTINE USES: (1) The adjudication of the form. (2) Documentation for public information in support of notations made on land status, records for the management, disposal; and use of public lands and resources. (3) Transfer to appropriate Federal agencies when concurrence is required prior to granting a right in public lands or resources. (4) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.
EFFECT OF NOT PROVIDING INFORMATON: Disclosure of the information is required to process the application. If all the information is not provided, the application may be rejected.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to evaluate your proposed and/or completed subsequent well operations on Federal geothermal leases.
The BLM will use this information to report subsequent operations once work is completed, and, when you request it, to approve subsequent operations.
Response to this request is required to receive or retain a benefit.
The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0132), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Washington D.C. 20240.





Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, February 11, 2011 3:19 PM
To: 'Ben Barker'
Cc: Dade, Randy, EMNRD; Mike_Smith@blm.gov; Jackson, Charles L., OSE; Rappuhn, Doug H., OSE; VonGonten, Glenn, EMNRD
Subject: RE: Request for reconsideration of G-103, LDG45-7

Mr. Barker, et al.:

The OCD regrets that its position has not changed based on your most recent request today to discharge to the farm field at the project location.

The OCD has completed its review of your February 11, 2011 E-mail and re-submittal based on the OCD's recent February 9, 2011 disapproval of the requested discharge of effluent ground water from Well 45-07 into the nearby farm field. The OCD had previously approved a one-time discharge for the Well 55-07 workover and pump test performed for interested investors in the project. The OCD also later received and reviewed the analytical laboratory data from Turner Laboratories, Inc. submitted shortly after your E-mail this morning.

The OCD notices that there was some difficulty with recovery (50 – 70% range) of some analytical constituents, i.e., sodium, phenols, PAHs, and chlorinated compounds. However, based on the minimal Reporting Limit (RL) and NDs observed in these parameters and in consideration of data submitted, OCD cannot dispute the data results unless the detection was at or near the RL for these constituents to question any possible exceedances. Therefore, the laboratory satisfies the OCD's DQOs based on this situation.

In conclusion, the OCD does not concur with the operator's plan to forego installation of the pits that were approved in the Permit and inject ground water effluent from all project wells into Well 45-07 or any other injection well during the exploration phase of the project. OCD notes this well is not permitted as a Class V Injection Well, but is a geothermal production well that the operator apparently now wishes to use as a Class V Injection Well. Rigorous monitoring is outlined in the Permit from production well effluent before injection via the 3 approved Class V Injection Wells to determine whether NM water quality standards can be met without treatment. If and when, the operator decides to request authorization to produce and/or inject from each well, depending on the well type, the monitoring will be required to show that no treatment of the effluent is necessary other than the basic filtering, etc. to make any allowed effluent suitable for direct discharge into the aquifer or geothermal reservoir, once the operator collects the exploration data to submit in geothermal forms for the OCD to verify that such a geothermal reservoir actually exists at the project location.

Based on the OCD's review of the operator's request, the OCD is concerned that the operator is not proceeding in accordance with its application and approved OCD discharge permit. Therefore, we recommend that the operator take time to study the discharge permit and schedule a meeting to discuss any questions or submit questions via e-mail for the OCD to respond to in order that we may avoid requests that are in conflict with the approved OCD discharge permit and/or the proper mechanism to modify the permit. Also, paperwork should be submitted attached to the appropriate geothermal forms that are properly completed and signed for documentation of the project. All exploration work must be document in some form and serves a purpose when the OCD the proper form requesting authorization to use each well associated with the project. Random requests should not be expected to be received from the operator. Any existing wells handled outside of the scope of the project, will likely be handled similar to the recent Well 55-07 workover.

OCD Comments on your Re-submittal:

Please note that the OCD never indicated that Turner Laboratories lacks credentials. OCD reviewed the EPA QA/QC Summary Sheets today to verify that the laboratory instrumentation meets OCD's DQOs. Based on this situation with NDs, it appears the OCD can consider most, if not all, of the analytical data results do meet the OCD's DQOs. One lab comment is that OCD requires reporting of solids to be based on "Dry" weight and not "Wet" weight as indicated in Turner's analytical report due to the decrease in the calculated analytical data results for solids using "Wet" weight.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention and Waste Minimization Guidance is under "About Us- Environmental Bureau"
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Ben Barker [mailto:Ben.Barker@rasertech.com]
Sent: Friday, February 11, 2011 12:24 AM
To: Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; Mike_Smith@blm.gov; Jackson, Charles L., OSE; Rappuhn, Doug H., OSE; VonGonten, Glenn, EMNRD
Subject: Request for reconsideration of G-103, LDG45-7

Dear Carl,

Thank you for your thoughtful review and for taking time Thursday to fill in some of the gaps in my knowledge of the regulatory background of the Lightning Dock area. We understand that our letter requesting a surface discharge permit (G-103), dated February 4, did not adequately address several important issues. Lightning Dock Geothermal (LDG) respectfully asks for the opportunity to correct those omissions and seeks your reconsideration.
Let me address some particular points raised in your email of February 9.

1. *Lack of Turner Laboratory credentials and QA/QC Summaries.*

   LDG requested expedited analysis of the 45-7 samples with interim reporting of results as soon as they were available. This meant we received several partial reports labeled "draft" in one or two days rather than the usual two weeks required for a formal report. In our haste to put the data before you we did not adequately explain its origin. Turner laboratories advised LDG today that the remaining analyses are complete and that a fully documented report will be delivered next week. Turner has given us verbal assurance that their report will contain the same values already reported and that their work will be fully documented according to EPA standards. The values for Mercury and radioactivity have been added to the attached table on page 3. Neither was significant.

2. *Elevated fluoride and pH reported in 45-7 sample.*

   LDG acknowledges that fluoride levels are high and notes that is true of the entire area. As we reported in our letter of June 30, 2010, Trace Analysis laboratory found a fluoride concentration of 4.84 mg/l in water served to guests at a Lordsburg hotel. The fluoride level reported in 45-7 is below that, at 4.3 mg/l. We point this out merely to recognize that high fluoride is pervasive in Hidalgo County groundwater, not to suggest that it is acceptable.

   We do believe the record of groundwater tests in the area of 45-7 and the adjoining crop field show that this water produced from 45-7 does not increase the risk of fluoride exposure over the water normally produced there for irrigation. Attached to this letter is a map indicating the locations of groundwater wells in Section 7, which are described in the table on page 2, and for which analyses are tabulated on page 3.

   The table on page 3 of the attachment includes all the available data from irrigation and domestic water wells in Section 7. Of the 6 wells for which fluoride measurements are available, only one has a lower fluoride concentration, 3.7 mg/l, than well 45-7. The mean fluoride concentration of the 6 wells, which we understand to have been used for many years to irrigate crops on or near the field we propose to use, is 11 mg/l. The table and

map also show the analysis ("well H") of the runoff discharged from Burgett's greenhouses had a fluoride value of 11.7 mg/l. While high fluoride is clearly a public health issue in drinking water it seems not to have prevented successful floriculture. We believe crop irrigation is a responsible use of the water to grow a winter cover crop that will reduce Aeolian erosion.

With respect to pH, we note that the sample waters from 45-7 were aerated to some extent by the lifting process. This leads to reactions with oxygen and carbon dioxide in the air and increases pH above the *in situ* level. Despite this, the samples do meet the NMAC standard. With production *sans* air lifting, the pH will almost surely decrease. In the case of well 55-7, the air-lifted samples reported to you in June had a pH of 8.69. When we tested again in August after several weeks of pumping, the pH was 6.79, almost a two point reduction.

3. *Volume of discharge.*

LDG seeks to conduct this brief test for the sole purpose of evaluating drilling progress on this first exploratory well. We intend only to learn whether continued drilling is more likely to help or harm the electrical potential of the well. LDG does not intend to use this method for the initial well testing of this well when it is completed. Neither does LDG seek to alter the conditions of approval for testing future wells. LDG fully intends to pursue the policy of no-net-discharge inherent in its project design by using well 45-7 and its successors to return water produced during tests to the reservoir, subject to all the conditions attendant to that use.

The volume of water produced in the 55-7 test was much larger than we expect from 45-7 in the proposed deliverability test. The 55-7 test was largely a reservoir volume test which we do not ask to repeat. We expect 45-7 to be free of the formation drilling damage found in 55-7 and thus to produce at a higher flow rate. Consequently, the limited objectives of the test can be met quickly with a high observed rate and the test terminated promptly. With a rig standing by at a cost of several thousand dollars per day, LDG has no incentive to prolong the flow period. We anticipate satisfying our data needs in fewer than three days and with a withdrawal of less than one third of the amount of water discharged during the 55-7 test. LDG will employ a NMOSE-approved totalizing water meter to comply with all record-keeping requirements.

4. *Pit requirements to protect "Waters of the State."*

LDG fully accepts its responsibility to protect the "Waters of the State" and believes its record of zero such discharges during the several months of drilling, testing, repairs and retesting at 55-7 bear this out. In the present case, LDG has employed skilled local farmers with the correct survey and tilling equipment to prepare the crop field so as to confine all fluids to the seeded area. LDG has upgraded the distribution system to replace the gravity-feed canal with slotted pipes having adjustable outlets. The field has been graded so the flow of water is westward, away from the valley drain to the playa. Considering the small gradients in this intensively leveled and cultivated area, it unlikely that even a major upset could result in water reaching the creeks or arroyos before being contained with earthmoving equipment LDG keeps on site. The test site will be staffed around the clock to guard against upsets.

We will be happy at any time provide whatever additional information you may need in your deliberation. I will be at the well site on Friday and can provide a video tour of any of the facilities you wish to examine.
Thank you for the opportunity to discuss the Lightning Dock project.

Best regards,
Ben

VP Resource Management
Raser Technologies
5152 N. Edgewood Drive
Provo, UT 84604
801-765-1200 office
801-850-5904 direct

801-857-5301 mobile1
707-508-9963 mobile2

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 09, 2011 4:54 PM
To: 'Mike_Smith@blm.gov'
Subject: FW: Turner report 11A0692

FYI.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention and Waste Minimization Guidance is under "About Us- Environmental Bureau"
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 09, 2011 4:54 PM
To: 'Jamie Robinson'
Cc: Del Fortner (External); Ben Barker; Roger Bowers (External); VonGonten, Glenn, EMNRD
Subject: RE: Turner report 11A0692

Ms. Robinson, Ben Barker, et al.:

First, the OCD has reviewed the credentials of the Turner Laboratories, Inc. submitted at the request of the OCD from Ms. Nancy Turner on February 8, 2011. The OCD was looking for laboratory associations, affiliations, etc. that the lab meets some type of national standard(s). The OCD received the following: 1) a proficiency certificate from a corporation presented to the laboratory that was not received from a Governmental agency, i.e., EPA; 2) Environmental Laboratory License from the Arizona Department of Health Services; and 3) certification of the test analytes and methods used by the laboratory. While the lab may be acceptable, the OCD notices that there was no Laboratory QA/QC Summary Sheets that accompanied the analytical data to verify the accuracy of the laboratory's lab equipment capabilities. Environmental laboratories know that QA/QC data sheets must accompany environmental data to satisfy the Data Quality Objectives of the State.

Second, the OCD reviewed the data absent the radiochemistry that is named "DRAFT: LDG 45-7" in both the preliminary submittal by Ben Barker and in Raser's most recent submittal by Jamie Robinson. The OCD notices that Fluorides and pH are significantly elevated to be of concern and forms a basis for the OCD permit and G-101 approval conditions. A point of confusion in New Mexico's State Environmental Regulations may be cleanup of ground water to the water quality standards or background, whichever is greater. In this case, the question is does the state allow discharges to the environment greater of the aforementioned. Since this is not remediation, this is not the case. In fact, Raser will need to perform rigorous testing even after OCD has reviewed the proper form documentation of its field work in order to verify that water quality is adequate without treatment, which was a major issue of contention during the hearings associated with the permit application.

Third, Raser is aware of the OCD discharge permit (GTHT-1) conditions for installation of temporary and permanent pits for well testing required under the permit, but has now proposed to discharge to the farm field that the OCD had temporarily allowed a lesser volume of well test water from Well 55-07 to be discharged based on water quality information that the OCD reviewed for approving that discharge into a farm field during the growing season.

One reason in addition to water quality that the OCD requires pits for this project is due to the tremendous volumes of fluids that would be brought to surface during initial well testing of every well that is drilled and for future well testing if the project ever reaches authorization to produce from each well. The demonstration required and record keeping of all information is a major task that will eventually need to be proven to the OCD before it can authorize any well for production and/or injection. The volumes of fluids involved and the clear language of the permit to NOT allow any

discharge to "waters of the state" i.e., creeks, arroyos, etc. without an NPDES Discharge Permit from the EPA (Region 6 Office) should also point out why the OCD was able to approve the discharge permit application in the first place without any treatment, etc. of water before final disposition. The sampling and frequency requirements are also specified in the discharge permit for proving that once the facility is in operation that it meets WQ Standards through rigorous testing requirement to prove that no treatment is needed.

Consequently, the **OCD hereby disapproves** Raser's request to discharge effluent from any project wells into the farm field on location. The OCD could work with Raser if it wishes to construct a properly designed pit that may handle the fluid volumes from testing of all wells drilled at the facility if it is feasible.

