GTHT - ___1___

NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS AND BLOWOUTS

Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Friday, August 17, 2012 3:39 PM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD
Cc: Michelle Henrie
Subject: Minor Release C-141 reports for Los Lobos Renewable Power, LLC, Hidalgo County, NM
Attachments: C 141 Spill 3 .pdf; C-141 Spill 1 .pdf; C-141 Spill 2 .pdf

Good afternoon Gentlemen:

Please find attached the C-141 forms for the three minor releases that occurred on Geothermal Road when three five gallon cans of motor oil fell out of the back of a truck due to a faulty tailgate latch.

Please call me with questions.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Nick Goodman
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Not on a facility, on Geothermal Road	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette, Inc.	Not applicable, not on a location	Not applicable, not on a location

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	South Line	Feet from the	West Line	County
	7	25S	19W					Hidalgo

Latitude 32° 08.912' **Longitude** 108° 50.111' N

NATURE OF RELEASE

Type of Release: Chevron RPM 15-40W motor oil	Volume of Release five gallons	Volume Recovered: 4.5 gallons
Source of Release: Five-gallon can of motor oil falling from pickup truck bed onto roadway	Date and Hour of Occurrence 8/6/2012 approximately 1545	Date and Hour of Discovery 8/6/2012 approximately 1545
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	Mr. Carl Chavez and Mr. Randy Dade of NMOCD Environmental Bureau and Mr. Michael Smith of BLM Las Cruces District Office and the New Mexico Environment Department were informed by telephone and or email.	
By David Janney, AMEC, Albuquerque, NM	Date and Hour August 7, 2012, approximately 1100	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Cause of problem was a faulty tailgate latch on a Thermasource pickup truck that allowed a five-gallon can of 15-40W motor oil in the bed of a slowly moving pickup truck to fall out and spill onto a roadway.

Describe Area Affected and Cleanup Action Taken.* The affected area of the asphalt roadway was approximately 15 square feet. A berm of absorbent material was use to contain the spill absorb the free oil. Once the oil had been absorbed, the absorbent material and as much of the stained soil as possible was removed and stockpile on plastic at the LDG 53-7 location pending proper disposal by Thermasource. Approximately 10 gallons of absorbent material was used to absorb this spill. It was removed and placed into a spill material bin pending proper disposal. Thermasource will contract for proper disposal and supply Los Lobos with documentation of proper disposal

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David W. Janney	OIL CONSERVATION DIVISION	
Printed Name: David Janney, PG	Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 6/16/2012 Phone: 505.821.1801		

* Attach Additional Sheets If Necessary

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1000 Rio Brazos Road, Aztec, NM 87410
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Energy Minerals and Natural Resources

Oil Conservation Division
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Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Nick Goodman
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Not on a facility, on Geothermal Road	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette Inc.	Not applicable, not on a location	Not applicable, not on a location

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	South Line	Feet from the	West Line	County
	7	25S	19W					Hidalgo

Latitude 32° 08.88' **Longitude** 108° 50.221' N

NATURE OF RELEASE

Type of Release: Chevron RPM 15-40W motor oil	Volume of Release five gallons	Volume Recovered: 4.0 gallons
Source of Release: Five-gallon can of motor oil falling from pickup truck bed onto roadway	Date and Hour of Occurrence 8/6/2012 approximately 1545	Date and Hour of Discovery 8/6/2012 approximately 1545
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	Mr. Carl Chavez and Mr. Randy Dade of NMOCD Environmental Bureau and Mr. Michael Smith of BLM Las Cruces District Office and the New Mexico Environment Department were informed by telephone and or email.	
By David Janney, AMEC, Albuquerque, NM	Date and Hour of Report: August 7, 2012, approximately 1100	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Cause of problem was a faulty tailgate latch on a Thermasource pickup truck that allowed a five-gallon can of 15-40W motor oil in the bed of a slowly moving pickup truck to fall out and spill onto a gravel roadway.

Describe Area Affected and Cleanup Action Taken.* The affected area of the gravel roadway was approximately 15 square feet. A berm of absorbent material was use to contain the spill and additional absorbent was used to absorb the free oil. Once the oil had been absorbed, the absorbent material and as much of the stained soil beneath it as possible were removed and stockpile on plastic at the LDG 53-7 location pending proper disposal by Thermasource. Approximately ¼ cubic yard of stained soil/gravel was removed and stockpiled on plastic for subsequent disposal by Thermasource, the drilling contractor. Thermasource will contract for proper disposal and supply Los Lobos with documentation of proper disposal.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David W. Janney	OIL CONSERVATION DIVISION	
Printed Name: David Janney, PG	Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 8/16/2012 Phone: 505.821.1801		

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Form C-141
Revised August 8, 2011

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Nick Goodman
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Not on a facility, on Geothermal Road	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette, Inc.	Not applicable, not on a location	Not applicable, not on a location

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	South Line	Feet from the	West Line	County
	7	25S	19W					Hidalgo

Latitude 32° 08.906' **Longitude** 108° 50.284' N

NATURE OF RELEASE

Type of Release: Chevron RPM 15-40W motor oil	Volume of Release five gallons	Volume Recovered: 4.5 gallons
Source of Release: Five-gallon can of motor oil falling from pickup truck bed onto roadway	Date and Hour of Occurrence 8/6/2012 approximately 1545	Date and Hour of Discovery 8/6/2012 approximately 1545
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	Mr. Carl Chavez and Mr. Randy Dade of NMOCD Environmental Bureau and Mr. Michael Smith of BLM Las Cruces District Office and the New Mexico Environment Department were informed by telephone and or email.	
By David Janney, AMEC, Albuquerque, NM	Date and Hour of Report: August 7, 2012, approximately 1100	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

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Describe Area Affected and Cleanup Action Taken.* The affected area of the hard gravel roadway was approximately 15 square feet. A berm of absorbent material was use to contain the spill absorb the free oil. Once the oil had been absorbed, the absorbent material and as much of the stained soil as possible was removed and stockpile on plastic at the LDG 53-7 location pending proper disposal by Thermasource. Approximately 10 gallons of absorbent material was used to absorb this spill. It was removed and placed into a spill material bin pending proper disposal. Thermasource will contract for proper disposal and supply Los Lobos with documentation of proper disposal

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Signature: David W. Janney	OIL CONSERVATION DIVISION	
Printed Name: David Janney, PG	Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 8/16/2012 Phone: 505.821.1801		

* Attach Additional Sheets If Necessary

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 07, 2012 3:53 PM
To: Chavez, Carl J, EMNRD
Subject: Verbal Release Notification Note to File

To Whom This Message May Concern:

Today around 11:15 a.m., David Janney called to report that 3- 5-gal containers of gear lube were spilled and that a C-141 would be submitted soon.

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: 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

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 13, 2012 7:35 AM
To: 'Janney, David'
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Mr. Janney:

The New Mexico Oil Conservation Division (OCD) accepts the Los Lobos Renewable Power, LLC statement that the excavation was backfilled in this case.

Please include this information along with photos of the excavations in the C-141s for the other spill locations.

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: 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

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Thursday, July 12, 2012 5:28 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Greetings Mr. Chavez:

The 47-7 excavation has been backfilled. Are you asking for a revised C-141 that indicates this has taken place.

Regards,

David

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, July 12, 2012 2:57 PM
To: Cotter, Jeff; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Mr. Cotter, et al.:

The New Mexico Oil Conservation Division (OCD) is in receipt of your final C-141 spill/release report form dated 6/28/2012 with attached manifests documenting the acceptance and disposal of a total of 220 yds. of diesel fuel contaminated soil from several spill locations from the facility to the nearby Butterfield Landfill.

The OCD requires Los Lobos Renewable Power LLC to provide the following information agreed to in a prior communication after receipt of the initial C-141 spill/release report form. The OCD requires the following to complete its review of the release information:

1) C-141 forms for the 55-7, 53-7 and genset locations with the lateral and vertical extent of the impacted soil with volume removed per spill location. Please attach any photos taken to document the excavations.

2) Submit final C-141 forms for the 53-7, 55-7 and genset locations that documents the removal actions at these locations.

Please indicate whether the excavations have been backfilled to complete the corrective actions. The C-141 form Corrective Action(s) section must indicate that backfilling has been completed.

Thank you in advance for your cooperation in this matter. Please contact me if you have questions.

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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"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

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From: Cotter, Jeff [mailto:jeff.cotter@amec.com]
Sent: Monday, July 02, 2012 10:20 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Ladies & Gentlemen:

Please find attached copies of the documents relating to final soil disposal from the diesel release at the LDG 47-7 location. Hard-copies of these documents have been placed in the mail to Carl, Randy at OCD and Mike Smith at BLM. Please let me know if you have any questions.

Jeff Cotter

Environmental Scientist/Project Manager

amec

AMEC Environment & Infrastructure , Inc.
8519 Jefferson St. NE
Albuquerque, NM 87113
Office: 505-821-1801

Fax: 505-821-7371
Mobile: 505-220-9702
www.amec.com

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Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Thursday, July 12, 2012 4:02 PM
To: Chavez, Carl J, EMNRD
Cc: Michelle Henrie; Michael Hayter; Cotter, Jeff
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Thank you Mr. Chavez.

We will submit the required paper work when they other sites have been excavated.

I am checking on the status of the 47-7 excavation.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, July 12, 2012 2:57 PM
To: Cotter, Jeff; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Mr. Cotter, et al.:

The New Mexico Oil Conservation Division (OCD) is in receipt of your final C-141 spill/release report form dated 6/28/2012 with attached manifests documenting the acceptance and disposal of a total of 220 yds. of diesel fuel contaminated soil from several spill locations from the facility to the nearby Butterfield Landfill.

The OCD requires Los Lobos Renewable Power LLC to provide the following information agreed to in a prior communication after receipt of the initial C-141 spill/release report form. The OCD requires the following to complete its review of the release information:

1) C-141 forms for the 55-7, 53-7 and genset locations with the lateral and vertical extent of the impacted soil with volume removed per spill location. Please attach any photos taken to document the excavations.

2) Submit final C-141 forms for the 53-7, 55-7 and genset locations that documents the removal actions at these locations.

Please indicate whether the excavations have been backfilled to complete the corrective actions. The C-141 form Corrective Action(s) section must indicate that backfilling has been completed.

Thank you in advance for your cooperation in this matter. Please contact me if you have questions.

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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From: Cotter, Jeff [mailto:jeff.cotter@amec.com]
Sent: Monday, July 02, 2012 10:20 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Ladies & Gentlemen:

Please find attached copies of the documents relating to final soil disposal from the diesel release at the LDG 47-7 location. Hard-copies of these documents have been placed in the mail to Carl, Randy at OCD and Mike Smith at BLM. Please let me know if you have any questions.

Jeff Cotter

Environmental Scientist/Project Manager

amec

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If you receive this e-mail in error, please notify the sender by reply e-mail and delete and destroy the message.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, July 12, 2012 2:56 PM
To: 'Cotter, Jeff'; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: RE: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

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1) C-141 forms for the 55-7, 53-7 and genset locations with the lateral and vertical extent of the impacted soil with volume removed per spill location. Please attach any photos taken to document the excavations.

2) Submit final C-141 forms for the 53-7, 55-7 and genset locations that documents the removal actions at these locations.

Please indicate whether the excavations have been backfilled to complete the corrective actions. The C-141 form Corrective Action(s) section must indicate that backfilling has been completed.

Thank you in advance for your cooperation in this matter. Please contact me if you have questions.

Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
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Sent: Monday, July 02, 2012 10:20 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD; michaelsmith@blm.gov; Phillips, Haddy L., OSE
Cc: Michael Hayter; Michelle Henrie; Janney, David
Subject: Soil Disposal Documentation Lightning Dock Geothermal (LDG) 47-7 Location

Ladies & Gentlemen:

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Jeff Cotter

Environmental Scientist/Project Manager

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Mobile: 505-220-9702
www.amec.com

July 2, 2012

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

Subject: **Los Lobos Renewable Power, LLC**
Lightning Dock Geothermal Project,
Form C-141 for Well LDG 47-7 Final Soil Disposal
Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment and Infrastructure, Inc. (AMEC) hereby submits for your review, OCD Form C-141 for the above referenced location at the Lightning Dock Geothermal Project located Section 7, Range 19 West, and Township 25 South of Hidalgo County, New Mexico. Final disposal of approximately 220 cubic yards of petroleum hydrocarbon impacted soil has been competed from the LDG 47-7 release site. The soil was disposed of at the City of Deming Butterfield Landfill. Disposal manifests and landfill disposal tickets are attached for your reference and proof of proper disposal.

Thank you for your assistance with this matter. Please feel free to contact me with any questions you may have. I can be reached 505.821.1801 or by email at david.janney@amec.com.

Respectfully submitted,
AMEC Environment & Infrastructure, Inc.

David W. Janney

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

Cc: Randy Dade – OCD Artesia
Michael Smith – BLM Las Cruces

Electronic Copies:

Haddy Phillips – OSE Deming
Michael Hayter – Director – Project Development Cyrq Energy/Los Lobos Renewable Power/ Lightning Dock Geothermal
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

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Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Michael Hayter
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Lightning Dock Geothermal Project LDG 47-7	Facility Type Geothermal power exploration location

Surface Owner Los Lobos Renewable Power, LLC (Lightning Dock Geothermal HI-01, LLC)	Mineral Owner United States Government Federal Geothermal lease NM 34790	API No. 30-023-20016

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	South Line	Feet from the	West Line	County
	7	25S	19W	1155		2366		Hidalgo

Latitude______________ **Longitude**______________

NATURE OF RELEASE

Type of Release: Hydrocarbon/Diesel	Volume of Release Unknown	Volume Recovered: NA
Source of Release: Overfilling of diesel fuel tank on drilling rig during drilling operations	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Cause of problem was overfilling of diesel fuel tank on drilling rig during drilling operations at well LDG 47-7. Overfilling caused fuel to contact the soil and seep into the shallow subsurface. This is estimated to be a minor release of less than five barrels.

Approximately 220 cubic yards of petroleum hydrocarbon impacted soil was disposed of at the City of Deming Butterfield Special Waste Landfill stemming from a diesel fuel release at above reference site. The C-141 form dated 5/29/12 describes the soil excavation and characterization process. Waste Disposal Manifests and landfill disposal tickets are attached to this C-141 as proof of proper disposal.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David W. Janney	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: David Janney, PG		
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 6/28/2012 Phone: 505.821.1801		

* Attach Additional Sheets If Necessary

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - P O BOX 706
DEMING, NM 88031
(575) 546-8845

701

TICKET NUMBER 7906
TIME IN 9:10AM

6-21-2012
9:22AM

C126

CYRQ ENERGY
KEARNS BLD SUITE 600
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101

GENERATOR CODE G4

PRODUCT P18

$5.00 UNCOVERED C1
DRIVER IN G1

72540 lb GROSS
33200 lb TARE
39340 lb NET

DRIVER D3 Doug

WEIGHMASTER Todd Rat

Date: 6/22/2012

701

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc.	801-875-4200
Generators Contact	**Manifest Tracking Number**
Cory Draper	47-7-1

Generator/Mailing Address: 136 South Main st. Salt Lake City, Utah 84101

Generator Site Address: Lightning Dock Geothermal lease (Well 47-7) Cotton City, New Mexico

Name of Waste: Hydrocarbon impacted Soil

Waste Generation Process: Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	~~20yard~~ Dump	~~est. 180 cubic yds~~ 20 yds

Special Handling Instructions and Additional Information: N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Herman	Steve Herman	6/21/2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address: PO Box 1099 Deming NM

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
Tony Armendariz		6/21/12

FACILITY

Discrepancy Indication Space: NET 39340 Ticket 7906

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-21-12

J & J Printing, Inc. • Deming, NM • (575) 546-7385

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. -- O BOX 706
DEMING, NM 88031
(575) 546-8848

702

TICKET NUMBER 7907
TIME IN 9:13AM

6-21-2012
9:26AM

C126
CYRO ENERGY
KEARNS BLD SUITE 600
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101

GENERATOR CODE G4

PRODUCT P18

$5.00 UNCOVERED C1
DRIVER IN G1

82020 lb GROSS
31720 lb TARE
50300 lb NET

DRIVER G2

WEIGHMASTER

W 37

Date: 6/20/2012

702

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc.	
Generators Contact	**Manifest Tracking Number**
Cory Draper	47-7-2

Generator Mailing Address: 136 South Main st. Salt Lake City, Utah 84101

Generator Site Address: Lightning Dock Geothermal LLC (WX11 47-7) Cotton City, New Mexico

Name of Waste: Hydrocarbon impacted soil

Waste Generation Process: Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
~~36~~ 1	~~20 yd~~ Dump	~~est 180 cubic yards~~ 20 yds

Special Handling Instructions and Additional Information

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID # 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Herman	Steve Herman	6/20/2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address: PO Box 1099 Deming, NM.

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
Juan Ortega	J Ota	6-21-12

FACILITY

Discrepancy Indication Space: NET 50300 7907

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-21-12

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06

CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - O BOX 706
DEMING, NM 88031
(575) 546-8848

703

TICKET NUMBER 7908
TIME IN 9:40AM

6-21-2012
9:57AM

C126
CYRQ ENERGY
KEARNS BLD SUITE 600
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101

GENERATOR CODE 84
PRODUCT P18
$5.00 UNCOVERED C1
DRIVER IN G1

77200 lb GROSS
30760 lb TARE
46440 lb NET

DRIVER G3 Arnulfo A

WEIGHMASTER LES Judd Rol

06

703

Date: 6/21/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc	801-875-4200
Generators Contact	**Manifest Tracking Number**
Cory Draper	47-7-3

Generator Mailing Address: 136 South Main st. S.L.C. Utah 84101

Generator Site Address: Lightning Dock Geothermal LLC (well 47-7) Cotton City N.M.

Name of Waste: Hydrocarbon impacted Soil

Waste Generation Process: Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20 yds

Special Handling Instructions and Additional Information: N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID#1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6/21/2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address: PO Box 1099 Deming NM

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
GERALD BACA	Gerald Baca	6/21/12

FACILITY

Discrepancy Indication Space: NET 46440 Ticket# 7908

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-21-12

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - O BOX 706
DEMING, NM 88031
(575) 546-8848

704

TICKET NUMBER 7914 6-21-2012
TIME IN 12:38PM 12:53PM

C126 GENERATOR CODE G4
CYRQ ENERGY
KEARNS BLD SUITE 600 PRODUCT P18
136 SOUTH MAIN STREET
SALT LAKE CTY,UTAH 84101 $5.00 UNCOVERED C1
DRIVER IN G1

86640 lb GROSS
32940 lb TARE
53700 lb NET

DRIVER G3 WEIGHMASTER ~~425~~

704

Date: 6/21/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc	801-875-4200
Generators Contact	**Manifest Tracking Number**
Cory Draper	47-7-4

Generator Mailing Address: 136 South Main st. SLC. Utah 84101

Generator Site Address: Lightning Dock Geothermal LLC (well 47-7) Cotton City N.M.

Name of Waste: Hydrocarbon impacted Soil

Waste Generation Process: Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20 yds

Special Handling Instructions and Additional Information: N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6-21-2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address: PO Box 1099 Deming N.M.

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
Tony Armendariz		6/21/12

FACILITY

Discrepancy Indication Space: NET 53700 7914

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-21-12

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37 5

CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - O BOX 706
DEMING, NM 88031
(575) 546-8848

705

TICKET NUMBER 7913 6-21-2012
TIME IN 12:36PM 12:49PM

C126 GENERATOR CODE G4
CYRO ENERGY
KEARNS BLD SUITE 600 PRODUCT P18
136 SOUTH MAIN STREET
SALT LAKE CTY,UTAH 84101 $5.00 UNCOVERED C1
DRIVER IN 01

80980 lb GROSS
31520 lb TARE
49460 lb NET

DRIVER 03 [signature] WEIGHMASTER ~~125~~ [signature]

37

705

Date: 6/21/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name: Cyrq Energy Inc	Generator's Phone Number: 801-875-4200
Generators Contact: Cory Draper	Manifest Tracking Number: 47-7-5
Generator Mailing Address: 136 South Main St. SLC. Utah 84101	
Generator Site Address: Lightning Rock Geothermal LLC (wcl 47-7) Cotton City N.M.	
Name of Waste: Hydrocarbon Impacted Soil	
Waste Generation Process: Soil Excavation	

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20 yds

Special Handling Instructions and Additional Information: N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6-21-2012

TRANSPORTER

Transporter Name: Rocky Mountain Transportation	Transporter Phone Number: 575-546-1084
Transporter Mailing Address: PO Box 1099 Deming N.M.	
Transporter Acknowledgement of Receipt of Special Waste	

Printed Name	Signature	Date
Ivan Overgaard	Ivan Overgaard	6-21-12

FACILITY

Discrepancy Indication Space: NET 49460 7913

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-21-12

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06

CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - O BOX 706
DEMING, NM 88031
(575) 546-8848

706

TICKET NUMBER 7916 6-21-2012
TIME IN 12:58PM 1:21PM

C126 GENERATOR CODE G4
CYRQ ENERGY
KEARNS BLD SUITE 600 PRODUCT P18
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101 $5.00 UNCOVERED C1
DRIVER IN G1

83140 lb GROSS
30580 lb TARE
52560 lb NET

DRIVER G3 Ronald A

WEIGHMASTER ~~125~~ Todd Rol

06

706

Date: 6/21/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name: Cyrq Energy Inc	Generator's Phone Number: 801-875-4200
Generators Contact: Cory Draper	Manifest Tracking Number: 47-7-6

Generator Mailing Address: 136 South Main St. SLC. Utah 84101

Generator Site Address: Lightning Dock Geothermal LLC (well 47-7) Cotton City

Name of Waste: Hydrocarbon Impacted Soil

Waste Generation Process: Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20 yds

Special Handling Instructions and Additional Information: N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman		6-21-2012

TRANSPORTER

Transporter Name: Rocky Mountain Transportation	Transporter Phone Number: 575-546-1084

Transporter Mailing Address: P.O Box 1099 Deming N.M.