Thank you for the opportunity to consider your request. The OCD hopes that Raser will follow its approved discharge permit requirements that forms the basis for approval of the project in the first place.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Monday, February 07, 2011 4:50 PM
To: Chavez, Carl J, EMNRD
Cc: Del Fortner (External); Ben Barker; Roger Bowers (External)
Subject: FW: Turner report 11A0692

Hi Carl,

Here is the final analysis report for 45-7 from the lab. We expect radiochemistry to be in by the end of the week. If you have any questions please feel free to contact me,

Sincerely,

Jamie

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive, Provo UT. 84604
Office: 801.765.1200
Cell: 801.717.5563

From: Terri Garcia [mailto:tgarcia@turnerlabs.com]
Sent: Monday, February 07, 2011 3:22 PM
To: Jamie Robinson
Subject: Turner report 11A0692

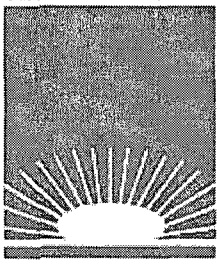
Hello Jamie,

Attached is the last draft report for this work order. All of the Turner Laboratories analyses have been reviewed and validated. The only addition to this report will be that of the radiochemistry from Radiation Safety, which I believe Dawn told you would be available at the end of this week.

Please feel free to contact me if you have any questions or if I can be of further assistance to you in any way.

Sincerely,

Terri Garcia
tgarcia@turnerlabs.com
Technical Director
Turner Laboratories, Inc.
Tucson, Arizona
520.882.5880



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

RECEIVED OCD
2011 FEB 14

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ NA- Federal ☐
5.a State Lease No.: Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☒ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name: NA
2. Name of Operator: Lightning Dock Geothermal HI-01,LLC (wholly-owned subsidiary of Los Lobos Renewable Power,LLC)
8. Farm or Lease Name: Lightning Dock Geo.
3. Address of Operator: 5152 North Edgewood Drive,Suite 200, Provo, Utah 84604
9. Well No.: 45-07
4. Location of Well: Unit Letter 2278.3 Feet From The West Line and 2360.0 Feet From The South Line, Section 7 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat: Wildcat
15. Elevation (Show whether DF, RT, GR, etc.): RT
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Flow test well ☒		OTHER ☐	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

Lightning Dock Geothermal (LDG) proposes to conduct a flow test of no more than 10-days duration with discharge to the crop irrigation field used in the TFD 55-7 test in 2010. LDG requests a Discharge Permit to begin this operation immediately, subject to chemical monitoring and immediate suspension and/or remediation as required by NMOCD if analyte values exceed standards set by the Environmental Bureau. Approval for this test has been granted by the NMOSE (permit) and the USDOI/BLM (sundry notice).

Lightning Dock Geothermal (LDG) has suspended drilling at 2900 ft depth with the rig on standby pending a test of the well's productivity and a subsequent decision on deeper penetration. A volume of fluid equal to four wellbore volumes was produced by flowing the well into closed tanks. The last fluid produced was sampled and submitted for chemical analysis. Preliminary reports have been received for all required analytes except Mercury and Radioactivity. The water from well 45-07 shows better water quality than was measured at well TFD 55-07 before its pump test in 2010. Only Fluoride exceeds the NMAC 20.6.2.3103 standard, and the Fluoride concentration of 4.3 mg/l is substantially less than the background value of 11.83 mg/l documented in the area. Neither Mercury nor Radioactivity have exceeded NMAC standards in any Lightning Dock well. The data and transmittal letter of 6/30/10 referring to the background values are attached to this form. Also attached are the 45-07 laboratory report and LDG's proposed plan for test monitoring.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Benjamin J Barker TITLE V.P. Resource Mgmt. DATE February 4, 2011

APPROVED BY _____ TITLE 1 DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Index of Form G-103 and Attachments

Request for Discharge Permit

February 4, 2011

Request for Discharge Permit

February 4, 2011

Proposed Monitoring Plan for discharge water chemistry during flow test

1. Days 1-3:
    a. Collect daily samples for Fluoride and TDS analysis.
    b. Submit samples for expedited analysis by the most rapid certified laboratory.
    c. If Fluoride or TDS exceed background values of 11.83 and 2096 mg/l, respectively, immediately cease flow and notify Environmental Bureau, NMOCD.
2. Day 4:
    a. Collect samples for complete NMAC 20.6.2.3103 suite of analyses.
    b. Submit samples for expedited analysis by the most rapid certified laboratory.
    c. If any analyte exceeds the higher of background or NMAC 20.6.2.3103 standard, immediately cease flow and notify Environmental Bureau, NMOCD.
3. Days 5-10:
    a. Collect samples for complete NMAC 20.6.2.3103 suite of analyses.
    b. Hold samples for analysis as directed by Environmental Bureau, NMOCD.

		NMAC	Well 45-7	Well 55-7	Well 55-7
	Analysis	**Standard**	**1/2011 Results**	2010 Results	2008 Results
A					
1	Arsenic (As)	0.1 mg/L	0.0066 mg/L	0.0210 mg/L	<0.00500 mg/L
2	Barium (Ba)	1.0 mg/L	ND	0.278 mg/L	0.0510 mg/L
3	Cadmium (Cd)	0.01 mg/L	ND	<0.00500 mg/L	<0.00100 mg/L
4	Chromium (Cr)	0.05 mg/L	ND	0.0950 mg/L	<0.00100 mg/L
5	Cyanide (CN)	0.2 mg/L	ND	<0.0150 mg/L	<0.0150 mg/L
6	Fluoride (F)	1.6 mg/L	4.3 mg/L	11.6 mg/L	13.9 mg/L
7	Lead (Pb)	0.05 mg/L	ND	0.0420 mg/L	<0.00500 mg/L
8	Total Mercury (Hg)	0.002 mg/L	not received	<0.000200 mg/L	<0.000200 mg/L
9	Nitrate (NO3 as N)	10.0 mg/L	1.0 mg/L	<0.500 mg/L	<0.100 mg/L
10	Selenium (Se)	0.05 mg/L	0.0061 mg/L	<0.0200 mg/L	<0.0100 mg/L
11	Silver (Ag)	0.05 mg/L	ND	<0.00500 mg/L	<0.00500 mg/L
12	Uranium (U)	0.03 mg/L	0.00067 mg/L	<0.0300 mg/L	
13	Radioactivity: Radium (Ra 226-228)	30 pCi/L	not received		
14	Benzene	0.01 mg/L	ND	<0.001 mg/L	<0.005 mg/L
15	Polychlorinated biphenyls (PCB's)	0.001 mg/L	ND	<0.000500 mg/L	
16	Toluene	0.75 mg/L	ND	<0.001 mg/L	<0.005 mg/L
17	Carbon Tetrachloride	0.01 mg/L	ND	<0.001 mg/L	<0.005 mg/L
18	1,2-dichloroethane (EDC)	0.01 mg/L	ND	<0.001 mg/L	<0.005 mg/L
19	1,1-dichloroethylene (1,1-DCE)	0.005 mg/L	ND		
20	1,1,2,2-tetrachloroethylene (PCE)	0.02 mg/L	ND	<0.001 mg/L	<0.005 mg/L
21	1,1,2-trichloroethylene (TCE)	0.1 mg/L	ND	<0.001 mg/L	<0.005 mg/L
22	ethylbenze	0.75 mg/L	0.0027 mg/L	<0.001 mg/L	<0.005 mg/L
23	total xylenes	0.62 mg/L	0.036 mg/L	<0.001 mg/L	<0.005 mg/L
24	methylene chloride	0.1 mg/L	ND	<0.005 mg/L	<0.025 mg/L
25	chloroform	0.1 mg/L	ND	<0.001 mg/L	<0.005 mg/L
26	1,1-dichloroethane	0.025 mg/L	ND	<0.001 mg/L	<0.005 mg/L
27	ethlene dibromide (EDB)	0.0001 mg/L	ND	<0.001 mg/L	<0.005 mg/L
28	1,1,1-trichloroethane	0.06 mg/L	ND	<0.001 mg/L	<0.005 mg/L
29	1,1,2-trichloroethane	0.01 mg/L	ND	<0.001 mg/L	<0.005 mg/L
30	1,1,2,2-tetrachloroethane	0.01 mg/L	ND	<0.001 mg/L	<0.005 mg/L
31	vinyl chloride	0.001 mg/L	ND	<0.001 mg/L	<0.005 mg/L
32	PAH's: total naphthalene + monomethylnaphthalenes	0.03 mg/L	0.009 mg/L	<0.005 mg/L	<0.025 mg/L
33	benzo-a-pyrene	0.0007 mg/L	ND		
B					
1	Chloride (Cl)	250.0 mg/L	44 mg/L	80 mg/L	99.8 mg/L
2	Copper (Cu)	1.0 mg/L	ND	0.0520 mg/L	<0.00500 mg/L
3	Iron (Fe)	1.0 mg/L	ND	11.2 mg/L	0.148 mg/L
4	Manganese (Mn)	0.2 mg/L	ND	0.294 mg/L	0.00400 mg/L
5	Phenols	0.005 mg/L	ND		
6	Sulfate (SO4)	600.0 mg/L	220 mg/L	500 mg/L	566 mg/L
7	Total Dissolved Solids (TDS)	1000.0 mg/L	580 mg/L	1440 mg/L	1450 mg/L
8	Zinc (Zn)	10.0 mg/L	ND	0.131 mg/L	0.00900 mg/L
9	pH	between 6-9	9.00	8.69	9.35
C					
1	Aluminum (Al)	5.0 mg/L	ND	12.2 mg/L	0.243 mg/L
2	Boron (B)	0.75 mg/L	0.23 mg/L	0.465 mg/L	0.496 mg/L
3	Cobalt (Co)	0.05 mg/L	ND	<0.00500 mg/L	
4	Molybdenum (Mo)	1.0 mg/L	0.018 mg/L	0.0460 mg/L	0.0340 mg/L
5	Nickel (Ni)	0.2 mg/L	ND	<0.00500 mg/L	<0.00500 mg/L

TURNER
LABORATORIES INC.

February 04, 2011

Jamie Robinson
Raser Technologies Inc.
5152 N. Edgewood Drive
Provo, UT 84604

TEL (801) 765-1200
FAX

Work Order No.: 11A0692
RE: Lordsburg, NM
Order Name: LDG 45-7

Dear Jamie Robinson,

Turner Laboratories, Inc. received 1 sample(s) on 01/31/2011 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Terri Garcia
Technical Director

Client: Raser Technologies Inc.
Project: Lordsburg, NM
Work Order: 11A0692
Date Received: 01/31/2011

Order: LDG 45-7

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
11A0692-01	DRAFT: LDG 45-7	Ground Water	01/31/2011 1400

Client: Raser Technologies Inc.
Project: Lordsburg, NM
Work Order: 11A0692
Date Received: 01/31/2011

Case Narrative

D5 Minimum Reporting Limit (MRL) is elevated due to sample dilution.

V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND Not Detected at or above the PQL

PQL Practical Quantitation Limit

DF Dilution Factor

Client: Raser Technologies Inc.
Project: Lordsburg, NM
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: LDG 45-7

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
ICP Dissolved Metals-E 200.7								
Aluminum	ND	2.0		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Barium	ND	0.050		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Boron	0.23	0.10		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Cadmium	ND	0.0020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Chromium	ND	0.030		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Copper	ND	0.020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Iron	ND	0.30		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Manganese	ND	0.020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Molybdenum	0.018	0.010		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Nickel	ND	0.050		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Silver	ND	0.010		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Zinc	ND	0.040		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
ICP/MS Dissolved Metals-E 200.8								
Arsenic	0.0066	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Cobalt	ND	0.0012	D5	mg/L	5	02/01/2011 0830	02/03/2011 1100	RAD
Lead	ND	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Selenium	0.0061	0.0025		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Uranium	0.00067	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1604	RAD
pH-E150.1								
pH (pH Units)	9.0	0.0		-	1	01/31/2011 1645	01/31/2011 1657	GW
Temperature (°C)	26			-	1	01/31/2011 1645	01/31/2011 1657	GW
Anions by Ion Chromatography-E300								
Chloride	44	5.0		mg/L	5	02/02/2011 1200	02/03/2011 0038	JM
Fluoride	4.3	2.5		mg/L	5	02/02/2011 1200	02/03/2011 0038	JM
Nitrogen, Nitrate (As N)	1.0	1.0		mg/L	1	02/01/2011 1300	02/01/2011 1727	JM
Sulfate	220	100		mg/L	20	02/02/2011 1200	02/03/2011 0057	JM
Total Dissolved Solids (Residue, Filterable)-SM2540 C								
Total Dissolved Solids (Residue, Filterable)	580	20		mg/L	1	02/01/2011 1015	02/03/2011 1450	GW
Cyanide-SM4500-CN BE								
Cyanide	ND	0.10		mg/L	1	02/03/2011 0830	02/04/2011 0730	JM
PCBs-SW8082								
Aroclor 1016	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB

Client: Raser Technologies Inc. **Client Sample ID:** DRAFT: LDG 45-7
Project: Lordsburg, NM **Collection Date/Time:** 01/31/2011 1400
Work Order: 11A0692 **Matrix:** Ground Water
Lab Sample ID: 11A0692-01 **Order Name:** LDG 45-7