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
GERALD Baca		6/21/12

FACILITY

Discrepancy Indication Space: NET 52560 7916

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson		6-21-12

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - P O BOX 706
DEMING, NM 88031
(575) 546-8848

707

TICKET NUMBER 7920 6-22-2012
TIME IN 8:50AM 9:09AM

C126 GENERATOR CODE G4
CYRQ ENERGY
KEARNS BLD SUITE 600 PRODUCT P18
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101 $5.00 UNCOVERED C1
DRIVER IN G1

67940 lb GROSS
33840 lb TARE
34100 lb NET

DRIVER G3 WEIGHMASTER P1

73

707

Date: 6/22/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc.	801-875-4200
Generators Contact	**Manifest Tracking Number**
Cory Draper	47-7-7

Generator Mailing Address

136 South Main St. SLC Utah 84101

Generator Site Address

Lightning Dock Geothermal LLC (47-7) Cotton City

Name of Waste

Hydrocarbon Impacted Soil

Waste Generation Process

Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20yds

Special Handling Instructions and Additional Information

N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number)

Soil/Diesel IO#1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6-22-2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address

PO Box 1099 Deming N.M.

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
Tony Armendariz	Tony Armendariz	6/22/12

FACILITY

Discrepancy Indication Space

34100 NET

720

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Robinson	6-22-12

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - O BOX 706
DEMING, NM 88031
(575) 546-8848

708

TICKET NUMBER 7921 6-22-2012
TIME IN 9:04AM 9:15AM

C126 GENERATOR CODE G4
CYRQ ENERGY
KEARNS BLD SUITE 600
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101

PRODUCT P18
$5.00 UNCOVERED C1
DRIVER IN G1

77600 lb GROSS
30920 lb TARE
46680 lb NET

DRIVER G3

WEIGHMASTER

31

708

Date: 6/08/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name: Cyrq Energy Inc		Generator's Phone Number: 801-475-4300
Generators Contact: Cory Draper		Manifest Tracking Number: 47-7-8
Generator Mailing Address: 136 South Main St. SLC Utah 84101		
Generator Site Address: Lightning Dock Geothermal LLC (47-7) Cotton City		
Name of Waste: Hydrocarbon Impacted Soil		
Waste Generation Process: Soil Excavation		
Number of Containers: 1	Type of Containers: Dump	Total Weight & Volume of Waste: 20 yds
Special Handling Instructions and Additional Information: N/A		
US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil/Diesel ID# 1993		

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6-22-2012

TRANSPORTER

Transporter Name: Rocky Mountain Transportation	Transporter Phone Number: 575-546-1084
Transporter Mailing Address: PO Box 1099 Deming N.M.	

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
ALEVAUS		6/22/12

FACILITY

Discrepancy Indication Space: 46680 NET 7921

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Robinson	6-22-12

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
305 S. GOLD ST. ~ P.O. BOX 706
DEMING, NM 88031
(575) 546-8848

TICKET NUMBER 7987 ✓ 8-22-2012
TIME IN 12:21PM 12:35PM

C126 GENERATOR CODE CA
CYRQ ENERGY
KEARNS BLD. SUITE 600 PRODUCT F18
136 SOUTH MAIN STREET
SALT LAKE CTY, UTAH 84101 $5.00 UNCOVERED C1
DRIVER IN 81

78490 lb GROSS
33620 lb TARE
44780 lb NET

DRIVER 03 WEIGHMASTER P1

73

709

Date: 6/22/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc	801-875-4800
Generators Contact	**Manifest Tracking Number**
Cory Singler	47-7-9

Generator Mailing Address

136 South Main St. SLC. Utah 84101

Generator Site Address

Lightning Dock Geothermal LLC (47-7) Cotton City

Name of Waste

Hydrocarbon Impacted Soil

Waste Generation Process

Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	80 yds

Special Handling Instructions and Additional Information

N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number)

Soil/Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harman	Steve Harman	6-22-2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address

PO Box 1099 Deming N.M.

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
Tony Armendariz	Tony Armendariz	6/22/12

FACILITY

Discrepancy Indication Space

NET 44780
7927

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Rad	Todd Rad	6-22-12

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21

CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - P BOX 706
710 DEMING, NM 88031
(575) 546-8849

TICKET NUMBER 7980 V 8-22-2012
TIME IN 1:00PM 1:17PM

C126 GENERATOR CODE G4
CYRQ ENERGY
KEARNS BLD SUITE 600 PRODUCT PSB
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101 $1.00 UNCOVERED CY
DRIVER IN G1

81960 LB GROSS
30740 LB TARE
51220 LB NET

DRIVER G3 WEIGHMASTER [illegible]

31

710

Date: 6/22/2012

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name: CYRQ Energy Inc	Generator's Phone Number: 801-875-4200
Generators Contact: Cory Draper	Manifest Tracking Number: 47-7-10
Generator Mailing Address: 136 South Main St. SLC Utah 84101	
Generator Site Address: Lightning Dock GeoThermal LL (47-7) Cotton City	
Name of Waste: Hydrocarbon Impacted Soil	
Waste Generation Process: Soil Excavation	
Number of Containers: 1	Type of Containers: Roll O	Total Weight & Volume of Waste: 80 yds
Special Handling Instructions and Additional Information: N/A	
US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number): Soil / Diesel ID#1993	

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Harmon	Steve Harmon	6-22-2012

TRANSPORTER

Transporter Name: Rocky Mountain Transportation	Transporter Phone Number: 575-546-7084
Transporter Mailing Address: PO Box 1099 Deming N. M.	

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
R Evans		6/22/12

FACILITY

Discrepancy Indication Space: NET 51220 7930

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Rob	6-22-12

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CITY OF DEMING SOLID WASTE DEPT
BUTTERFIELD TRAIL LANDFILL
309 S. GOLD ST. - P. O. BOX 706
DEMING, NM 88031
(575) 546-8848

TICKET NUMBER 7932
TIME IN 1:52PM

6-22-2012
2:13PM

D126
CYRQ ENERGY
KEARNS BLD SUITE 600
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101

GENERATOR CODE G4
PRODUCT P1A
65.00 UNCOVERED C1
DRIVER IN G1

78960 lb GROSS
30480 lb TARE
48580 lb NET

DRIVER C3 [signature]
WEIGH-MASTER [signature]

Date: 6/22/2012

711

BUTTERFIELD TRAIL REGIONAL LANDFILL - SPECIAL WASTE MANIFEST

CITY OF DEMING PO Box 706 Deming, NM 88030 (575) 546-8848

GENERATOR

Generators Name	Generator's Phone Number
Cyrq Energy Inc.	
Generators Contact	**Manifest Tracking Number**
Cory Draper	

Generator Mailing Address
136 South Main st. SLC. Utah 84101

Generator Site Address
Lightning Dock Geothermal LLC (47-7) Cotton City

Name of Waste
Hydrocarbon Impacted Soil

Waste Generation Process
Soil Excavation

Number of Containers	Type of Containers	Total Weight & Volume of Waste
1	Dump	20 yds

Special Handling Instructions and Additional Information
N/A

US DOT Description (including Proper Shipping Name, Non Hazard Class and ID Number)
Soil / Diesel ID# 1993

GENERATORS' CERTIFICATION: I herby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to applicable government regulations. I authorize the BTRL to obtain a sample from any waste shipment.

Printed Name	Signature	Date
Steve Herman	Steve Herman	6-22-2012

TRANSPORTER

Transporter Name	Transporter Phone Number
Rocky Mountain Transportation	575-546-1084

Transporter Mailing Address
PO Box 1099 Deming N.M

Transporter Acknowledgement of Receipt of Special Waste

Printed Name	Signature	Date
GERALD BACA	Gerald Baca	6/22/12

FACILITY

Discrepancy Indication Space
NET# 48580
Ticket # 7932

Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space

Printed Name	Signature	Date
Todd Robinson	Todd Robinson	6-22-12

J & J Printing, Inc. • Deming, NM • (575) 546-7385

Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Wednesday, June 06, 2012 5:58 PM
To: Chavez, Carl J, EMNRD
Cc: Michelle Henrie
Subject: RE: C-141 forms

Good afternoon Mr. Chavez:

Thank you for the opportunity to discuss this and other issues earlier today. As per your request, I have provided written responses to the questions that are presented below.

Please feel free to contact me with any questions you may have.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, June 01, 2012 11:28 AM
To: Janney, David
Cc: Brooks, David K., EMNRD; Dade, Randy, EMNRD
Subject: RE: C-141 forms

David:

Ok, appreciates any lat-long info. that you wish to provide, since this is optional. After reviewing the report with attached C-141 for release north of well 47-7, there appears to be actually 4 release locations with this release estimated to be the largest. Please contact me to discuss.

Since we are communicating on these releases, please bear with me as I state the regulation and any communication issues that OCD has based on the releases, which appear to be "minor releases" with "subsequent notice" requirements.

19.14.36.10 SUBSEQUENT NOTIFICATION: *"Subsequent notification" shall be a complete written report of the incident and shall be submitted to the Santa Fe office of the division within ten days after discovery of the incident.[Recompiled 12/31/01] OCD: initial written report received. NMED criteria appear to be displayed in Table 1, but the OCD Spill/Release criteria should be displayed. Based on OCD criteria, sample "WS-1A-WS-5A" exceeds OCD criteria.*

We believed that the NMED criteria is more protective of the environment and when we researched the disposal of the soil with NMED we found that it would fall under NMED disposal guidelines, not NMOCD guidelines, since it was not a "geothermal exploration or production waste".

In the future, we will include NMOCD criteria and if you wish we can regenerate the table from the 47-7 report with the NMOCD criteria.

19.14.36.11 CONTENT OF NOTIFICATION: All reports of fires, breaks, spills, leaks or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general condition prevailing in the area, including precipitation, temperature and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.[Recompiled 12/31/01] OCD: Since the quantity of loss is "Unknown" but an estimate is provided, the operator has taken good measure to report and the OCD expects that the operator will work conservatively in its corrective actions to remove the spill contents from the ground. The general conditions are unknown because it was a discovery, but the operator knows the time-frame when field activities were undertaken to address "general condition prevailing". The OCD notices the term "Los Lobos intends to remove and properly dispose.....", which may mean that no corrective action is completed based on the releases. This should not be the case.

In the final report and C-141 forms for the 55-7, 53-7 and genset locations we will indicate the lateral and vertical extent of the impacted soil.

The lateral and vertical extent of the impacted soil at the 47-7 location was approximately 51' x 60' at an average depth of approximately 4 ' and in one location down to a depth of approximately 6.5'. All stained soil was removed and the PID was used as another tool to arrive at the limits of the excavation. In the future we will include photographs of the completed excavation.

OCD Conclusions:

If the operator can remove all stained soils from the releases and sampled the base of the excavations based on best professional judgment, i.e., Field PID, olfactory senses, visual staining, lab data, or "hot spot" location, this will work. Any obviously contaminated soils shall be properly disposed with receipt provided from receiving RCRA facility along with photos of the base of excavation and final analytical to the OCD in the final C-141 reports for the releases. Please contact me if you have questions or wish to discuss this further. The OCD feels that re-emplacement of soils that meet the OCD criteria is feasible with appropriate sampling of stockpiled soils that the operator wishes to re-emplace back into the excavations. The hot weather conditions and reasonable allowable time that soils may remain removed and exposed to the weather before re-emplacement may be further discussed as this will assist is remediation of the some of the contaminated soils; however, liner coverage to prevent precipitation from exacerbating the stockpiled soil condition need to be addressed based on the anticipated rainy season.

We will properly dispose of all contaminated soil above the concentration of 100 mg/Kg TPH and provide copies of the landfill manifest or bill-of-lading when the project has been completed. We will also submit final C-141 forms for the 53-7, 55-7 and genset locations along with a single report that documents the removal actions at these locations.

Any removed and stockpiled soil is placed on plastic as stated in the 47-7 report and it will also be covered with plastic if precipitation is anticipated, otherwise it will be allowed to aerate.

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

From: Janney, David [mailto:david.janney@amec.com]
Sent: Friday, June 01, 2012 10:02 AM
To: Chavez, Carl J, EMNRD
Subject: RE: C-141 forms

Good morning Mr. Chavez:

Yes, we can do this but keep in mind that the others are at the well heads and that is why we used the distances from the section lines.

I will double check on the lat-long of the genset release, keep in mind that this was pulled from Google Earth.

Regards,

David

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, June 01, 2012 9:52 AM
To: Janney, David
Subject: RE: Certified mail labels for the LDG 63-7 Form G-112

David:

Good morning. I'm currently reviewing the release reports. One of the three C-141s provided Lat-Long UTM NAD 83 for the release location. I think we need them for each location. However, I did have problems reconverting the UTM NAD 83 values and after reconversion and it is difficult for the OCD to reconvert these units. The decimal places in the lat-long numbers did not appear to be appropriate for reconversion and when I made some decimal location assumptions, I ended up at a location in the Atlantic Ocean. The latitude seemed ok, but the longitude was hectic. LOL!

So, could you please send me lat-long decimal degree locations for the 3 spills. Thank you.

After attempting conversion of: 3558893.25N 704182.21E (UTM NAD83)

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Free Format Type 2 - The first 40 characters of the input data record must
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The following three records are examples of valid input records:

<------------ Columns 1-40 ------------><------------ Columns 41-80----------->
45 45 45.55555 111 11 11.11111          one
25 55.5555555   76 56.6666666           two
34.444444444    98.888888888           three

The following is an example of the output.