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Aroclor 1221	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1232	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1242	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1248	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1254	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1260	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Surr: Decachlorobiphenyl	*99*	*49.2-158.7*		*%REC*	*1*	*02/01/2011 1136*	*02/02/2011 2134*	*DCB*
Volatile Organic Compounds by GC/MS-SW8260B								
1,1,1,2-Tetrachloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,1-Trichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2,2-Tetrachloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2-Trichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2-Trichlorotrifluoroethane	ND	5.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloropropene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,3-Trichlorobenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,3-Trichloropropane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,4-Trichlorobenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,4-Trimethylbenzene	0.50	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dibromo-3-chloropropane	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dibromoethane	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3,5-Trimethylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,4-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2,2-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Butanone	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Chlorotoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Hexanone	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
4-Chlorotoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
4-Isopropyltoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
4-Methyl-2-pentanone	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Acetone	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Acrylonitrile	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Benzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromochloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP

Client: Raser Technologies Inc.
Project: Lordsburg, NM
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: LDG 45-7

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Bromodichloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromoform	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromomethane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Carbon disulfide	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Carbon tetrachloride	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloroethane	ND	1.0	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloroform	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloromethane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
cis-1,2-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
cis-1,3-Dichloropropene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dibromochloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dibromomethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dichlorodifluoromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Ethylbenzene	2.7	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Hexachlorobutadiene	ND	5.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Iodomethane	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Isopropylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
m,p-Xylene	17	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Methylene chloride	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Naphthalene	8.9	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
n-Butylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
n-Propylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
o-Xylene	19	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
sec-Butylbenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Styrene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
tert-Butylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Tetrachloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Toluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,2-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,3-Dichloropropene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,4-Dichloro-2-butene	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Trichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Trichlorofluoromethane	ND	0.50	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Vinyl acetate	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Vinyl chloride	ND	0.50	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Surr: 4-Bromofluorobenzene	*98*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Surr: Dibromofluoromethane	*111*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Surr: Toluene-d8	*100*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Semivolatile Organic Compounds-SW8270C								
1,2,4-Trichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB

Client: Raser Technologies Inc.
Project: Lordsburg, NM
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: LDG 45-7

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
1,2-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
1,3-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
1,4-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4,5-Trichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4,6-Trichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dimethylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dinitrophenol	ND	48		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dinitrotoluene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,6-Dinitrotoluene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Chloronaphthalene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Chlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Methylnaphthalene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Nitrophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3,3'-Dichlorobenzidine	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3,4-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4,6-Dinitro-2-methylphenol	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Bromophenyl phenyl ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chloro-3-methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chloroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chlorophenyl phenyl ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Nitrophenol	ND	48		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Acenaphthene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Acenaphthylene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Aniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[a]anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[a]pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[b,k]fluoranthene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[g,h,i]perylene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzoic acid	19	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzyl alcohol	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroethoxy)methane	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroethyl)ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroisopropyl)ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-ethylhexyl)phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Butyl benzyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB

Client: Raser Technologies Inc. **Client Sample ID:** DRAFT: LDG 45-7
Project: Lordsburg, NM **Collection Date/Time:** 01/31/2011 1400
Work Order: 11A0692 **Matrix:** Ground Water
Lab Sample ID: 11A0692-01 **Order Name:** LDG 45-7

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chrysene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dibenz[a,h]anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dibenzofuran	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Diethyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dimethyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Di-n-butyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Di-n-octyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Fluoranthene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Fluorene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorobutadiene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorocyclopentadiene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachloroethane	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Indeno[1,2,3-cd]pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Isophorone	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Naphthalene	5.7	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Nitrobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodimethylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodiphenylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodipropylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Pentachlorophenol	ND	29		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Phenanthrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Phenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Surr: 2,4,6-Tribromophenol	*85*	*41.08-112.4*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 2-Fluorobiphenyl	*70*	*29.5-107.83*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 2-Fluorophenol	*42*	*19.78-74.14*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 4-Terphenyl-d14	*60*	*39.48-98.11*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: Nitrobenzene-d5	*71*	*12.94-105.5*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: Phenol-d6	*59*	*14.3-96.41*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 11A0692 DATE ______ PAGE ______ OF ______

PROJECT NAME LDG 45-7 # ______
CONTACT NAME Ben Barker
COMPANY NAME Raser Technologies
ADDRESS 5152 North Edgewood d.
Provo, Utah 84604 PHONE ______ FAX ______
SAMPLER'S SIGNATURE [signature]

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

Analysis options: Base Neutrals 625/8270 ☐, Acids ☐; Volatile Organics 624/524.2/8260; TTHMS ☐, HAA5 ☐; Pesticides 8081 ☐, PCB's 8082 ☐; NO_3 ☐, NO_2 ☐, TKN ☐; Oil and Grease Grav. 1664A ☐; TCLP Analysis: VOA ☐, Semi VOA ☐, Pest. ☐; Metals: TCLP ☐, Dissolved ☐, RCRA8 ☐, Total ☐; Cyanide: Total ☐, Amen. ☐, WAD ☐; SDWA-INORGANICS: PRIMARY ☐, SECONDARY ☐; Coliform: MPN ☐, Colilert ☐; pH ☐, Cl_2 ☐, Cl_2 ☐; COD ☐, TSS ☐, BOD ☐

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	ANALYSIS
LDG 45-7	1-31-11	2:00		GW		SEE ATTACHED

1. RELINQUISHED BY:
Signature [signature]
Printed Name Steve R Harmer
Firm Raser Technologies
Date/Time 1-31-11 4:39

2. RECEIVED BY:
Signature ______
Printed Name ______
Firm ______
Date/Time ______

TURNAROUND REQUIREMENTS:
___ Standard (approx. 10 days)*
___ Next Day ___ 2 Day ___ 5 Day*
___ Email Preliminary Results To:
* Working Days

REPORT REQUIREMENTS:
___ I. Routine Report
___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
___ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ___ Y ___ N
P.O. # ______
Bill to: ______

SAMPLE RECEIPT:
Total Containers ______
Temperature 16 / 10 / 18
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature ______
Printed Name ______
Firm ______
Date/Time ______

4. RECEIVED BY: [signature]
Signature
Printed Name Stephen Lund[illegible]
Firm TURNER LABORATORIES, INC.
Date/Time 1-31-11 1639

* LEGEND
DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No
Custody Seals ☐
Container Intact ☑
COC / Labels Agree ☑
Preservation Confirmation ☑
Appropriate Head Space ☑
Received Within Hold Time ☑

13

Roark Technologies, Jamie Robinson 801-765-1200

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection D of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "methods for chemical analysis of water and waste of the U.S. environmental protection agency," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

A. Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As).....0.1 mg/l
(2) Barium (Ba).....1.0 mg/l
(3) Cadmium (Cd).....0.01 mg/l
(4) Chromium (Cr).....0.05 mg/l
(5) Cyanide (CN).....0.2 mg/l
(6) Fluoride (F).....1.6 mg/l
(7) Lead (Pb).....0.05 mg/l
(8) Total Mercury (Hg).....0.002 mg/l
(9) Nitrate (NO3 as N).....10.0 mg/l
(10) Selenium (Se).....0.05 mg/l
(11) Silver (Ag).....0.05 mg/l

(12) Uranium (U).....0.03 mg/l

(13) Radioactivity: Combined Radium-226 & Radium-228.....30 pCi/l

(14) Benzene.....0.01 mg/l

(15) Polychlorinated biphenyls (PCB's).....0.001 mg/l

(16) Toluene.....0.75 mg/l

(17) Carbon Tetrachloride.....0.01 mg/l

(18) 1,2-dichloroethane (EDC).....0.01 mg/l

(19) 1,1-dichloroethylene (1,1-DCE).....0.005 mg/l

(20) 1,1,2,2-tetrachloroethylene (PCE).....0.02 mg/l

(21) 1,1,2-trichloroethylene (TCE).....0.1 mg/l

(22) ethylbenzene.....0.75 mg/l

(23) total xylenes.....0.62 mg/l

(24) methylene chloride.....0.1 mg/l

(25) chloroform.....0.1 mg/l

(26) 1,1-dichloroethane.....0.025 mg/l

(27) ethylene dibromide (EDB).....0.0001 mg/l

(28) 1,1,1-trichloroethane.....0.06 mg/l

(29) 1,1,2-trichloroethane.....0.01 mg/l

(30) 1,1,2,2-tetrachloroethane.....0.01 mg/l

(31) vinyl chloride.....0.001 mg/l

(32) PAHs: total naphthalene plus monomethylnaphthalenes.....0.03 mg/l

(33) benzo-a-pyrene.....0.0007 mg/l

B. Other Standards for Domestic Water Supply

(1) Chloride (Cl).....250.0 mg/l

(2) Copper (Cu).....1.0 mg/l

(3) Iron (Fe).....1.0 mg/l

(4) Manganese (Mn).....0.2 mg/l

(6) Phenols.....0.005 mg/l

(7) Sulfate (SO4).....600.0 mg/l

(8) Total Dissolved Solids (TDS).....1000.0 mg/l

(9) Zinc (Zn).....10.0 mg/l

(10) pH.....between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al)..... .....5.0 mg/l

(2) Boron (B) .....0.75 mg/l

(3) Cobalt (Co) .....0.05 mg/l

(4) Molybdenum (Mo) .....1.0 mg/l

(5) Nickel (Ni) .....0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly of indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.

[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which is designed to receive and which receives 2,000 gallons or less of liquid waste per day;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Leachate from materials disposed of in accordance with the Solid Waste Management Regulations (20 NMAC 9.1) adopted by the New Mexico Environmental Improvement Board;

K. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

L. Effluent or leachate discharges resulting from activities regulated by a mining plan approved and permit issued by the New Mexico Coal Surface Mining Commission, provided that this

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection D of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "methods for chemical analysis of water and waste of the U.S. environmental protection agency," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

A. Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As).....0.1 mg/l
(2) Barium (Ba).....1.0 mg/l
(3) Cadmium (Cd).....0.01 mg/l
(4) Chromium (Cr).....0.05 mg/l
(5) Cyanide (CN).....0.2 mg/l
(6) Fluoride (F).....1.6 mg/l
(7) Lead (Pb).....0.05 mg/l
(8) Total Mercury (Hg).....0.002 mg/l
(9) Nitrate (NO3 as N).....10.0 mg/l
(10) Selenium (Se).....0.05 mg/l
(11) Silver (Ag).....0.05 mg/l

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al)..... .....5.0 mg/l

(2) Boron (B) .....0.75 mg/l

(3) Cobalt (Co) .....0.05 mg/l

(4) Molybdenum (Mo) .....1.0 mg/l

(5) Nickel (Ni) .....0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly of indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.

[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the New Mexico Coal Surface Mining Commission;

M. Effluent or leachate discharges which are regulated by the Oil Conservation Commission and the regulation of which by the Water Quality Control Commission would interfere with the exclusive authority granted under Section 70-2-12 NMSA 1978, or under other laws, to the Oil Conservation Commission.

[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01]

raser

TECHNOLOGIES

June 30, 2010

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Fluoride and TDS Values at the Lightning Dock Geothermal Area

Dear Mr. Chavez:

This is a follow up report to our letter of June 17, 2010. At that time we sent you lab reports showing that 46 of 49 water quality parameter values specified in Condition 3 of the approved G-103 were met by water produced from well TFD 55-7 during testing on June 8. We have since added radium to the list of satisfactory results under 20.6.2.3103 NMAC.

Continuing operations in the well allowed us to collect significantly cleaner water samples than in our first report. We received the analyses of those samples for F and TDS today and have included the laboratory report as Attachment A. They show somewhat lower values of both concentrations, which we attribute to less contamination by residual drilling mud and better sampling conditions.

We made reference in our initial report to a substantial body of prior work indicating that the values for Fluoride (F) and total dissolved solids (TDS) were within the normal background for the area. An attachment to the June 17 letter included a data base of 199 analyses from the Animas Valley. That document is unwieldy and we have extracted from it the population of neighboring wells in the thermal anomaly for inclusion in this letter as Attachment B. That attachment also displays the spatial relationship of the measurements on maps.

Raser personnel have also located important additions to the data base, including a lab report for the closest analog of TFD 55-7. That well is the 2220-ft deep TG 52-7, drilled in 2003, and whose water quality results are included as Attachment C.

The geochemical data base for Section 7 and the adjoining sections includes twenty wells, for which seventeen have recorded values of F and/or TDS concentration. Among those seventeen wells, thirteen are within Section 7 and eleven may properly be regarded as neighbors on the thermal anomaly. Among those neighbors, the average value of [F] is 11.83 mg/l. The latest average sample value for TFD 55-7 is 9.53 mg/l. The same group of neighbors has an average [TDS] of 2096 mg/l, compared with a value of 1180 mg/l for TFD 55-7. A fuller discussion follows, but we conclude that the data shows the water from TFD 55-7 meets the background standard of G-103 Condition 3 for surface discharge.

5152 North Edgewood Drive
Phone 1-801-765-1200
Suite 200
Toll Free 1-888-81-POWER
Provo, UT 84604
Fax 1-801-374-3314

A great many wells have been drilled in the Lightning Dock area for a variety of commercial and domestic purposes. Chemical data is unavailable for the majority. We are fortunate that the scientific interest over several decades in Lightning Dock has resulted in enough analyses in the thermal area to define a background water quality with reasonable certainty. The table below lists all the wells within a section of well 55-7 for which [F] and/or [TDS] are available.

				All Wells (17)		Section 7 (13)		Thermal Anomaly (11)	
ID	Section No. T25S, R19W	Data Base Reference	SOURCE description	Fluoride mg/l	TDS mg/l	Fluoride mg/l	TDS mg/l	Fluoride mg/l	TDS mg/l
C	12	4	Well	7.3	1608				
D	13	37	Well	3.5	1184				
E	12	131, 138	Beall water well, OCD-2	2.0	443				
F	12	5	Well	3.6	1660				
G	7	62, 183	Folk well	7.80	539	7.80	457		
P	7	95, 96	Well	-	385	-	385		
H	7	135	Burgett grnhouse discharge	11.70	1115	11.70	1115	11.70	1115
I	7	133	Burgett geowell	12.50	1195	12.50	1195	12.50	1195
J	7	136	Beall grnhouse well	-	1092	-	1092	-	1092
K	7	2, 89, 93, 94	Burgett well	-	1341	-	1452	12.60	1341
L	7	90, 178, 179	Burgett well	10.45	1130	10.45	1130	10.45	1108
N	7	3, 63, 88, 137	McCants grnhouse well	12.50	1076	12.50	1076	12.50	1076
O	7	91, 92, 181	Well	12.00	10985	12.00	10985	12.00	10985
-	7	Raser 2008	Burgett discharge	9.95	1110	9.95	1110	9.95	1110
-	7	Raser 2008	Burgett well	13.20	1320	13.20	1320	13.20	1320
-	7	Raser 2008	Burgett well	11.60	1140	11.60	1140	11.60	1140
-	7	LDG 2003	TG 52-7 (~100' W of well J)	11.82	1572	11.82	1572	11.82	1572
			Average Concentration	9.27	1700	11.35	1848	**11.83**	**2096**
			(avg. excluding well "O")						1207
		Lab ID	Sample point						
Well 55-7 samples:		236041-163	Flow line port					9.68	1230
collected 6/26/10		236042-164	Collection tank					9.38	1130
			Average Concentration					**9.53**	**1180**

Looking down the columns headed "All Wells" we find a [F] value only slightly below that of TDF 55-7 and a [TDS] that is 44% higher. The nearest well to TDF 55-7, of those in Sections 12 and 13, is nearly three-fourths of a mile. Although the group includes wells with strikingly high [TDS] they are well away from the center of the thermal anomaly, indicated by the contour lines.

Considering all the wells in Section 7, their average [F] and [TDS] exceeds those of TDF 55-7 by a substantial margin. However, we suggest that your calculation of the applicable background standard should exclude two Section 7 wells on geologic grounds.

Local residents report that well "G" is only a "few" hundred feet deep. Combined with its location outside the core thermal area the shallow depth makes it unlikely that this well is an indicator of background concentrations in the thermal area. Similarly, well "P" is even farther off the side of the thermal anomaly and is actually on the opposite side of the major fault zone running through the area. The Animas Valley fault is not visible on the surface at this point but several geologists have mapped its probable course to the west of "P" between "P" and the wells around TFD 55-7.

The eleven wells that are clearly within the thermal area are sufficient to define background [F] and [TDS] values. Those averages are shown in bold face type in the table above as 11.83 mg/l for [F] and 2096 mg/l for [TDS]. We do not have access to enough of the researcher's original notes to pass judgment on the relative quality of the various samplers and labs, but we note that correct sampling procedures have been well understood for the entire period of Lightning Dock study covered in this data table.

The one [TDS] that may arouse concern is found in well "O." The high values in this well were measured on two different occasions by the New Mexico State University laboratory, which has extensive experience in this work. We have found nothing in the record to suggest these are not valid measurements. Even if there were a scientific reason to exclude those measurements, the remaining ten wells would still have an average [TDS] of 1207 mg/l, higher than the TFD 55-7 average of 1180 mg/l.

Raser requests OCD-EB approval to proceed with surface discharge during the test period of TFD 55-7 on the basis that the sample analyzed to date meet the "background" standard of Condition 3. Raser further requests that OCD adopt the background values displayed for the core thermal area in the table above as an interim standard for the purposes of continued monitoring according to the approved plan of operations.

Thank you for your consideration.

Very truly yours,
Raser Technologies

Benjamin J. Barker
VP Resource Management

5152 North Edgewood Drive
Phone 1-801-765-1200
Suite 200
Toll Free 1-888-81-POWER
Provo, UT 84604
Fax 1-801-374-3314

Attachment A

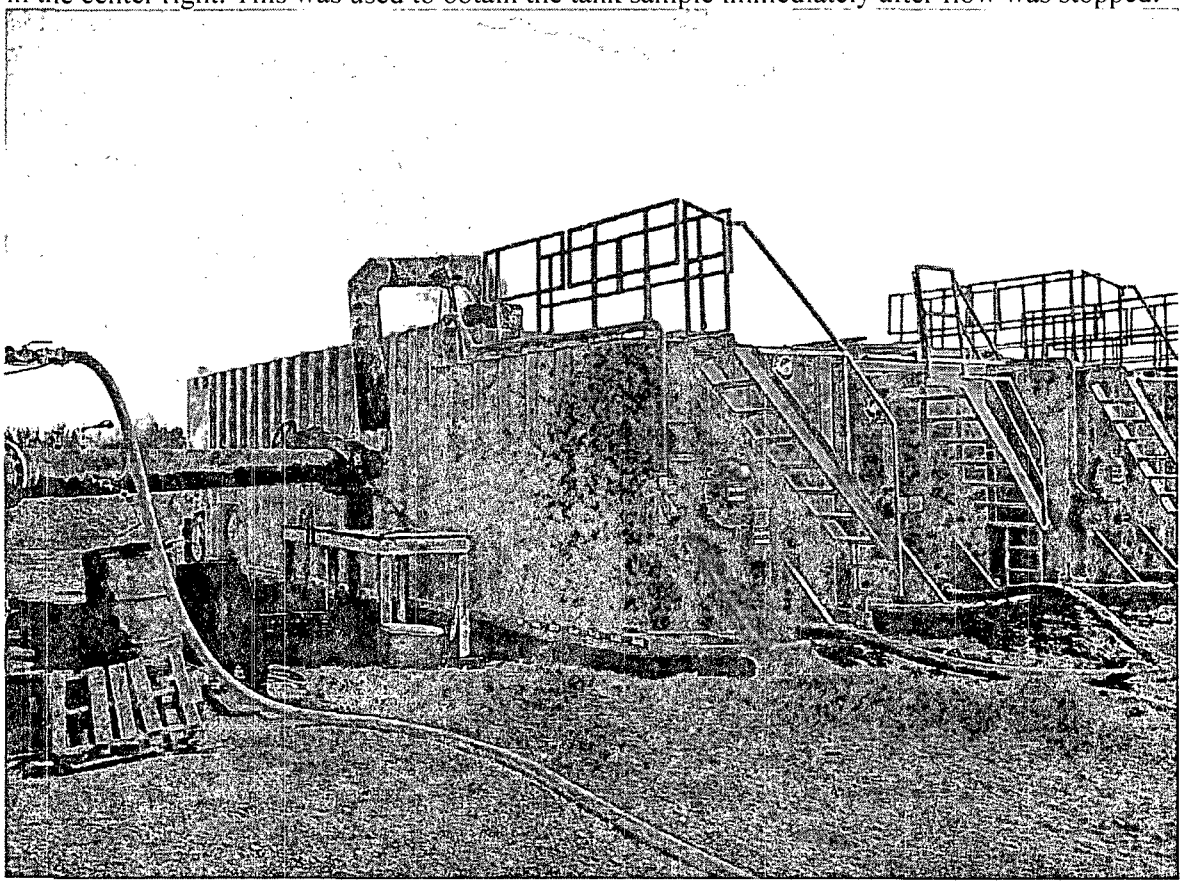
Reports from TraceAnalysis, Inc. of samples collected on June 26, 2010

1. Summary Report 6/29/10
2. Analytical and Quality Control Report 6/29/10

Six samples are included in the reports. The two relevant to this analysis are

- 236041-163, collected from the flow line via a sampling port at the 4 o'clock position while holding back pressure with a throttle valve. The sample tube was submerged in a cold water bath to obtain a whole-fluid sample without flashing.
- 236041-164 collected from the final-stage collection tank after fluid flashed in the tank. This is more representative of the system of production that will be in use during the test.

The air injection line, pressure and temperature gauges, sample port and cooling tank are all visible on the left side of the photo below. Note the capped valve directly beneath the steam vent in the center right. This was used to obtain the tank sample immediately after flow was stopped.



The other samples in the report are:
#162 – Lightning Dock domestic water (used to mix drilling fluids)
#165 - Lordsburg municipal water (hotel tap water)
166 and #167 – samples extracted from rig tanks (after significant evaporation) as controls

Summary Report

Jamie Robinson
Raser Technologies
5152 North Edgewood Dr.
Suite 200
Provo, UT 84604

Report Date: June 29, 2010

Work Order: 10062902

Project Location: Lighting Dock, NM
Project Name: Lighting Dock 55-7
Project Number: TFD557B

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
236040	162	water	2010-06-26	09:00	2010-06-28
236041	163	water	2010-06-26	17:40	2010-06-28
236042	164	water	2010-06-26	19:00	2010-06-28
236043	165	water	2010-06-26	22:00	2010-06-28
236044	166	water	2010-06-26	11:00	2010-06-28
236045	167	water	2010-06-26	11:05	2010-06-28

Sample: 236040 - 162

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**130**	mg/L as CaCo3	4.00
Total Alkalinity		**130**	mg/L as CaCo3	4.00
Chloride		**33.7**	mg/L	2.50
Fluoride		**1.05**	mg/L	0.500
Sulfate		**122**	mg/L	2.50
Total Dissolved Solids		**410**	mg/L	5.00

Sample: 236041 - 163

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		**52.0**	mg/L as CaCo3	1.00

continued ...

sample 236041 continued ...

Param	Flag	Result	Units	RL
Bicarbonate Alkalinity		**136**	mg/L as CaCo3	4.00
Total Alkalinity		**188**	mg/L as CaCo3	4.00
Chloride		**84.2**	mg/L	2.50
Fluoride		**9.68**	mg/L	0.500
Sulfate		**441**	mg/L	2.50
Total Dissolved Solids		**1230**	mg/L	5.00

Sample: 236042 - 164

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		**44.0**	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**152**	mg/L as CaCo3	4.00
Total Alkalinity		**196**	mg/L as CaCo3	4.00
Chloride		**83.8**	mg/L	2.50
Fluoride		**9.38**	mg/L	0.500
Sulfate		**436**	mg/L	2.50
Total Dissolved Solids		**1130**	mg/L	5.00

Sample: 236043 - 165

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		**12.0**	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**330**	mg/L as CaCo3	4.00
Total Alkalinity		**342**	mg/L as CaCo3	4.00
Chloride		**91.2**	mg/L	2.50
Fluoride		**4.84**	mg/L	0.500
Sulfate		**327**	mg/L	2.50
Total Dissolved Solids		**992**	mg/L	5.00

Sample: 236044 - 166

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		**28.0**	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**110**	mg/L as CaCo3	4.00
Total Alkalinity		**138**	mg/L as CaCo3	4.00
Chloride		**79.6**	mg/L	2.50
Fluoride		**11.2**	mg/L	0.500
Sulfate		**471**	mg/L	2.50
Total Dissolved Solids		**1350**	mg/L	5.00

Sample: 236045 - 167

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**134**	mg/L as CaCo3	4.00
Total Alkalinity		**134**	mg/L as CaCo3	4.00
Chloride		**81.7**	mg/L	2.50
Fluoride		**11.6**	mg/L	0.500
Sulfate		**483**	mg/L	2.50
Total Dissolved Solids		**1340**	mg/L	5.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

Jamie Robinson
Raser Technologies
5152 North Edgewood Dr.
Suite 200
Provo, UT, 84604

Report Date: June 29, 2010

Work Order: 10062902

Project Location: Lighting Dock, NM
Project Name: Lighting Dock 55-7
Project Number: TFD557B

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
236040	162	water	2010-06-26	09:00	2010-06-28
236041	163	water	2010-06-26	17:40	2010-06-28
236042	164	water	2010-06-26	19:00	2010-06-28
236043	165	water	2010-06-26	22:00	2010-06-28
236044	166	water	2010-06-26	11:00	2010-06-28
236045	167	water	2010-06-26	11:05	2010-06-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 26 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project Lighting Dock 55-7 were received by TraceAnalysis, Inc. on 2010-06-28 and assigned to work order 10062902. Samples for work order 10062902 were received intact at a temperature of 3.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Alkalinity	SM 2320B	61067	2010-06-28 at 11:00	71280	2010-06-28 at 11:00
Chloride (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
Chloride (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
Chloride (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
Fluoride (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
Fluoride (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
Fluoride (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
SO4 (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
SO4 (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
SO4 (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
TDS	SM 2540C	61083	2010-06-28 at 10:30	71296	2010-06-28 at 10:30

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10062902 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 236040 - 162

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**130**		mg/L as CaCo3	1	4.00
Total Alkalinity		**130**		mg/L as CaCo3	1	4.00

Sample: 236040 - 162

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**33.7**		mg/L	1	2.50

Sample: 236040 - 162

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL	Units	Dilution	RL
Fluoride		**1.05**		mg/L	1	0.500

Sample: 236040 - 162

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**122**	mg/L	5	2.50

Sample: 236040 - 162

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**410**	mg/L	1	5.00

Sample: 236041 - 163

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		**52.0**	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**136**	mg/L as CaCo3	1	4.00
Total Alkalinity		**188**	mg/L as CaCo3	1	4.00