NADCON Version 1.02 - NAD 83 datum values converted from NAD 27 datum values
   45 45 45.30043 111 11 13.94256        one
   25 55.5778817   76 56.6404343         two
   34.444524645    98.889238661          three
```

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From: Janney, David [mailto:david.janney@amec.com]
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To: Chavez, Carl J, EMNRD
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Did you also receive the 53-7 LOV response and the 47-7 soil removal action report

Regards

David

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Sent: Thursday, May 31, 2012 10:02 AM
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Subject: RE: Certified mail labels for the LDG 63-7 Form G-112

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Good afternoon Mr. Chavez:

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

May 29, 2012

Subject: **Los Lobos Renewable Power, LLC**
Lightning Dock Geothermal Project,
Form C-141 for Wells LDG 53-7, 55-7, and Genset Area
Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment and Infrastructure, Inc. (AMEC) hereby submits for your review, OCD Form C-141 for each of the above referenced locations at the Lightning Dock Geothermal Project located Section 7, Range 19 West, and Township 25 South of Hidalgo County, New Mexico. Apparently, minor releases of diesel fuel occurred while drilling crews were engaged refueling operations on the drilling rig or other pieces of equipment on the locations. These Forms were prepared in accordance with guidelines published in New Mexico Administrative Code (NMAC) 19.14.36 as Notices of Initial Report for each of these releases.

Los Lobos intends to remove and properly dispose of petroleum hydrocarbon-impacted soil at each of these locations and when these removals have been completed, the appropriate documentation will be submitted to you. Please feel free to contact me with any questions you may have about this matter at 505.821.1801 or by email at david.janney@amec.com.

Respectfully submitted,
AMEC Environment & Infrastructure, Inc.

David W. Janney

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

Cc: Randy Dade – OCD Artesia
Michael Smith – BLM Las Cruces
Charles Jackson – OSE Deming
Michael Hayter – Director – Project Development Cyrq Energy/Los Lobos Renewable Power/ Lightning Dock Geothermal
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Michael Hayter
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Lightning Dock Geothermal Project, LDG 53-7	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette Inc. P.O. Box 1618, Roswell, NM 88202	United States Government Federal Geothermal lease NM 34790	30-023-20017

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the		Feet from the		County
G	7	25S	19W	1525	North Line	2228	East Line	Hidalgo

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Hydrocarbon/Diesel	Volume of Release Unknown	Volume Recovered: NA
Source of Release: Overfilling of diesel fuel tank on drilling rig during drilling operations	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Cause of problem was overfilling of diesel fuel tank on drilling rig during drilling operations at well LDG 53-7. Overfilling caused fuel to contact the soil and seep into the shallow subsurface. The release is estimate to be a minor and less than two barrels.

Describe Area Affected and Cleanup Action Taken.* - During drilling operations for LDG 53-7, a stained area was discovery on the soil surface. The vertical and horizontal extent of the area impacted are yet to be determined.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David Janney, PG Printed Name: David Janney, PG	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com Date: 5/29/2012 Phone: 505.821.1801	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary

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Form C-141
Revised August 8, 2011

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Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Lightning Dock Geothermal Project LDG 55-7	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette Inc. P.O. Box 1618, Roswell, NM 88202	United States Government Federal Geothermal lease NM 34790	

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Unit Letter	Section	Township	Range	Feet from the		Feet from the		County
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Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Hydrocarbon/Diesel	Volume of Release Unknown	Volume Recovered: NA
Source of Release: Overfilling of diesel fuel tank on drilling rig during drilling operations	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Cause of problem was overfilling of diesel fuel tank on drilling rig during drilling operations at well LDG 55-7. Overfilling caused fuel to contact the soil and seep into the shallow subsurface. The release is estimated to be minor and less than one barrel.

Describe Area Affected and Cleanup Action Taken.* - During drilling operations for LDG 55-7, a stained area was discovery on the soil surface. The vertical and horizontal extent of the area impacted are yet to be determined.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David Janney, PG	OIL CONSERVATION DIVISION	
Printed Name: David Janney, PG	Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 5/29/2012 Phone: 505.821.1801		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Michael Hayter
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Lightning Dock Geothermal Area -Genset	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Rosette Inc. P.O. Box 1618, Roswell, NM 88202	United States Government Federal Geothermal lease NM 34790	N/A

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the		Feet from the		County
G	7	25S	19W	NA		NA		Hidalgo

Latitude: 3558893.25N Longitude: 704182.21 m E, UTM NAD 83

NATURE OF RELEASE

Type of Release: Hydrocarbon/Diesel Fuel	Volume of Release Unknown	Volume Recovered: NA
Source of Release: Overfilling of diesel fuel tank on drilling rig during drilling operations	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Cause of problem was overfilling of diesel fuel tank near the genset. Overfilling caused fuel to contact the soil and seep into the shallow subsurface. The release is estimated to be less than one barrel.

Describe Area Affected and Cleanup Action Taken.* - Following release and demobilization of the drilling rig, a stained area was discovery on the soil surface. The vertical and horizontal extent of the area impacted are yet to be determined. The release is minor and estimated to be less than one barrel.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David Janney, PG Printed Name: David Janney, PG	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com Date: 5/29/2012 Phone: 505.821.1801	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary

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

May 29, 2012

Subject: **Los Lobos Renewable Power, LLC**
Lightning Dock Geothermal Project, Well LDG 47-7
Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment and Infrastructure, Inc. (AMEC) hereby submits this report documenting soil excavation activities at the Lightning Dock Geothermal Project's well LDG 47-7. The well is located in the SE ¼ of the SW ¼ of Section 7 in Range 19 West and Township 25 South of Hidalgo County, New Mexico. According to available information, the soil surface in the area north of the LDG 47-7 wellhead was found to be stained with what appeared to be diesel fuel following the demobilization of the drilling rig in late April 2012. According to the drilling crew, the release was caused by over-filling fuel tanks on the drilling related equipment and the release was estimated to have been "minor" or less than 200 gallons or 5 barrels. This report was prepared in accordance with guidelines published in New Mexico Administrative Code (NMAC) 19.14.36. It includes a brief description of the soil excavation process, pertinent photo documentation collected during field activities, and the analytical results for the soil samples collected during the course of field activities.

SCOPE OF WORK

The scope of work described below was conducted in accordance with NMAC 19.14.36 and the New Mexico Oil Conservation Division (OCD) guidance document *New Mexico Pit Closure Plan for Oil and Gas Drilling Locations*. The scope of work for the excavation activities included:

- Excavation, stockpiling and sampling of between 163 to 181 cubic yards (cy) of soil from the stained area;
- Collection and laboratory analysis of soil removal confirmation samples obtained from the bottom of the excavation and disposal profiling samples from the stockpile of excavated soil;
- Reporting analytical results and describing field activities.

FIELD ACTIVITIES

Between May 9 and May 10, 2012, Los Lobos or its subcontractors excavated under AMEC direction, between 163 and 181 cy of petroleum hydrocarbon impacted soil located immediately north of LDG 47-7. During excavation activities, soil removal was

concentrated in areas of observed surface and subsurface staining and soils exhibiting olfactory signs of hydrocarbon impacts.

Excavation activities were performed using a track mounted excavator (Hitachi Model EX200LC). Soil was transferred to a dump truck and staged at a temporary disposal area located near LDG 47-7. The soil was placed on a 40-foot by 10-foot section of 6-mil plastic sheeting pending laboratory analytical results and subsequent disposal at a permitted landfill. Soil encountered consisted of sandy gravel material to an approximate depth of 1.5 feet below ground surface (bgs) followed by clay soil to a depth of approximately 7 feet bgs.