Sample: 236041 - 163

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**84.2**	mg/L	5	2.50

Sample: 236041 - 163

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		**9.68**	mg/L	2	0.500

Sample: 236041 - 163

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**441**	mg/L	10	2.50

Sample: 236041 - 163

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**1230**	mg/L	1	5.00

Sample: 236042 - 164

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		**44.0**	mg/L as CaCo3	1	1.00

continued ...

sample 236042 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Bicarbonate Alkalinity		**152**	mg/L as CaCo3	1	4.00
Total Alkalinity		**196**	mg/L as CaCo3	1	4.00

Sample: 236042 - 164

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**83.8**	mg/L	5	2.50

Sample: 236042 - 164

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		**9.38**	mg/L	2	0.500

Sample: 236042 - 164

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**436**	mg/L	10	2.50

Sample: 236042 - 164

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**1130**	mg/L	1	5.00

Sample: 236043 - 165

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		**12.0**	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**330**	mg/L as CaCo3	1	4.00
Total Alkalinity		**342**	mg/L as CaCo3	1	4.00

Sample: 236043 - 165

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**91.2**	mg/L	5	2.50

Sample: 236043 - 165

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		**4.84**	mg/L	1	0.500

Sample: 236043 - 165

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**327**	mg/L	10	2.50

Sample: 236043 - 165

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**992**	mg/L	1	5.00

Sample: 236044 - 166

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		**28.0**	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**110**	mg/L as CaCo3	1	4.00
Total Alkalinity		**138**	mg/L as CaCo3	1	4.00

Sample: 236044 - 166

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**79.6**	mg/L	5	2.50

Sample: 236044 - 166

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL Units	Dilution	RL
Fluoride		**11.2**	mg/L	2	0.500

Sample: 236044 - 166

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL Units	Dilution	RL
Sulfate		**471**	mg/L	10	2.50

Sample: 236044 - 166

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	Result	RL Units	Dilution	RL
Total Dissolved Solids		**1350**	mg/L	1	5.00

Sample: 236045 - 167

Laboratory:	El Paso				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	Sample Preparation:		Prepared By:	JG

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**134**		mg/L as CaCo3	1	4.00
Total Alkalinity		**134**		mg/L as CaCo3	1	4.00

Sample: 236045 - 167

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**81.7**		mg/L	5	2.50

Sample: 236045 - 167

Laboratory:	El Paso				
Analysis:	Fluoride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	Result	RL	Units	Dilution	RL
Fluoride		**11.6**		mg/L	2	0.500

Sample: 236045 - 167

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	71285	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61071	Sample Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**483**	mg/L	10	2.50

Sample: 236045 - 167

Laboratory:	El Paso				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	71296	Date Analyzed:	2010-06-28	Analyzed By:	MD
Prep Batch:	61083	Sample Preparation:	2010-06-28	Prepared By:	MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**1340**	mg/L	1	5.00

Method Blank (1) QC Batch: 71280

QC Batch:	71280	Date Analyzed:	2010-06-28	Analyzed By:	JG
Prep Batch:	61067	QC Preparation:	2010-06-28	Prepared By:	JG

Parameter	Flag	MDL Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 71281

QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	QC Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.300	mg/L	2.5

Method Blank (1) QC Batch: 71281

QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	QC Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71281

QC Batch:	71281	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61068	QC Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71284

QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	QC Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71284

QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	QC Preparation:	2010-06-28	Prepared By:	JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71284

QC Batch:	71284	Date Analyzed:	2010-06-28	Analyzed By:	JR
Prep Batch:	61070	QC Preparation:	2010-06-28	Prepared By:	JR

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71296

QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
Prep Batch: 61083 QC Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	MDL Result	Units	RL
Total Dissolved Solids		<5.00	mg/L	5

Duplicates (1) Duplicated Sample: 236045

QC Batch: 71280 | Date Analyzed: 2010-06-28 | Analyzed By: JG
Prep Batch: 61067 | QC Preparation: 2010-06-28 | Prepared By: JG

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	134	134	mg/L as CaCo3	1	0	20
Total Alkalinity	134	134	mg/L as CaCo3	1	0	20

Duplicates (1) Duplicated Sample: 236041

QC Batch: 71296 | Date Analyzed: 2010-06-28 | Analyzed By: MD
Prep Batch: 61083 | QC Preparation: 2010-06-28 | Prepared By: MD

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1240	1230	mg/L	1	1	10

Laboratory Control Spike (LCS-1)

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	24.6	mg/L	1	25.0	<0.500	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	24.1	mg/L	1	25.0	<0.500	96	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	5.09	mg/L	1	5.00	<0.100	102	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	5.00	mg/L	1	5.00	<0.100	100	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	24.1	mg/L	1	25.0	<0.500	96	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	23.6	mg/L	1	25.0	<0.500	94	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	25.0	mg/L	1	25.0	<0.500	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	25.0	mg/L	1	25.0	<0.500	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	5.17	mg/L	1	5.00	<0.100	103	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	5.16	mg/L	1	5.00	<0.100	103	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	24.5	mg/L	1	25.0	<0.500	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	24.5	mg/L	1	25.0	<0.500	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	25.3	mg/L	1	25.0	<0.500	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	25.3	mg/L	1	25.0	<0.500	101	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	5.23	mg/L	1	5.00	<0.100	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	5.23	mg/L	1	5.00	<0.100	105	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	24.8	mg/L	1	25.0	<0.500	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	24.8	mg/L	1	25.0	<0.500	99	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71296 | Date Analyzed: 2010-06-28 | Analyzed By: MD
Prep Batch: 61083 | QC Preparation: 2010-06-28 | Prepared By: MD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids	1070	mg/L	1	1000	<5.00	107	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids	1010	mg/L	1	1000	<5.00	101	90 - 110	6	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	168	mg/L	5.56	139	33.7	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	170	mg/L	5.56	139	33.7	98	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	29.1	mg/L	5.56	27.8	1.05	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	29.4	mg/L	5.56	27.8	1.05	102	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61068 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate [1]	276	mg/L	5.56	139	122	111	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

[1] Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued ...

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate [2]	278	mg/L	5.56	139	122	112	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	236	mg/L	5.56	139	83.8	109	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	236	mg/L	5.56	139	83.8	109	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	38.4	mg/L	5.56	27.8	9.38	104	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	38.4	mg/L	5.56	27.8	9.38	104	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61070 | QC Preparation: 2010-06-28 | Prepared By: JR

[2] Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	[3]	645	mg/L	5.56	139	436	150	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	[4]	645	mg/L	5.56	139	436	150	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	233	mg/L	5.56	139	79.6	110	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	233	mg/L	5.56	139	79.6	110	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	40.4	mg/L	5.56	27.8	11.2	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	40.5	mg/L	5.56	27.8	11.2	105	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[4]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 | Date Analyzed: 2010-06-28 | Analyzed By: JR
Prep Batch: 61071 | QC Preparation: 2010-06-28 | Prepared By: JR

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	[5]	688	mg/L	5.56	139	471	156	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	[6]	689	mg/L	5.56	139	471	157	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 71280 | Date Analyzed: 2010-06-28 | Analyzed By: JG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		90 - 110	2010-06-28
Carbonate Alkalinity		mg/L as CaCo3	0.00	236		90 - 110	2010-06-28
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	8.00		90 - 110	2010-06-28
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71280 | Date Analyzed: 2010-06-28 | Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		90 - 110	2010-06-28
Carbonate Alkalinity		mg/L as CaCo3	0.00	240		90 - 110	2010-06-28
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	8.00		90 - 110	2010-06-28
Total Alkalinity		mg/L as CaCo3	250	248	99	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281 | Date Analyzed: 2010-06-28 | Analyzed By: JR

[5]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[6]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	23.5	94	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	4.81	96	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	23.1	92	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.5	98	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.02	100	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.1	96	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.5	98	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.02	100	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.1	96	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.9	100	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.09	102	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.4	98	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.9	100	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.09	102	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.4	98	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	25.3	101	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.16	103	90 - 110	2010-06-28

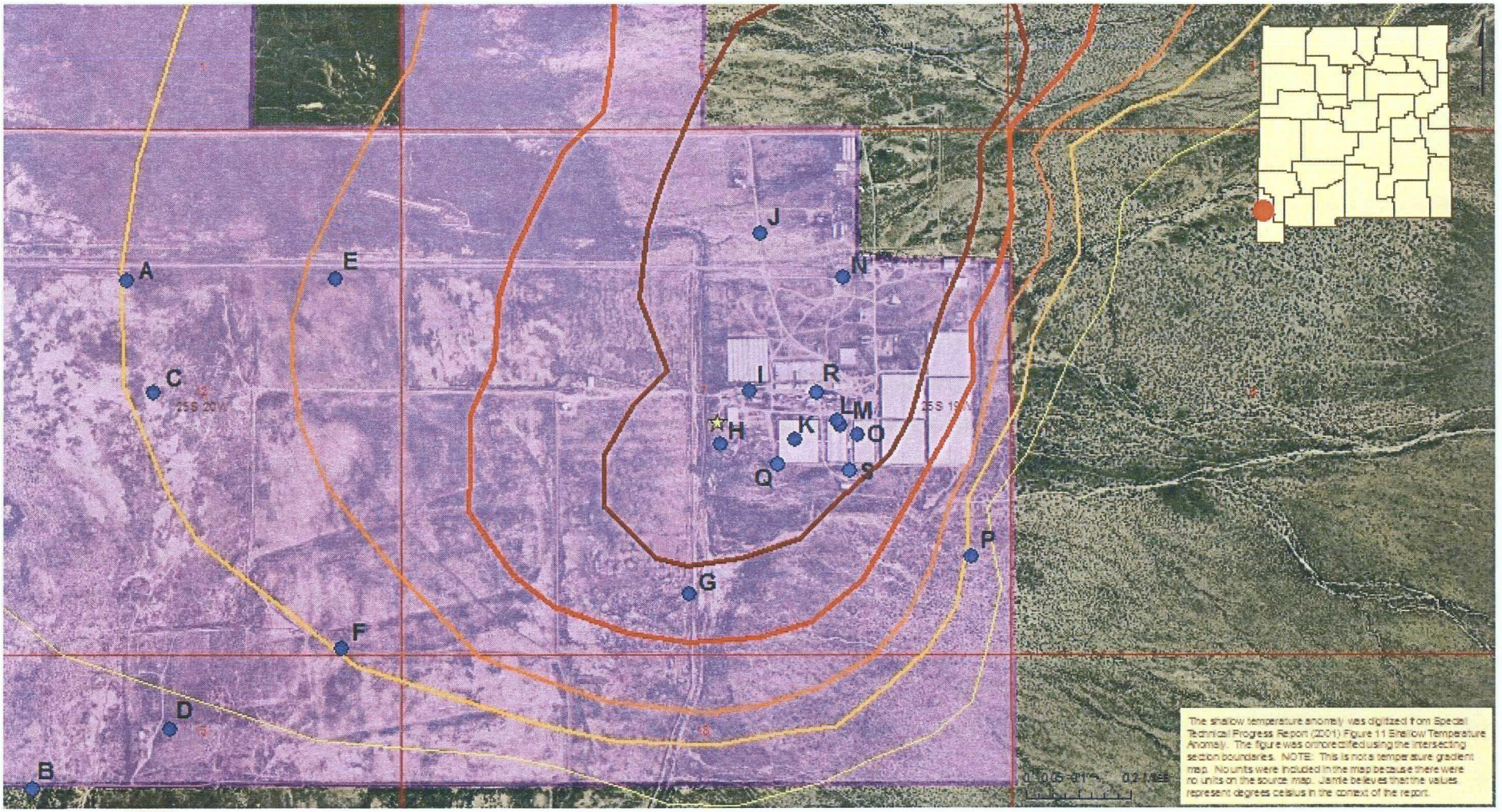
Standard (CCV-2)

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.8	99	90 - 110	2010-06-28

Attachment B

Maps and Data Table
Showing Lightning Dock [TDS] and [F] Distributions

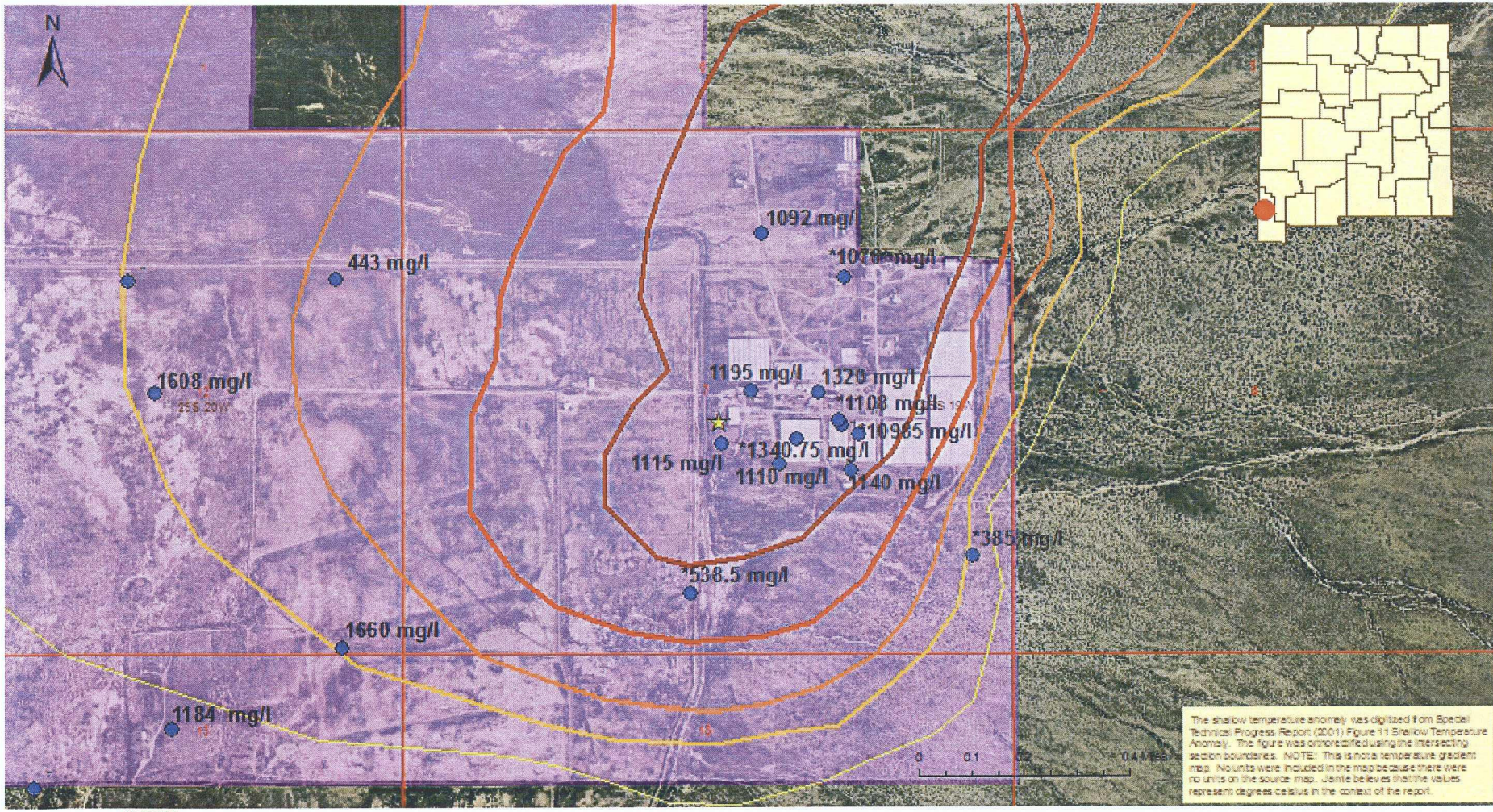


55-7
Wells
80 c
90 c
100 c
120 c
150 c

Lightning Dock, NM
Reference Map

Map by: Jamie Robinson
Date: 06/23/10
Path: NM/GIS/Working/ArcGISProjects/E/NM/GIS/Working/ArcGisProjects/James Maps/Lightning_Dock_datumvalues062310

raser

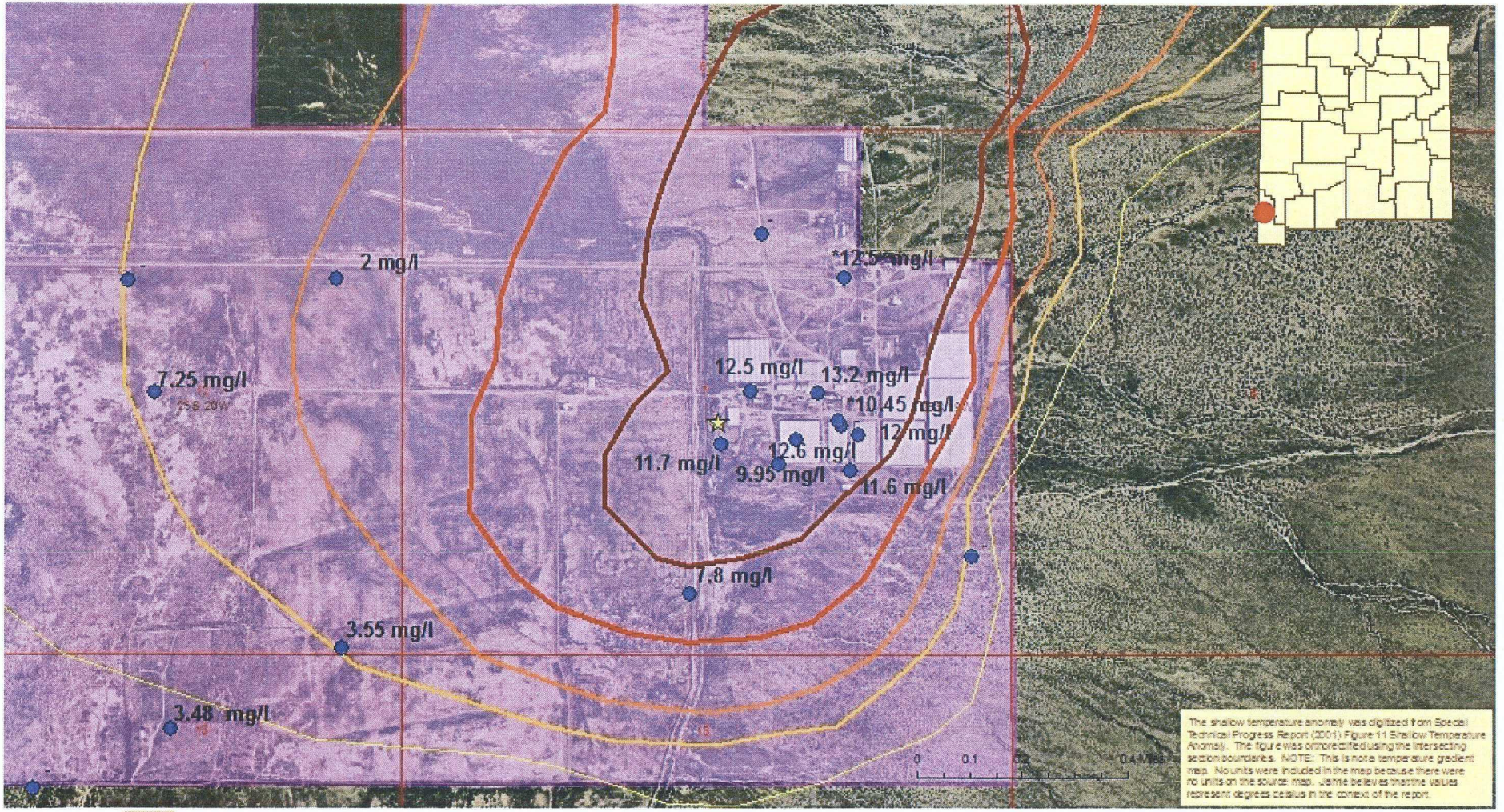


55-7
Wells
80 c
90 c
100 c
120 c
150 c

Lightning Dock, NM
TDS Concentrations

Map by: Jamie Robinson
Date: 06/23/10
Note: * values are averages of multiple data sets
Path: N:\GIS\Working\ArcGIS\Projects\E:\NM GIS\Working\ArcGis\Projects\Jamies Maps_Lightning_Dock_TDSconcentrations061710

raser



Lightning Dock, NM
Fluoride Concentrations

Map by: Jamie Robinson
Date: 06/23/10
Note: * values are averages of multiple data sets
Path: N:\GIS\Working\ArcGIS\Projects\NMGIS\Working\ArcGIS\Projects\Jamies Maps_Lightning_Dock_Fconcentrations061710

raser

Animas Valley Geochemical Data Base Extract: TDS and Fluoride values for Wells in Sections 7, 12 and 13, T25S, R19W

MAP REFERENCE	DATUM REFERENCE	SOURCE REFERENCE	SAMPLE	DATE	WATER SOURCE	W LONGITUDE 27	N LATITUDE 27	TEMP °F	TDS mg/l	F mg/l
A	165	Norman	N-39	-	Well	-108.85263	32.14987	-	-	-
B	167	Norman	N-41	-	Well	-108.85520	32.13586	-	-	-
C	4	Logsdon	P-4	1981	Well	-108.85188	32.14678	-	1608	7.25
D	37	Logsdon	AN-5	1981	Well	-108.85141	32.13749	-	1184	3.48
E	131	OCD	OCD-2	01/28/86	Beall water well	-108.84682	32.14992	63.5	443	2.00
E	138	Cunniff	C-3	11/07/85	Beall water well, OCD-2	-108.84682	32.14992	-	-	-
F	5	Logsdon	P-5	1981	Well	-108.84665	32.13973	-	1660	3.55
*G	183	Summers	Sum-5	04/04/60	Folk well	-108.83698	32.14122	-	620	-
*G	62	AMAX	AMAX-7	01/27/75	Folk well	-108.83698	32.14122	149.0	457	7.80
H	135	OCD	OCD-6	01/28/86	Burgett grnhouse discharge	-108.83612	32.14534	116.6	1115	11.70
I	133	OCD	OCD-4	01/28/86	Burgett geowell	-108.83528	32.14681	118.4	1195	12.50
J	136	Cunniff	C-1	11/07/85	Beall grnhouse well	-108.83501	32.15117	-	1092	-
*K	93	NMSU	NMSU-20	08/07/80	Burgett well	-108.83405	32.14549	159.8	1628	-
*K	2	Logsdon	P-2	1981	Burgett hot well	-108.83405	32.14549	-	1116	12.60
*K	89	NMSU	NMSU-16	03/27/81	Burgett well	-108.83405	32.14549	183.2	1167	-
*K	94	NMSU	NMSU-21	01/06/81	Burgett well	-108.83405	32.14549	149.0	1452	-
*L	90	NMSU	NMSU-17	01/06/81	Burgett well	-108.83288	32.14599	-	1034	-
*L	178	Summers	Sum-1B	04/28/49	Well	-108.83288	32.14599	-	1130	11.00
M	166	Norman	N-40	-	Well	-108.83282	32.14589	-	-	-
*N	63	AMAX	AMAX-8	01/26/75	McCants well	-108.83272	32.14997	185.0	1132	13.00
*N	3	Logsdon	P-3	1981	McCants well	-108.83272	32.14997	-	8	12.00
*N	88	NMSU	NMSU-15	08/06/80	McCants well	-108.83272	32.14997	192.0	982	-
*N	137	Cunniff	C-2	11/07/85	McCants grnhouse well	-108.83272	32.14997	-	1114	-
*O	91	NMSU	NMSU-18	08/07/80	Burgett well	-108.83233	32.14563	192.9	16281	-
*O	92	NMSU	NMSU-19	01/06/81	Burgett well	-108.83233	32.14563	201.2	15604	-
*O	181	Summers	Sum-2B	04/30/66	Well	-108.83233	32.14563	-	1070	12.00
*P	95	NMSU	NMSU-22	08/07/80	Well	-108.82916	32.14227	76.1	352	-
*P	96	NMSU	NMSU-23	01/06/81	Well	-108.82916	32.14227	75.2	418	-
**Q	-	Raser	153440	05/13/08	Burgett discharge	-	-	-	1110	9.95
**R	-	Raser	Geo well 1	6/9/2008	Burgett well	-	-	-	1320	13.2
**S	-	Raser	Geo well D	6/9/2008	Burgett well	-	-	-	1140	11.6
** T	-	Cunniff	AB53998	11/5/2003	TG 52-7	-	-	-	1572	11.82

Attachment C

Report from
Soil, Water and Air Testing Laboratory
New Mexico State University
12/23/2003
Well TG 52-7

Soil **W**ater and **A**ir **T**esting **Lab**
New Mexico State University
BOX 30003
Las Cruces, NM 88003
(505)646-4422

Report #031232246

Date: 12/22/03

ANALYTICAL REPORT

To: Lightning Dock Geothermal, In 523-7908
Attn: Roy A. Cunniff
224 W. Greening Ave.
Las Cruces, NM 88005 Purchase Order #

Below are the results for submitted sample(s). (MDL=Method detection limit)