During excavation, soil was monitored for visual and olfactory indications of petroleum hydrocarbons and screened for volatile organic compounds using a photo-ionization detector (PID) with the heated headspace methodology (EPA Method 5021). These methods were in used in combination to aide delineation of the vertical and horizontal limits of the impacted area. Heated headspace reading ranged from 0.9 parts per million (ppm) to 467 ppm. The excavation was advanced to an approximate depth of 3.5 to 4 feet bgs with the exception of the northern most portion of the excavation that was advanced to a depth of approximately 6.5 to 7 feet bgs. A photographic log of excavation activities is presented as Appendix A.

Following the completion of excavation activities, fourteen soils samples (samples CS-1 to CS-14) were collected from the bottom of the excavation at a sample density of one sample per 100 square feet of excavated area. AMEC also collected two five-point composite samples from the excavated soil stockpile (WS-1A to WS-5A and WS-1B to WS-5B). Sample locations are shown on Figure 1. All samples were collected in properly labeled 4-ounce glass sample jars provided by the laboratory, placed on ice in an insulated cooler, and transported under standard chain-of-custody procedures to Trace Analysis Laboratory, Inc. (Trace) in El Paso, Texas.

The removal confirmation samples were analyzed for total petroleum hydrocarbons (TPH), diesel range organics (DRO) and gasoline range organics (GRO) by EPA Methods 8021B and 8015D respectively. The landfill disposal profile samples were analyzed for TPH, benzene, toluene, ethyl benzene, and xylene (collectively BTEX) by EPA Method 8021B as required by Butterfield Landfill. As instructed by AMEC, the fourteen confirmation samples collected from the bottom of the excavation were composited by Trace into seven composite samples.

ANALYTICAL RESULTS

Analytical results for the samples collected from the removal confirmation samples in the bottom of the excavation indicated concentrations of TPH below laboratory detection limits with the exception of composite sample CS-4-CS-5, which had a concentration of 87.2 milligrams per kilogram (mg/Kg) DRO and 2.14 mg/Kg GRO (TPH concentration of 89.34 mg/Kg). The TPH concentration is below the 100 mg/Kg New Mexico Environmental Department (NMED) remedial standard.

Analytical results of stockpile samples obtained for landfill disposal profiling indicated concentrations of 3,460 mg/Kg DRO and 23.9 mg/kg of GRO (total TPH concentration

of 3483.9 mg/kg). Benzene was not detected above the laboratory reporting limit of 0.0200 mg/Kg in sample WS-1A-WS-5A; however, toluene was detected at a concentration of 0.0469 mg/Kg, ethylbenzene was detected at a concentration 0.213 mg/Kg and xylene was detected at a concentration of 0.383 mg/Kg. The laboratory analytical report is presented as Appendix B.

DISCUSSION

A TPH concentration of 89.34 mg/Kg was detected in sample CS-4-CS-5, however this concentration is below the NMED remedial standard of 100 mg/Kg. Confirmatory soil sampling results indicate the excavation can be backfilled and compacted to grade with clean soil. Additionally, the excavated and profiled soil will be transported and disposed of at the Butterfield Landfill in Deming, New Mexico in accordance with applicable regulations.

LIMITATIONS

The scope of work for this report is intended to provide documentation of soil excavation activities conducted at LDG 47-7. This work was performed in a manner consistent with the level of care and skill ordinarily exercised by other members of AMEC's profession practicing in the same locality, under similar conditions at the date the services were provided. Any conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions can vary between or beyond the data evaluated. AMEC makes no other representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of the services provided.

Respectfully submitted,
AMEC Environment & Infrastructure, Inc.

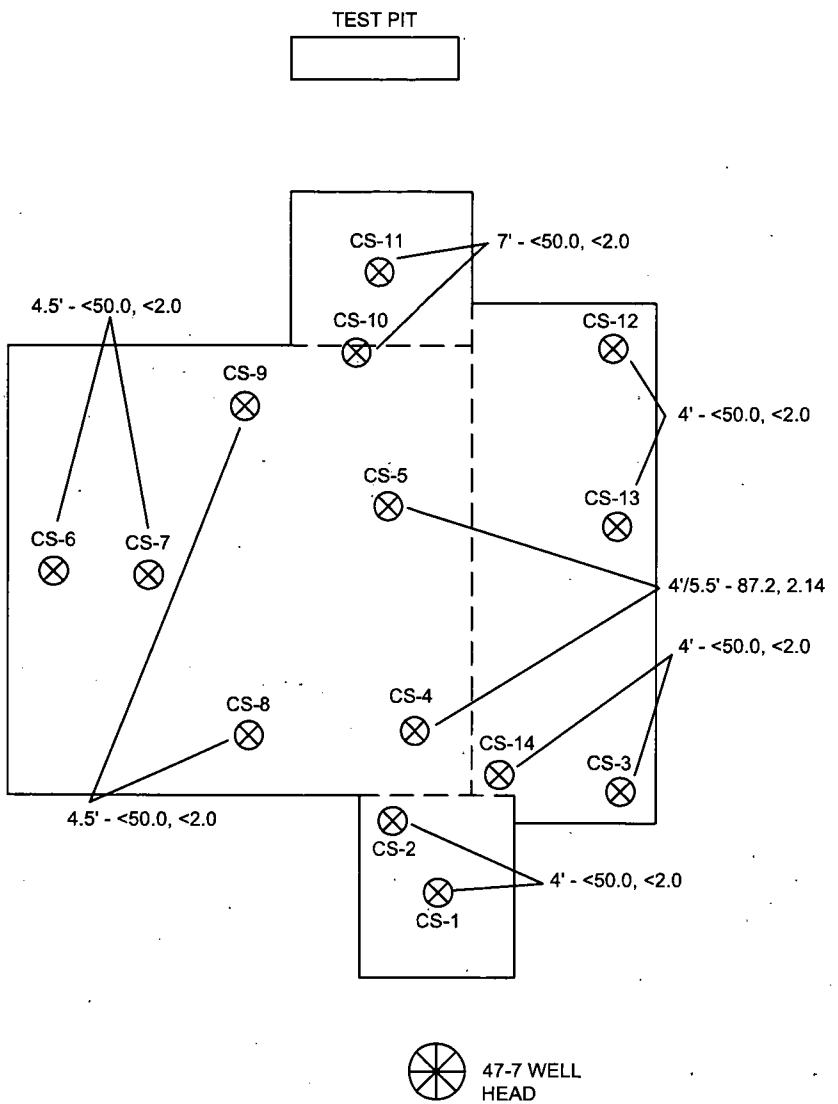
Gabriel Acevedo
Staff Geologist

Reviewed by:

David Janney, PG
Project Manager and Agent for Los Lobos Renewable Power, LLC

Cc: Randy Dade – OCD Artesia
Michael Smith – BLM Las Cruces
Charles Jackson – OSE Deming
Michael Hayter – Director – Project Development Cyrq Energy/Los Lobos Renewable Power/ Lightning Dock Geothermal
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

FIGURE



LEGEND:

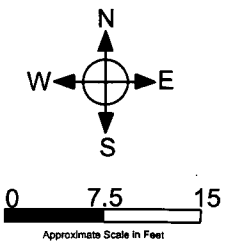
= SAMPLE LOCATION

= WELL HEAD

COMPOSITE SAMPLE LOCATIONS
4' - DRO mg/Kg, GRO mg/Kg

DRO = DIESEL RANGE ORGANIC COMPOUNDS

GRO = GASOLINE RANGE ORGANIC COMPOUNDS



CLIENT LOGO: Cyrq energy	CLIENT: CYRC ENERGY	DWN BY: KWJ	PROJECT: LIGHTNING DOCK GEOTHERMAL HI-01, LLC	REV. NO.: -
		CHK'D BY: DWJ		DATE: 5/23/2012
AMEC Environment & Infrastructure 3519 Jefferson Rd NE Albuquerque, New Mexico 87113	amec	DATUM: N/A	TITLE: LDG 47-7 SPILL REMEDIATION EXCAVATION SAMPLE LOCATIONS	PROJECT NO: 1151700102.03
		PROJECTION: N/A		FIGURE No. 1
		SCALE: AS SHOWN		

G:\CAD\keith_johnston\PROJECTS\1151700102\well_47-7_samples\fig_1.dwg May 29,2012 3:15pm

TABLE

Table 1
Summary of Laboratory Analytical Results
LDG 47-7 Hidalgo County, New Mexico

Sample Number		Sample Date	Diesel Range Organics (DRO) (mg/Kg)	Gasoline Range Organics (GRO) (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/kg)	Ethyl Benzene (mg/Kg)	Xylene(mg/Kg)
CS-1-CS-2	4	May 9, 2012	<50.0	<2.00	NA	NA	NA	NA
CS-3-CS-14	4	May 9, 2012	<50.0	<2.00	NA	NA	NA	NA
CS-4-CS-5	4/5.5	May 9, 2012	**87.2**	**2.14**	NA	NA	NA	NA
CS-6-CS-7	4.5	May 10, 2012	<50.0	<2.00	NA	NA	NA	NA
CS-8-CS-9	4.5	May 10, 2012	<50.0	<2.00	NA	NA	NA	NA
CS-10-CS-11	7	May 10, 2012	<50.0	<2.00	NA	NA	NA	NA
CS-12-CS-13	4	May 10, 2012	<50.0	<2.00	NA	NA	NA	NA
WS-1A-WS-5A	--	May 10, 2012	**3460**	2.14	<0.0200	0.0469	0.213	0.383
WS-1B-WS-5B	--	May 10, 2012	1360	58	<0.0200	0.02	0.07	0.29
NMED TPH Screening Guidelines[1]	--	February 2012	1800	NVP	NVP	NVP	NVP	NVP
NMED Soil Screening Levels[2]	--	February 2012	NVP	NVP	84.7	57,700	378.0	3980.0

Note:
NA - Not Analyzed
NVP - No Value Provided
[1] Industrial Direct Exposure
[2] Risk Based Soil Screening Level for Industrial/Occupational

APPENDIX A

Photographic Log

Photo 1: View of hydrocarbon staining in initial test pit (looking northwest).

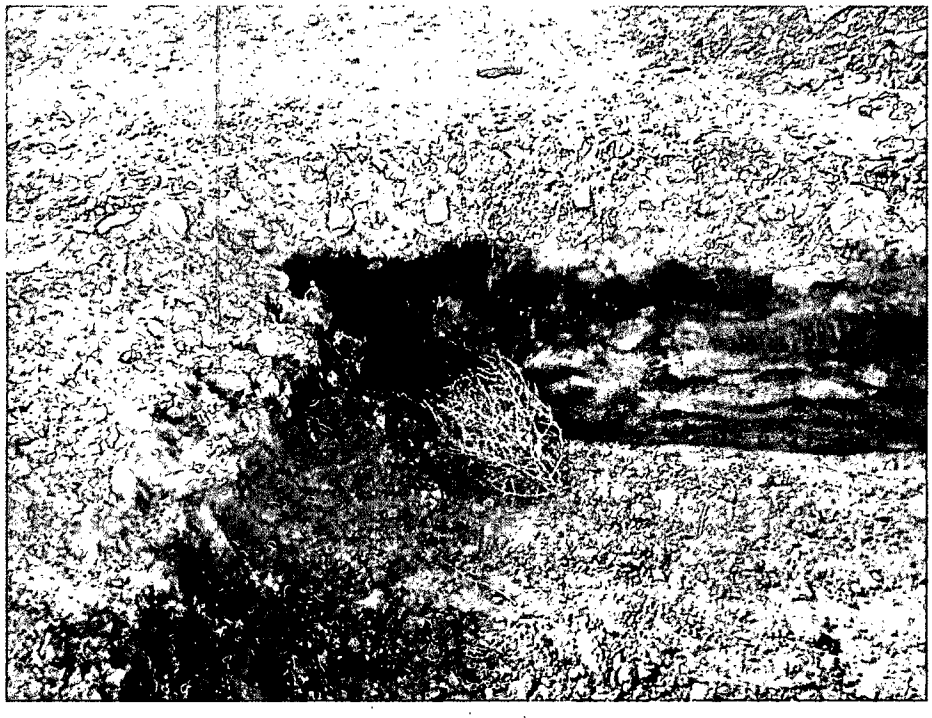


Photo 2: Additional view of stained subsurface soils (looking north).

Photo 3: View of surface staining (looking east).

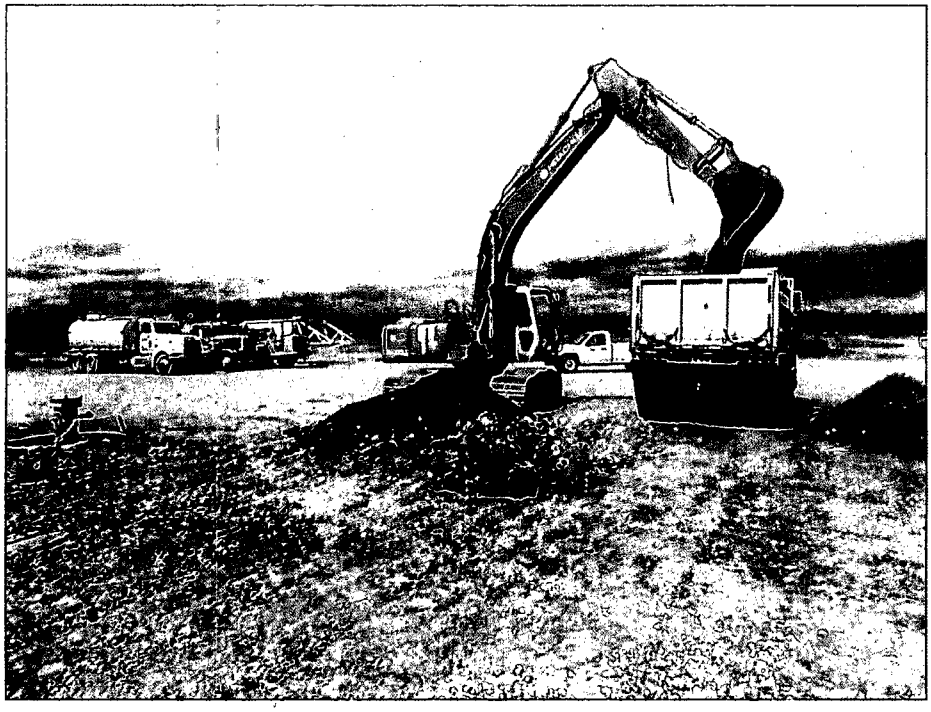


Photo 4: View of excavation process. Soils were placed in a dump truck and staged on site (looking northwest).

Photo 5: View of excavation of soils (looking west).

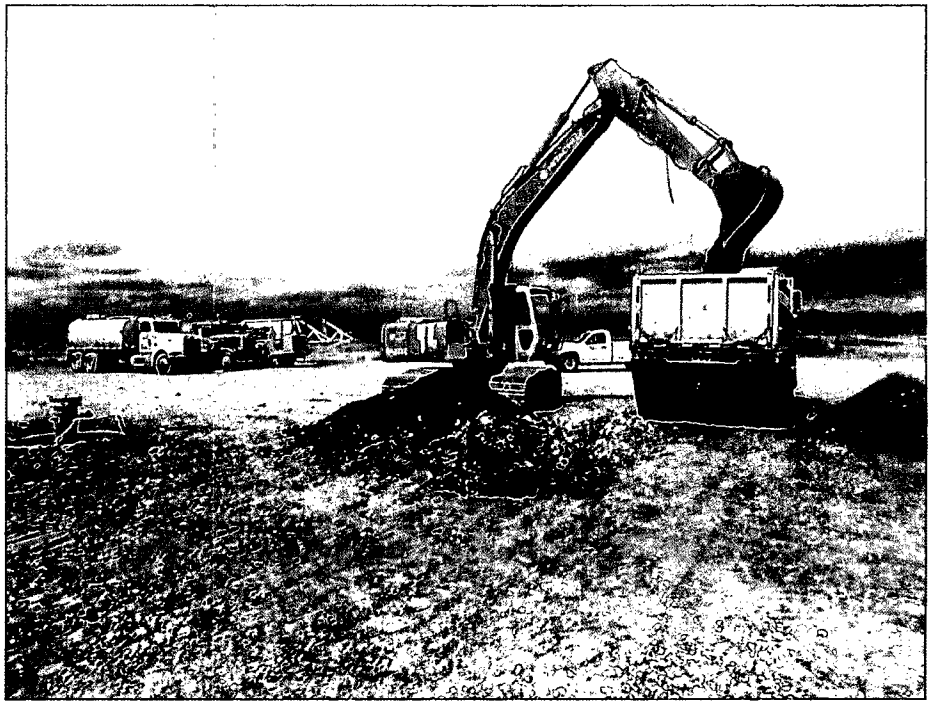


Photo 6: View of excavated area near completion (looking northwest).

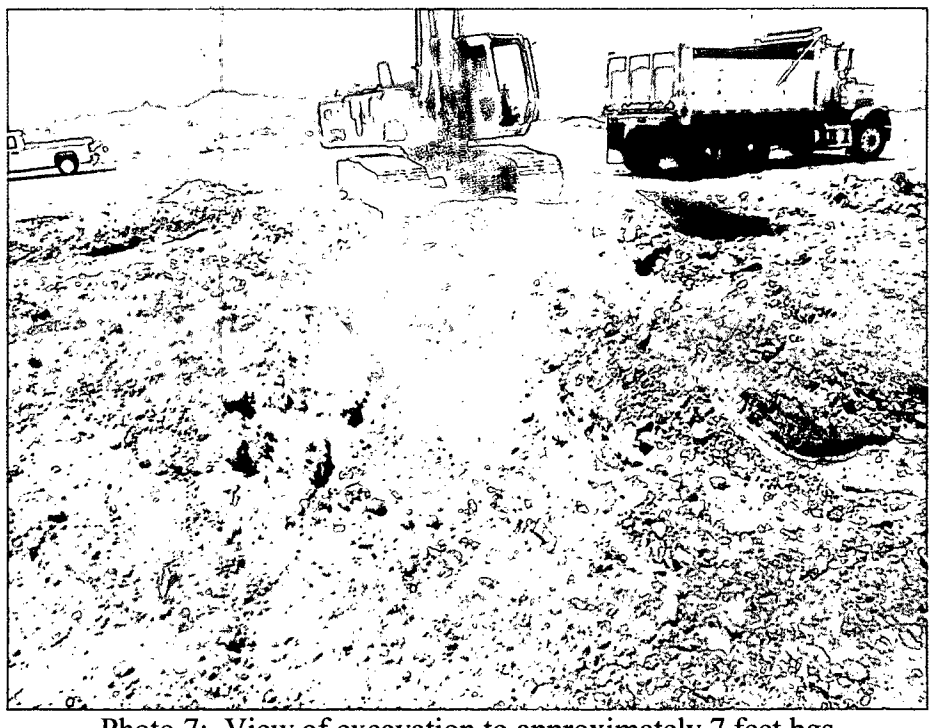


Photo 7: View of excavation to approximately 7 feet bgs in heavily impacted area (looking west).

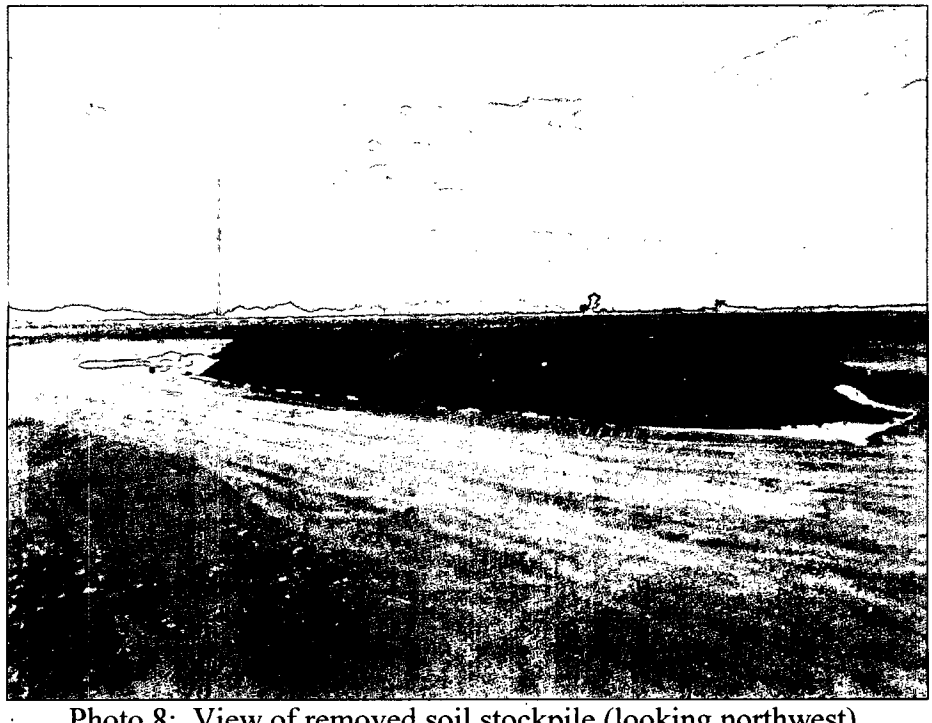


Photo 8: View of removed soil stockpile (looking northwest).

APPENDIX B

Laboratory Analytical Results

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 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report
(Corrected Report)

David Janney
AMEC Environment & Infrastructure-Albuquerque
8519 Jefferson
Albuquerque, NM, 87113

Report Date: May 29, 2012

Work Order: 12051404

Project Location: Lordsburg, NM
Project Name: Lightning Dock (Area 47-7)
Project Number: Lightning Dock (Area 47-7)

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
297207	CS-1-CS-2 (4')	soil	2012-05-09	14:43	2012-05-11
297208	CS-3-CS-14 (4')	soil	2012-05-09	14:55	2012-05-11
297209	CS-4-CS-5 (4/5.5')	soil	2012-05-09	14:58	2012-05-11
297210	CS-6-CS-7 (4.5)	soil	2012-05-10	11:58	2012-05-11
297211	CS-8-CS-9 (4.5')	soil	2012-05-10	12:06	2012-05-11
297212	CS-10-CS-11 (7')	soil	2012-05-10	13:35	2012-05-11
297213	CS-12-CS-13 (4')	soil	2012-05-10	13:52	2012-05-11
297214	WS-1A-WS-5A	soil	2012-05-10	14:31	2012-05-11
297295	WS-1B-5B	soil	2012-05-10	14:31	2012-05-11

Report Corrections (Work Order 12051404)

- Added Composite sample 297295 05/23/2012.

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 28 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

Report Contents

Case Narrative

Samples for project Lightning Dock (Area 47-7) were received by TraceAnalysis, Inc. on 2012-05-11 and assigned to work order 12051404. Samples for work order 12051404 were received intact at a temperature of 4.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	77356	2012-05-14 at 15:07	91186	2012-05-14 at 15:07
BTEX	S 8021B	77610	2012-05-23 at 11:34	91476	2012-05-23 at 11:34
TPH DRO - NEW	S 8015 D	77384	2012-05-14 at 17:00	91214	2012-05-15 at 19:36
TPH DRO - NEW	S 8015 D	77709	2012-05-24 at 12:30	91601	2012-05-29 at 10:55
TPH GRO	S 8015 D	77391	2012-05-15 at 14:25	91226	2012-05-15 at 14:25
TPH GRO	S 8015 D	77654	2012-05-24 at 14:04	91529	2012-05-24 at 14:04

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 12051404 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: 297207 - CS-1-CS-2 (4')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			127	mg/Kg	1	100	127	75.4 - 130

Sample: 297207 - CS-1-CS-2 (4')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Jb	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	70 - 130

Sample: 297208 - CS-3-CS-14 (4')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	75.4 - 130

Sample: 297208 - CS-3-CS-14 (4')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Jb	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	70 - 130