Sample I.D. AB53998

Sample Description: Animas NM Well TG 52-7 DST
Sample collection date: 11/05/03 Sample collection time: 15:00
Submittal date: 11/07/03 Submittal time: 15:18
WSS# Request ID No. Collector: ROY CUNNIFF
Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
pH of water	150.1	9.26			11/11/03	LJG
Electrical Conductivity	2510B	2310	micromhos/cm	1	11/11/03	LJG
Total Dissolved Solids	160.2	1572	mg/L	1	11/11/03	BJH
Magnesium (for SAR)-	200.7	0.04	meq/L	0.01	11/21/03	BJH
Calcium (for SAR)-	200.7	0.51	meq/L	0.01	11/21/03	BJH
Sodium (for SAR)-	200.7	19.40	meq/L	0.01	11/21/03	BJH
Potassium by ICP-	200.7	8.4	mg/L	0.1	11/21/03	BJH
Sodium Adsorption Ratio (SAR)	Handbook 60	36.99		0.01	11/21/03	BJH
Carbonate	310.1	1.62	meq/L	0.01	11/12/03	LJG
Bicarbonate	310.1	4.69	meq/L	0.01	11/12/03	LJG
Alkalinity (as CaCO3)	2320B	315.5	mg/L	0.1	11/12/03	LJG
Hardness as CaCO3-	130.2	28	mg/L	1	11/21/03	BJH
Residual Sodium Carbonate (RSC)		5.76	meq/L	0.01	11/21/03	BJH
Chloride by Autoanalyzer	4500-Cl_D	111.0	mg/L	2.5	11/19/03	CAW
Sulfate	4500-SO4_E	545	mg/L	10	11/26/03	JH
Fluoride by electrode	4500-F_C	11.82	mg/L	0.05	11/26/03	DIG
Aluminum by ICP-	200.7	0.78	mg/L	0.05	12/05/03	BJH
Antimony by ICP	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Arsenic by ICP-	EPA 200.7	0.07	mg/L	0.05	12/05/03	BJH
Barium	200.8	53.1	ug/L	0.1	11/26/03	MBL
Beryllium	200.8	Not detected	ug/L	0.2	11/26/03	MBL
Bismuth by ICP-		Not detected	mg/L	1	12/19/03	BJH
Cadmium by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.01	12/05/03	BJH
Calcium by ICP-	200.7	10.9	mg/L	0.1	12/05/03	BJH
Chromium by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.01	12/05/03	BJH
Cobalt by ICP-	200.7	Not detected	mg/L	0.01	12/05/03	BJH
Copper by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.04	12/05/03	BJH
Iron by ICP-	200.7	26.80	mg/L	0.05	12/05/03	BJH
Lead by ICP (EPA 200.7)	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Magnesium by ICP-	200.7	0.5	mg/L	0.1	12/05/03	BJH
Manganese by ICP-	200.7	0.474	mg/L	0.005	12/05/03	BJH
Mercury	200.8	3.2	ug/L	0.2	11/26/03	MBL
Molybdenum by ICP-MS	200.8	71.1	ug/L	1	11/26/03	MBL
Nickel by ICP (EPA 200.7)	EPA 200.7	0.01	mg/L	0.01	12/05/03	BJH
Selenium by ICP	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Silver by ICP-	200.7	Not detected	mg/L	0.02	12/05/03	BJH
Sodium by ICP-	200.7	473.6	mg/L	0.1	12/05/03	BJH
Thallium by ICP	200.7	Not detected	mg/L	0.05	12/05/03	BJH
Uranium by ICP-MS	200.8	1.77	ug/L	0.05	11/26/03	MBL

Sample I.D. AB53998

Sample Description: Animas NM Well TG 52-7 DST
Sample collection date: 11/05/03 Sample collection time: 15:00
Submittal date: 11/07/03 Submittal time: 15:18
WSS# Request ID No. Collector: ROY CUNNIFF
Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
Vanadium by ICP	200.7	Not detected	mg/L	0.05	12/05/03	BJH
Zinc by ICP-	200.7	0.30	mg/L	0.01	12/05/03	BJH
Boron by ICP-	200.7	10.10	mg/L	0.01	12/05/03	BJH
Silica by ICP	EPA 200.7	51.60	mg/L	0.25	12/05/03	BJH

Please advise should you have questions concerning these data.
Respectfully submitted,

Laboratory Manager
(505)646-4422

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C
May 27

Submit to appropriate District Of

☐ AMENDED REPO

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

[1] Operator Name and Address	[2] OGRID Number
Los Lobos Renewable Power, LLC 5125 North Edgewood Drive Suite 375 Provo, Utah 84604	[3] API Number 30 -

[4] Property Code	[5] Property Name	[6] Well No.
	Lightning Dock No 1, HI-01 LLC	45-07

[7] Proposed Pool 1	[8] Proposed Pool 2

[7] Surface Location

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	07	25S	19W		2360.0	South	2278.3	West	Hidalgo

[8] Proposed Bottom Hole Location If Different From Surface

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Same									

Additional Well Information

[11] Work Type Code	[12] Well Type Code	[13] Cable/Rotary	[14] Lease Type Code	[15] Ground Level Elevation
N	(P) Production Well	R	F – Land BLM – Geothermal	4100
[16] Multiple	**[17] Proposed Depth**	**[18] Formation**	**[19] Contractor**	**[20] Spud Date**
See Plan of Operation	3,400 feet		Layne Christensen Company	May 2008

Depth to Groundwater 40 feet	Distance from nearest fresh water well .4 miles	Distance from nearest surface water - None

Pit: Liner: Synthetic ☒ 45 mils thick Clay ☐ Pit Volume: 45,000bbls
Closed-Loop System ☒

Drilling Method:
Fresh Water ☐ Brine ☒ Diesel/Oil-based ☐ Gas/Air ☐

[21] Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
26"	20"	3/8" Wall	63'	150 Sacks	
17.7"	13.375"	54.5 lb/ft	1,500'	750 Sacks	
12.25"	9.625"	36.0 lb/ft	3,400'	980 Sacks	
	7" Liner (If)	23.0 lb/ft			

[22] Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive z
Describe the blowout prevention program, if any. Use additional sheets if necessary.

SEE PLAN OF OPERATION

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify that the drilling pit will be constructed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Signature:

Printed name: Steven Bowen

Title: Manager

E-mail Address: Steve.Bowen@rosetech.com

Date: 4/21/08 Phone: 281 765 1210

OIL CONSERVATION DIVISION

Approved by:

Title: Environmental Engineer

Approval Date: 6/11/2010 Expiration Date: 6/11/2012

Conditions of Approval Attached ☑

G-101 Lightning Dock Geothermal HI-01 LLC Project
Production/Development Well 45-07 (GTHT-001)

OCD G-101 Conditions of Approval
(06/11/2010)

1) Geothermal exempt work over wastes must be disposed at an OCD approved waste disposal facility in accordance with 19.15.35.8(D) NMAC or OCD permitted treatment or disposal facility (19.15.36 et seq. NMAC).

2) All water quality sampling and laboratory methods must be in accordance with the terms and conditions of the discharge permit (GTHT-001). The operator must document the back annulus quality of the ground water to OCD's satisfaction.

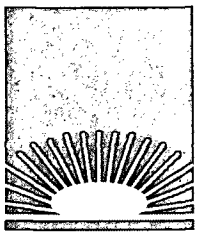
3) Additional tanks (or large frac tank) will be necessary to circulate the hole for clean sampling representative of the formation to satisfy Condition 2 above. If the operator is unable to document that the ground water produced during the test is adequately "fresh," then it must immediately stop the test and contact OCD-EB.

4) All applicable G-Forms documenting well construction, lithology, tests, etc. and request for approval to produce or develop the well and the geothermal resource(s) shall be submitted to OCD-EB for approval.

5) The "Smith Corp" Geothermal Data Log from Well TFD-55-7 within the project area indicates that there is stratigraphic or formation variation with depth, i.e., alluvium to ~ 150 ft; ash/tuff to ~1950 ft; siltstone to ~2300 ft; limestone ~ 2950 ft; intrusive dike ~ 3200 ft; limestone ~ 3400 ft; intrusive dike w/ chert ~ 3600 ft; and so on. The project work is within ~ 3500 ft. of surface and the operator believes there is natural hydrogeologic connection between water bearing formations due to fault systems and associated natural rock fracturing in the area. The operator shall implement well completion measures that protect fresh water in accordance with the discharge permit.

6) All field work and well completions must comply with the terms and conditions of the discharge permit and associated Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC).

Please be advised that OCD approval does not relieve ***Los Lobos Renewable Power, L.L.C.*** *of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve* ***Los Lobos Renewable Power, L.L.C.*** *of responsibility for compliance with any other federal, state, or local laws and/or regulations.*



February 07, 2011

Jamie Robinson
Raser Technologies Inc.
5152 N. Edgewood Drive
Provo, UT 84604

TEL (801) 765-1200
FAX

Work Order No.: 11A0692
RE: Lightning Dock
Order Name: 45-07

Dear Jamie Robinson,

Turner Laboratories, Inc. received 1 sample(s) on 01/31/2011 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Terri Garcia
Technical Director

Client: Raser Technologies Inc.
Project: Lightning Dock
Work Order: 11A0692
Date Received: 01/31/2011

Order: 45-07

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
11A0692-01	DRAFT: LDG 45-7	Ground Water	01/31/2011 1400

Client: Raser Technologies Inc.
Project: Lightning Dock
Work Order: 11A0692
Date Received: 01/31/2011

Case Narrative

D5	Minimum Reporting Limit (MRL) is elevated due to sample dilution.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND	Not Detected at or above the PQL
PQL	Practical Quantitation Limit
DF	Dilution Factor

Client: Raser Technologies Inc. **Client Sample ID:** DRAFT: LDG 45-7
Project: Lightning Dock **Collection Date/Time:** 01/31/2011 1400
Work Order: 11A0692 **Matrix:** Ground Water
Lab Sample ID: 11A0692-01 **Order Name:** 45-07

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
ICP Dissolved Metals-E 200.7								
Aluminum	ND	2.0		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Barium	ND	0.050		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Boron	0.23	0.10		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Cadmium	ND	0.0020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Calcium	14	4.0		mg/L	1	02/01/2011 0830	02/03/2011 1104	RAD
Chromium	ND	0.030		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Copper	ND	0.020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Iron	ND	0.30		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Magnesium	ND	3.0		mg/L	1	02/01/2011 0830	02/03/2011 1104	RAD
Manganese	ND	0.020		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Molybdenum	0.018	0.010		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Nickel	ND	0.050		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Silver	ND	0.010		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
Sodium	250	5.0	M3	mg/L	1	02/01/2011 0830	02/03/2011 1104	RAD
Zinc	ND	0.040		mg/L	1	02/01/2011 0830	02/03/2011 1105	RAD
ICP/MS Dissolved Metals-E 200.8								
Arsenic	0.0066	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Cobalt	ND	0.0012	D5	mg/L	5	02/01/2011 0830	02/03/2011 1100	RAD
Lead	ND	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Selenium	0.0061	0.0025		mg/L	1	02/01/2011 0830	02/02/2011 1158	RAD
Uranium	0.00067	0.00050		mg/L	1	02/01/2011 0830	02/02/2011 1604	RAD
pH-E150.1								
pH (pH Units)	9.0	0.0		-	1	01/31/2011 1645	01/31/2011 1657	GW
Temperature (°C)	26			-	1	01/31/2011 1645	01/31/2011 1657	GW
Anions by Ion Chromatography-E300								
Chloride	44	5.0		mg/L	5	02/02/2011 1200	02/03/2011 0038	JM
Fluoride	4.3	2.5		mg/L	5	02/02/2011 1200	02/03/2011 0038	JM
Nitrogen, Nitrate (As N)	1.0	1.0		mg/L	1	02/01/2011 1300	02/01/2011 1727	JM
Sulfate	220	100		mg/L	20	02/02/2011 1200	02/03/2011 0057	JM
Total Dissolved Solids (Residue, Filterable)-SM2540 C								
Total Dissolved Solids (Residue, Filterable)	580	20		mg/L	1	02/01/2011 1015	02/03/2011 1450	GW
Cyanide-SM4500-CN BE								
Cyanide	ND	0.10		mg/L	1	02/03/2011 0830	02/04/2011 0730	JM

Client: Raser Technologies Inc.
Project: Lightning Dock
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: 45-07

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Silica-SM4500-Si D								
Silica	120	50		mg/L	25	02/04/2011 1410	02/04/2011 1455	EW
PCBs-SW8082								
Aroclor 1016	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1221	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1232	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1242	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1248	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1254	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Aroclor 1260	ND	0.96		ug/L	1	02/01/2011 1136	02/02/2011 2134	DCB
Surr: Decachlorobiphenyl	*99*	*49.2-158.7*		*%REC*	*1*	*02/01/2011 1136*	*02/02/2011 2134*	*DCB*
Volatile Organic Compounds by GC/MS-SW8260B								
1,1,1,2-Tetrachloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,1-Trichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2,2-Tetrachloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2-Trichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1,2-Trichlorotrifluoroethane	ND	5.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,1-Dichloropropene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,3-Trichlorobenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,3-Trichloropropane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,4-Trichlorobenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2,4-Trimethylbenzene	0.50	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dibromo-3-chloropropane	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dibromoethane	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichloroethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,2-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3,5-Trimethylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,3-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
1,4-Dichlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2,2-Dichloropropane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Butanone	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Chlorotoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
2-Hexanone	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
4-Chlorotoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP

Client: Raser Technologies Inc.
Project: Lightning Dock
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: 45-07

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
4-Isopropyltoluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
4-Methyl-2-pentanone	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Acetone	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Acrylonitrile	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Benzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromochloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromodichloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromoform	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Bromomethane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Carbon disulfide	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Carbon tetrachloride	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chlorobenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloroethane	ND	1.0	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloroform	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Chloromethane	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
cis-1,2-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
cis-1,3-Dichloropropene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dibromochloromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dibromomethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Dichlorodifluoromethane	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Ethylbenzene	2.7	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Hexachlorobutadiene	ND	5.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Iodomethane	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Isopropylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
m,p-Xylene	17	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Methylene chloride	ND	1.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Naphthalene	8.9	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
n-Butylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
n-Propylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
o-Xylene	19	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
sec-Butylbenzene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Styrene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
tert-Butylbenzene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Tetrachloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Toluene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,2-Dichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,3-Dichloropropene	ND	2.0		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
trans-1,4-Dichloro-2-butene	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Trichloroethene	ND	0.50		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Trichlorofluoromethane	ND	0.50	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Vinyl acetate	ND	10		ug/L	1	02/01/2011 1257	02/01/2011 1435	KP

Client: Raser Technologies Inc. **Client Sample ID:** DRAFT: LDG 45-7
Project: Lightning Dock **Collection Date/Time:** 01/31/2011 1400
Work Order: 11A0692 **Matrix:** Ground Water
Lab Sample ID: 11A0692-01 **Order Name:** 45-07