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	70 - 130

Sample: 297209 - CS-4-CS-5 (4/5.5')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**87.2**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	75.4 - 130

Sample: 297209 - CS-4-CS-5 (4/5.5')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	**2.14**	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 297210 - CS-6-CS-7 (4.5)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			121	mg/Kg	1	100	121	75.4 - 130

Sample: 297210 - CS-6-CS-7 (4.5)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Jb	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 297211 - CS-8-CS-9 (4.5')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	U	1	<50.0		mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	75.4 - 130

Sample: 297211 - CS-8-CS-9 (4.5')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
GRO	Jb	1	<2.00		mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 297212 - CS-10-CS-11 (7')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			125	mg/Kg	1	100	125	75.4 - 130

Sample: 297212 - CS-10-CS-11 (7')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	70 - 130

Sample: 297213 - CS-12-CS-13 (4')

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			123	mg/Kg	1	100	123	75.4 - 130

Sample: 297213 - CS-12-CS-13 (4')

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70 - 130

Sample: 297214 - WS-1A-WS-5A

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	91186	Date Analyzed:	2012-05-14	Analyzed By:	ZLM
Prep Batch:	77356	Sample Preparation:	2012-05-14	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	**0.0469**	mg/Kg	1	0.0200
Ethylbenzene		1	**0.213**	mg/Kg	1	0.0200
Xylene		1	**0.383**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1	2.00	105	70 - 130

Sample: 297214 - WS-1A-WS-5A

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91214	Date Analyzed:	2012-05-15	Analyzed By:	DS
Prep Batch:	77384	Sample Preparation:	2012-05-14	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**3460**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	205	mg/Kg	1	100	205	75.4 - 130

Sample: 297214 - WS-1A-WS-5A

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91226	Date Analyzed:	2012-05-15	Analyzed By:	ZLM
Prep Batch:	77391	Sample Preparation:	2012-05-15	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**23.9**	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.57	mg/Kg	1	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 297295 - WS-1B-5B

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	91476	Date Analyzed:	2012-05-23	Analyzed By:	ZLM
Prep Batch:	77610	Sample Preparation:	2012-05-23	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	**0.0286**	mg/Kg	1	0.0200
Ethylbenzene		1	**0.0700**	mg/Kg	1	0.0200
Xylene		1	**0.291**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

Sample: 297295 - WS-1B-5B

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	91601	Date Analyzed:	2012-05-29	Analyzed By:	CM
Prep Batch:	77709	Sample Preparation:	2012-05-24	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**1360**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		223	mg/Kg	1	100	223	75.4 - 130

Sample: 297295 - WS-1B-5B

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	91529	Date Analyzed:	2012-05-24	Analyzed By:	ZLM
Prep Batch:	77654	Sample Preparation:	2012-05-24	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,Qs	1	**57.9**	mg/Kg	2	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.08	mg/Kg	2	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			2.57	mg/Kg	2	2.00	128	70 - 130

Method Blanks

Method Blank (1) QC Batch: 91186

QC Batch: 91186 Date Analyzed: 2012-05-14 Analyzed By: ZLM
Prep Batch: 77356 QC Preparation: 2012-05-14 Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	0.00980	mg/Kg	0.02
Xylene		1	0.0244	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Method Blank (1) QC Batch: 91214

QC Batch: 91214 Date Analyzed: 2012-05-15 Analyzed By: DS
Prep Batch: 77384 QC Preparation: 2012-05-14 Prepared By: DS

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.50	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	75.4 - 130

Method Blank (1) QC Batch: 91226

QC Batch: 91226 Date Analyzed: 2012-05-15 Analyzed By: ZLM
Prep Batch: 77391 QC Preparation: 2012-05-15 Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	1.91	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 91476

QC Batch: 91476 Date Analyzed: 2012-05-23 Analyzed By: ZLM
Prep Batch: 77610 QC Preparation: 2012-05-23 Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	0.00990	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.81	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Method Blank (1) QC Batch: 91529

QC Batch: 91529 Date Analyzed: 2012-05-24 Analyzed By: ZLM
Prep Batch: 77654 QC Preparation: 2012-05-24 Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.378	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

Method Blank (1) QC Batch: 91601

QC Batch: 91601 | Date Analyzed: 2012-05-29 | Analyzed By: CM
Prep Batch: 77709 | QC Preparation: 2012-05-24 | Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.50	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	75.4 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 91186 | Date Analyzed: 2012-05-14 | Analyzed By: ZLM
Prep Batch: 77356 | QC Preparation: 2012-05-14 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.99	mg/Kg	1	2.00	<0.00365	99	75.4 - 120
Toluene		1	2.03	mg/Kg	1	2.00	<0.00816	102	74.9 - 120
Ethylbenzene		1	2.01	mg/Kg	1	2.00	0.0098	100	78.1 - 120
Xylene		1	6.10	mg/Kg	1	6.00	0.0244	101	77.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.02	mg/Kg	1	2.00	<0.00365	101	75.4 - 120	2	20
Toluene		1	2.07	mg/Kg	1	2.00	<0.00816	104	74.9 - 120	2	20
Ethylbenzene		1	2.03	mg/Kg	1	2.00	0.0098	101	78.1 - 120	1	20
Xylene		1	6.16	mg/Kg	1	6.00	0.0244	102	77.3 - 120	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.92	mg/Kg	1	2.00	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.01	2.01	mg/Kg	1	2.00	100	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 91214 | Date Analyzed: 2012-05-15 | Analyzed By: DS
Prep Batch: 77384 | QC Preparation: 2012-05-14 | Prepared By: DS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	211	mg/Kg	1	250	<6.50	84	73.2 - 118

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	217	mg/Kg	1	250	<6.50	87	73.2 - 118	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	119	121	mg/Kg	1	100	119	121	75.4 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 91226 | Date Analyzed: 2012-05-15 | Analyzed By: ZLM
Prep Batch: 77391 | QC Preparation: 2012-05-15 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	21.2	mg/Kg	1	20.0	1.91	106	68.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	20.0	mg/Kg	1	20.0	1.91	100	68.9 - 120	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	1.95	mg/Kg	1	2.00	94	98	70 - 130
4-Bromofluorobenzene (4-BFB)	2.18	2.11	mg/Kg	1	2.00	109	106	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 91476 | Date Analyzed: 2012-05-23 | Analyzed By: ZLM
Prep Batch: 77610 | QC Preparation: 2012-05-23 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.94	mg/Kg	1	2.00	<0.00365	97	75.4 - 120

continued ...

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	1.94	mg/Kg	1	2.00	<0.00816	97	74.9 - 120
Ethylbenzene		1	1.95	mg/Kg	1	2.00	<0.00560	98	78.1 - 120
Xylene		1	5.77	mg/Kg	1	6.00	0.0099	96	77.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.93	mg/Kg	1	2.00	<0.00365	96	75.4 - 120	0	20
Toluene		1	1.89	mg/Kg	1	2.00	<0.00816	94	74.9 - 120	3	20
Ethylbenzene		1	1.91	mg/Kg	1	2.00	<0.00560	96	78.1 - 120	2	20
Xylene		1	5.63	mg/Kg	1	6.00	0.0099	94	77.3 - 120	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.91	1.83	mg/Kg	1	2.00	96	92	70 - 130
4-Bromofluorobenzene (4-BFB)	2.04	1.93	mg/Kg	1	2.00	102	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 91529 | Date Analyzed: 2012-05-24 | Analyzed By: ZLM
Prep Batch: 77654 | QC Preparation: 2012-05-24 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.6	mg/Kg	1	20.0	0.378	88	68.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.5	mg/Kg	1	20.0	0.378	88	68.9 - 120	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.88	mg/Kg	1	2.00	99	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.96	1.95	mg/Kg	1	2.00	98	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 91601 | Date Analyzed: 2012-05-29 | Analyzed By: CM
Prep Batch: 77709 | QC Preparation: 2012-05-24 | Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	270	mg/Kg	1	250	<6.50	108	73.2 - 118

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	283	mg/Kg	1	250	<6.50	113	73.2 - 118	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	124	126	mg/Kg	1	100	124	126	75.4 - 130

Matrix Spike (MS-1) Spiked Sample: 297281

QC Batch: 91186 | Date Analyzed: 2012-05-14 | Analyzed By: ZLM
Prep Batch: 77356 | QC Preparation: 2012-05-14 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.11	mg/Kg	1	2.00	<0.00365	106	37.6 - 142
Toluene		1	2.27	mg/Kg	1	2.00	<0.00816	114	38.6 - 153
Ethylbenzene		1	2.31	mg/Kg	1	2.00	<0.00560	116	36.7 - 172
Xylene		1	7.12	mg/Kg	1	6.00	0.0082	118	36.7 - 173

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.92	mg/Kg	1	2.00	<0.00365	96	37.6 - 142	9	20
Toluene		1	2.06	mg/Kg	1	2.00	<0.00816	103	38.6 - 153	10	20
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00560	104	36.7 - 172	10	20
Xylene		1	6.37	mg/Kg	1	6.00	0.0082	106	36.7 - 173	11	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.94	mg/Kg	1	2	97	97	70 - 130

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	1.93	1.94	mg/Kg	1	2	96	97	70 - 130

Matrix Spike (MS-1) Spiked Sample: 297207