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Vinyl chloride	ND	0.50	V1	ug/L	1	02/01/2011 1257	02/01/2011 1435	KP
Surr: 4-Bromofluorobenzene	*98*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Surr: Dibromofluoromethane	*111*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Surr: Toluene-d8	*100*	*70-130*		*%REC*	*1*	*02/01/2011 1257*	*02/01/2011 1435*	*KP*
Semivolatile Organic Compounds-SW8270C								
1,2,4-Trichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
1,2-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
1,3-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
1,4-Dichlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4,5-Trichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4,6-Trichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dichlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dimethylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dinitrophenol	ND	48		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,4-Dinitrotoluene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2,6-Dinitrotoluene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Chloronaphthalene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Chlorophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Methylnaphthalene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
2-Nitrophenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3,3'-Dichlorobenzidine	ND	19	V1	ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3,4-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
3-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4,6-Dinitro-2-methylphenol	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Bromophenyl phenyl ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chloro-3-methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chloroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Chlorophenyl phenyl ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Methylphenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Nitroaniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
4-Nitrophenol	ND	48	V1	ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Acenaphthene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Acenaphthylene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Aniline	ND	19		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[a]anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[a]pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[b,k]fluoranthene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzo[g,h,i]perylene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB

Client: Raser Technologies Inc.
Project: Lightning Dock
Work Order: 11A0692
Lab Sample ID: 11A0692-01

Client Sample ID: DRAFT: LDG 45-7
Collection Date/Time: 01/31/2011 1400
Matrix: Ground Water
Order Name: 45-07

Analyses	Result	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Benzoic acid	19	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Benzyl alcohol	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroethoxy)methane	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroethyl)ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-chloroisopropyl)ether	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Bis(2-ethylhexyl)phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Butyl benzyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Chrysene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dibenz[a,h]anthracene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dibenzofuran	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Diethyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Dimethyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Di-n-butyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Di-n-octyl phthalate	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Fluoranthene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Fluorene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorobutadiene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachlorocyclopentadiene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Hexachloroethane	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Indeno[1,2,3-cd]pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Isophorone	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Naphthalene	5.7	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Nitrobenzene	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodimethylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodiphenylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
N-Nitrosodipropylamine	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Pentachlorophenol	ND	29		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Phenanthrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Phenol	ND	9.6		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Pyrene	ND	4.8		ug/L	1	02/01/2011 1140	02/03/2011 1827	DCB
Surr: 2,4,6-Tribromophenol	*85*	*41.08-112.4*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 2-Fluorobiphenyl	*70*	*29.5-107.83*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 2-Fluorophenol	*42*	*19.78-74.14*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: 4-Terphenyl-d14	*60*	*39.48-98.11*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: Nitrobenzene-d5	*71*	*12.94-105.5*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*
Surr: Phenol-d6	*59*	*14.3-96.41*		*%REC*	*1*	*02/01/2011 1140*	*02/03/2011 1827*	*DCB*

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 11A0692 DATE _____ PAGE _____ OF _____

PROJECT NAME LDG 45-7 #
CONTACT NAME Ben Barker
COMPANY NAME Raser Technologies
ADDRESS 5152 North Edgewood dr.
Provo, Utah 84604 PHONE FAX
SAMPLER'S SIGNATURE Steve R Harmon

NUMBER OF CONTAINERS

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	
LDG45-7	1-31-11	2:00		GW	SEE ATTACHED

Base Neutrals 625/8270 ☐ Acids ☐ Volatile Organics 624/524.2/8260 ☐ TTHMS ☐ HAA5 ☐ Pesticides 8081 ☐ PCB's 8082 ☐ NO3 ☐ NO2 ☐ TKN ☐ Oil and Grease Grav. 1664A ☐ VOA ☐ TCLP Analysis Semi-VOA ☐ Pest. ☐ TCLP ☐ Metals Total ☐ Dissolved ☐ RCRA8 ☐ Total ☐ Cyanide Amen. ☐ WAD ☐ SDWA-INORGANICS PRIMARY ☐ SECONDARY ☐ Coliform MPN ☐ Colilert ☐ pH ☐ Cl2 ☐ Cl- ☐ COD ☐ TSS ☐ BOD ☐

1. RELINQUISHED BY:
Signature: Steve R Harmon
Printed Name: Steve R Harmon
Firm: Raser Technologies
Date/Time: 1-31-11 4:39

2. RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS:
____ Standard (approx. 10 days)*
____ Next Day ____ 2 Day ____ 5 Day*
____ Email Preliminary Results To:
* Working Days

REPORT REQUIREMENTS:
____ I. Routine Report
____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
____ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ____ Y ____ N
P.O. #
Bill to:

SAMPLE RECEIPT:
Total Containers
Temperature 16 10
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

4. RECEIVED BY:
Signature: Stephen Lund
Printed Name
Firm: TURNER LABORATORIES, INC.
Date/Time: 1-31-11 1639

* LEGEND
DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

SPECIAL INSTRUCTIONS/COMMENTS:

Compliance Analysis: ☐ Yes ☐ No	Custody Seals ☐	Preservation Confirmation ☐
ADEQ Forms: ☐ Yes ☐ No	Container Intact ☑	Appropriate Head Space ☑
Mail ADEQ Forms: ☐ Yes ☐ No	COC / Labels Agree ☑	Received Within Hold Time ☑

Power Technologies, Jamie Robinson 801-765-1200

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection D of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "methods for chemical analysis of water and waste of the U.S. environmental protection agency," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

A. Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As).....0.1 mg/l
(2) Barium (Ba).....1.0 mg/l
(3) Cadmium (Cd).....0.01 mg/l
(4) Chromium (Cr).....0.05 mg/l
(5) Cyanide (CN).....0.2 mg/l
(6) Fluoride (F).....1.6 mg/l
(7) Lead (Pb).....0.05 mg/l
(8) Total Mercury (Hg).....0.002 mg/l
(9) Nitrate (NO3 as N).....10.0 mg/l
(10) Selenium (Se).....0.05 mg/l
(11) Silver (Ag).....0.05 mg/l

(12) Uranium (U).....0.03 mg/l

(13) Radioactivity: Combined Radium-226 & Radium-228.....30 pCi/l

(14) Benzene.....0.01 mg/l

(15) Polychlorinated biphenyls (PCB's).....0.001 mg/l

(16) Toluene.....0.75 mg/l

(17) Carbon Tetrachloride.....0.01 mg/l

(18) 1,2-dichloroethane (EDC).....0.01 mg/l

(19) 1,1-dichloroethylene (1,1-DCE).....0.005 mg/l

(20) 1,1,2,2-tetrachloroethylene (PCE).....0.02 mg/l

(21) 1,1,2-trichloroethylene (TCE).....0.1 mg/l

(22) ethylbenzene.....0.75 mg/l

(23) total xylenes.....0.62 mg/l

(24) methylene chloride.....0.1 mg/l

(25) chloroform.....0.1 mg/l

(26) 1,1-dichloroethane.....0.025 mg/l

(27) ethylene dibromide (EDB).....0.0001 mg/l

(28) 1,1,1-trichloroethane.....0.06 mg/l

(29) 1,1,2-trichloroethane.....0.01 mg/l

(30) 1,1,2,2-tetrachloroethane.....0.01 mg/l

(31) vinyl chloride.....0.001 mg/l

(32) PAHs: total naphthalene plus monomethylnaphthalenes.....0.03 mg/l

(33) benzo-a-pyrene.....0.0007 mg/l

B. Other Standards for Domestic Water Supply

(1) Chloride (Cl).....250.0 mg/l

(2) Copper (Cu).....1.0 mg/l

(3) Iron (Fe).....1.0 mg/l

(4) Manganese (Mn).....0.2 mg/l

(6) Phenols.....0.005 mg/l

(7) Sulfate (SO4).....600.0 mg/l

(8) Total Dissolved Solids (TDS).....1000.0 mg/l

(9) Zinc (Zn).....10.0 mg/l

(10) pH.....between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al) ..... 5.0 mg/l

(2) Boron (B) ..... 0.75 mg/l

(3) Cobalt (Co) ..... 0.05 mg/l

(4) Molybdenum (Mo) ..... 1.0 mg/l

(5) Nickel (Ni) ..... 0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly of indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.

[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which is designed to receive and which receives 2,000 gallons or less of liquid waste per day;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Leachate from materials disposed of in accordance with the Solid Waste Management Regulations (20 NMAC 9.1) adopted by the New Mexico Environmental Improvement Board;

K. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

L. Effluent or leachate discharges resulting from activities regulated by a mining plan approved and permit issued by the New Mexico Coal Surface Mining Commission, provided that this

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection D of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "methods for chemical analysis of water and waste of the U.S. environmental protection agency," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

A. Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As).....0.1 mg/l
(2) Barium (Ba).....1.0 mg/l
(3) Cadmium (Cd).....0.01 mg/l
(4) Chromium (Cr).....0.05 mg/l
(5) Cyanide (CN).....0.2 mg/l
(6) Fluoride (F).....1.6 mg/l
(7) Lead (Pb).....0.05 mg/l
(8) Total Mercury (Hg).....0.002 mg/l
(9) Nitrate (NO3 as N).....10.0 mg/l
(10) Selenium (Se).....0.05 mg/l
(11) Silver (Ag).....0.05 mg/l

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al)..... .....5.0 mg/l

(2) Boron (B) .....0.75 mg/l

(3) Cobalt (Co) .....0.05 mg/l

(4) Molybdenum (Mo) .....1.0 mg/l

(5) Nickel (Ni) .....0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly of indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.

[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the New Mexico Coal Surface Mining Commission;

M. Effluent or leachate discharges which are regulated by the Oil Conservation Commission and the regulation of which by the Water Quality Control Commission would interfere with the exclusive authority granted under Section 70-2-12 NMSA 1978, or under other laws, to the Oil Conservation Commission.

[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01]

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N. M. B. M.		
U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ NA- Federal ☐
5.a State Lease No.: Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☒ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐
7. Unit Agreement Name: N/A
2. Name of Operator: Lightning Dock Geothermal HI-01, LLC
8. Farm or Lease Name: N/A
3. Address of Operator: 5152 Edgewood Drive, Provo, Utah 84604
9. Well No.: TFD 55-7
4. Location of Well: Unit Letter 2454 Feet From The East Line and 2345 Feet From The South Line, Section 7 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat: Wildcat
15. Elevation (Show whether DF, RT, GR, etc.): 4201' GR
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☒	PLUG AND ABANDON	☐	REMEDIAL WORK	☒	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☐	PLUG & ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER	☐			OTHER			☐

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

1. MIRU drill rig.
2. Drill out cement plug from 1450' to 1550' approx.
3. Drill out cement plug from 1890' to 2090' approx.
4. RIH to locate cement plug at 5400' approx.
5. Set bridge plug in 3000'-3400' interval.
6. Collect water samples for geochemical and environmental analysis.
7. Set production pump at 850' approx.
8. Release rig.
9. Hook up well for pump test to irrigation system.
10. Run pump test for up to four weeks.
11. Secure well.

Please see attached Proposed Operations and Drilling Plan for details.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Benjamin J. Barker TITLE VP Resource Management DATE April 12, 2010

APPROVED BY Carl J. Chavez TITLE Environmental Engineer DATE May 26, 2010

CONDITIONS OF APPROVAL, IF ANY: SEE ATTACHMENT

G-103 Lightning Dock Geothermal HI-01 LLC Project
TFD 55-7 (GTHT-001)

OCD G-103 Conditions of Approval
(05/26/2010)

1) Geothermal exempt work over wastes must be disposed at an OCD approved waste disposal facility in accordance with 19.15.35.8(D) NMAC or OCD permitted treatment or disposal facility (19.15.36 et seq. NMAC).

2) Closed-loop system work over wastes must not be discharged into the unlined pit.

3) All water quality sampling and laboratory methods must be in accordance with the terms and conditions of the discharge permit (GTHT-001) and any discharge from the well to the unlined 170' x 170' x 12' pit must be approved by OCD-EB in advance of any discharge to the pit. OCD will approve the discharge of formation fluids that meets the greater of background and/or 20.6.2.3103 NMAC. Raser must document the back annulus quality of the ground water to OCD's satisfaction.

4) Additional tanks (or large frac tank) will be necessary to circulate the hole for clean sampling representative of the formation to satisfy Condition 3 above. If Raser Technologies is unable to document that the ground water produced during the test is adequately "fresh," then it must immediately stop the test and contact OCD-EB.

5) A final C-103 Form shall be submitted to OCD-EB within 30 days of well work with final construction details or specifications.

6) The "Smith Corp" Geothermal Data Log of the well indicates that there is stratigraphic or formation variation with depth, i.e., alluvium to ~ 150 ft; ash/tuff to ~1950 ft; siltstone to ~2300 ft; limestone ~ 2950 ft; intrusive dike ~ 3200 ft; limestone ~ 3400 ft; intrusive dike w/ chert ~ 3600 ft; and so on. The project work is within ~ 3500 ft. of surface and the operator believes there is natural interconnection between water bearing formations due to natural rock fracturing. The operator shall implement field workover measures that are protective of fresh water whenever unfractured brackish, saline or brine formations at depth are encountered in order to protect local fresh water aquifers.

7) All work must also comply with the terms and conditions of the discharge permit (GTHT-001).

Please be advised that OCD approval does not relieve ***Los Lobos Renewable Power, L.L.C.*** *of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve* ***Los Lobos Renewable Power, L.L.C.*** *of responsibility for compliance with any other federal, state, or local laws and/or regulations.*