QC Batch: 91214 | Date Analyzed: 2012-05-15 | Analyzed By: DS
Prep Batch: 77384 | QC Preparation: 2012-05-14 | Prepared By: DS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	247	mg/Kg	1	250	9.55	95	75.4 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	251	mg/Kg	1	250	9.55	96	75.4 - 130	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	122	122	mg/Kg	1	100	122	122	38.4 - 143

Matrix Spike (MS-1) Spiked Sample: 297213

QC Batch: 91226 | Date Analyzed: 2012-05-15 | Analyzed By: ZLM
Prep Batch: 77391 | QC Preparation: 2012-05-15 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.4	mg/Kg	1	20.0	<0.359	77	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.9	mg/Kg	1	20.0	<0.359	80	70 - 130	3	20

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

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.74	mg/Kg	1	2	86	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.97	2.02	mg/Kg	1	2	98	101	70 - 130

Matrix Spike (MS-1) Spiked Sample: 297295

QC Batch: 91476 | Date Analyzed: 2012-05-23 | Analyzed By: ZLM
Prep Batch: 77610 | QC Preparation: 2012-05-23 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.88	mg/Kg	1	2.00	<0.00365	94	37.6 - 142
Toluene		1	2.01	mg/Kg	1	2.00	0.0286	99	38.6 - 153
Ethylbenzene		1	2.12	mg/Kg	1	2.00	0.07	102	36.7 - 172
Xylene		1	6.42	mg/Kg	1	6.00	0.291	102	36.7 - 173

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.04	mg/Kg	1	2.00	<0.00365	102	37.6 - 142	8	20
Toluene		1	2.07	mg/Kg	1	2.00	0.0286	102	38.6 - 153	3	20
Ethylbenzene		1	2.37	mg/Kg	1	2.00	0.07	115	36.7 - 172	11	20
Xylene		1	6.94	mg/Kg	1	6.00	0.291	111	36.7 - 173	8	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.90	1.99	mg/Kg	1	2	95	100	70 - 130
4-Bromofluorobenzene (4-BFB)	2.24	2.40	mg/Kg	1	2	112	120	70 - 130

Matrix Spike (MS-1) Spiked Sample: 297295

QC Batch: 91529 | Date Analyzed: 2012-05-24 | Analyzed By: ZLM
Prep Batch: 77654 | QC Preparation: 2012-05-24 | Prepared By: ZLM

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	59.5	mg/Kg	2	20.0	57.9	8	70 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qr	Qr	1	76.6	mg/Kg	2	20.0	57.9	94	70 - 130	25	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.76	1.74	mg/Kg	2	2	88	87	70 - 130
4-Bromofluorobenzene (4-BFB)	2.32	2.30	mg/Kg	2	2	116	115	70 - 130

Matrix Spike (MS-1) Spiked Sample: 297295

QC Batch: 91601 | Date Analyzed: 2012-05-29 | Analyzed By: CM
Prep Batch: 77709 | QC Preparation: 2012-05-24 | Prepared By: CM

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	1	1480	mg/Kg	1	250	1360	48	75.4 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs	Qs	1	1440	mg/Kg	1	250	1360	32	75.4 - 130	3	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	205	193	mg/Kg	1	100	205	193	38.4 - 143

Calibration Standards

Standard (CCV-1)

QC Batch: 91186 | Date Analyzed: 2012-05-14 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.101	101	80 - 120	2012-05-14
Toluene		1	mg/kg	0.100	0.105	105	80 - 120	2012-05-14
Ethylbenzene		1	mg/kg	0.100	0.102	102	80 - 120	2012-05-14
Xylene		1	mg/kg	0.300	0.310	103	80 - 120	2012-05-14

Standard (CCV-2)

QC Batch: 91186 | Date Analyzed: 2012-05-14 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0958	96	80 - 120	2012-05-14
Toluene		1	mg/kg	0.100	0.0988	99	80 - 120	2012-05-14
Ethylbenzene		1	mg/kg	0.100	0.117	117	80 - 120	2012-05-14
Xylene		1	mg/kg	0.300	0.292	97	80 - 120	2012-05-14

Standard (CCV-1)

QC Batch: 91214 | Date Analyzed: 2012-05-15 | Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	204	82	80 - 120	2012-05-15

Standard (CCV-2)

QC Batch: 91214 | Date Analyzed: 2012-05-15 | Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	210	84	80 - 120	2012-05-15

Standard (CCV-1)

QC Batch: 91226 Date Analyzed: 2012-05-15 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.12	112	80 - 120	2012-05-15

Standard (CCV-2)

QC Batch: 91226 Date Analyzed: 2012-05-15 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.824	82	80 - 120	2012-05-15

Standard (CCV-3)

QC Batch: 91226 Date Analyzed: 2012-05-15 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.08	108	80 - 120	2012-05-15

Standard (CCV-1)

QC Batch: 91476 Date Analyzed: 2012-05-23 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0974	97	80 - 120	2012-05-23
Toluene		1	mg/kg	0.100	0.0956	96	80 - 120	2012-05-23
Ethylbenzene		1	mg/kg	0.100	0.0960	96	80 - 120	2012-05-23
Xylene		1	mg/kg	0.300	0.283	94	80 - 120	2012-05-23

Standard (CCV-2)

QC Batch: 91476 Date Analyzed: 2012-05-23 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0958	96	80 - 120	2012-05-23
Toluene		1	mg/kg	0.100	0.0921	92	80 - 120	2012-05-23
Ethylbenzene		1	mg/kg	0.100	0.105	105	80 - 120	2012-05-23
Xylene		1	mg/kg	0.300	0.294	98	80 - 120	2012-05-23

Standard (CCV-1)

QC Batch: 91529 Date Analyzed: 2012-05-24 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.882	88	80 - 120	2012-05-24

Standard (CCV-2)

QC Batch: 91529 Date Analyzed: 2012-05-24 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.07	107	80 - 120	2012-05-24

Standard (CCV-1)

QC Batch: 91601 Date Analyzed: 2012-05-29 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	279	112	80 - 120	2012-05-29

Standard (CCV-2)

QC Batch: 91601 Date Analyzed: 2012-05-29 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	272	109	80 - 120	2012-05-29

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 1205 1404

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: AMEC
Phone #: (505) 821-1801
Address: (Street, City, Zip) 8519 Jefferson, NE Albuquerque, NM 87113
Fax #: (505) 821-7371
Contact Person: David Janney
E-mail: david.janney@amec.com
Invoice to: (If different from above)
Project #:
Project Name: Lightning Dock (Area 47-7)
Project Location (including state): Lordsburg, NM
Sampler Signature: [signature]

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	WATER	SOIL	AIR	SLUDGE	HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 (GRO)/(DRO) TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, Fl, S04, NO3, NO2, Alkalinity	Na, Ca, Mg, K, TDS, EC	Turn Around Time if different from standard	Hold
297207	CS-1 (4')	1	4oz		✓							✓		5-9-12	2:43pm				✓																	
⊥	CS-2 (4')	1	4oz		✓							✓		" "	2:48pm				✓																	
208	CS-3 (4')	1	4oz		✓							✓		" "	2:55pm				✓																	
209	CS-4 (4')	1	4oz		✓							✓		" "	2:58pm				✓																	
⊥	CS-5 (5.5')	1	4oz		✓							✓		5-10-12	10:06am				✓																	
210	CS-6 (4.5')	1	4oz		✓							✓		" "	11:58am				✓																	
⊥	CS-7 (4.5')	1	4oz		✓							✓		" "	12:02pm				✓																	
211	CS-8 (4.5')	1	4oz		✓							✓		" "	12:06pm				✓																	
⊥	CS-9 (4.5')	1	4oz		✓							✓		" "	12:09pm				✓																	
212	CS-10 (~~4.5~~ 7')	1	4oz		✓							✓		" "	1:35pm				✓																	
⊥	CS-11 (7')	1	4oz		✓							✓		" "	1:40pm				✓																	

See instructions - Lab to perform composite

composite At Lab

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
[signature]	AMEC	5-11-12	11:40am	[signature]		5/11/12	11:40	INST ___ OBS 4 °C COR 4 °C
[signature]		5-11-12	1630					INST ___ OBS ___ °C COR ___ °C
				Patel T.H.	Trace Analysis	5-12-12	11:25am	INST 62 OBS 3.6 °C COR 3.5 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review

REMARKS: CS - samples composite see attached sheet for instructions call Dave Janney for instructions if needed. 7 samples total for TPH 8015

☐ Dry Weight Basis Required
☐ TRRP Report Required
☐ Check If Special Reporting Limits Are Needed

Store remaining soil for possible future analysis

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier # Carey FX

MAY 16 2012

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LAB Order ID # 12051404

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: AMEC
Phone #: (505) 821-1801
Address: (Street, City, Zip) 8519 Jefferson, NE Albuquerque, NM
Fax #: (505) 821-7371
Contact Person: David Janney
E-mail: david.janney@amec.com
Invoice to: (If different from above)
Project #:
Project Name: Lightning Dock Area 47-7
Project Location (including state): Lordsburg, NM
Sampler Signature: [signature]

ANALYSIS REQUEST
(Circle or Specify Method No.)

Analysis columns: MTBE 8021 / 602 / 8260 / 624; (BTEX) (8021) / 602 / 8260 / 624; TPH 418.1 / TX1005 / TX1005 Ext(C35); TPH (8015) (GRO) / (DRO) / TVHC; PAH 8270 / 625; Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7; TCLP Metals Ag As Ba Cd Cr Pb Se Hg; TCLP Volatiles; TCLP Semi Volatiles; TCLP Pesticides; RCI; GC/MS Vol. 8260 / 624; GC/MS Semi. Vol. 8270 / 625; PCB's 8082 / 608; Pesticides 8081 / 608; BOD, TSS, pH; Moisture Content; Cl, Fl, SO4, NO3, NO2, Alkalinity; Na, Ca, Mg, K, TDS, EC; RCRA 8 Metals; ~~[illegible]~~; Turn Around Time if different from standard; Hold

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	Matrix	Preservative	Date	Time	Analyses / Notes	Hold
297213	CS-12 (4')	1	4oz	SOIL ✓	ICE ✓	5-10-12	1:52pm	TPH 8015 ✓; see instructions - lab to composite *	
⏐	CS-13 (4')	1	4oz	SOIL ✓	ICE ✓	" "	1:58pm	TPH 8015 ✓; see instructions - lab to composite	
208	CS-14 (4')	1	4oz	SOIL ✓	ICE ✓	" "	2:21pm	TPH 8015 ✓; see instructions - lab to composite	
214	WS-1A	1	4oz	SOIL ✓	ICE ✓	" "	2:31pm	MTBE ✓, TPH 8015 ✓; composite 1 sample * lab to composite; 6A	
⏐	WS-2A	1	4oz	SOIL ✓	ICE ✓	" "	2:38pm	✓, ✓; composite 1 sample; 6A	
⏐	WS-3A	1	4oz	SOIL ✓	ICE ✓	" "	2:42pm	✓, ✓; composite 1 sample; 6A	
⏐	WS-4A	1	4oz	SOIL ✓	ICE ✓	" "	2:45pm	✓, ✓; lab to composite; 6A	
⏐	WS-5A	1	4oz	SOIL ✓	ICE ✓	" "	2:50pm	✓, ✓; 6A	
297215	WS-1B	1	4oz	SOIL ✓	ICE ✓	" "	2:31pm	Hold (BW composite 5/23/12)	X
⏐	WS-2B	1	4oz	SOIL ✓	ICE ✓	" "	2:38pm	Hold	X
⏐	WS-3B	1	4oz	SOIL ✓	ICE ✓	" "	2:42pm	Hold	X

Relinquished by	Company	Date	Time	Received by	Company	Date	Time	Temp
[signature]	AMEC	5-11-12	11:40am	[signature]		5/11/12	1140	INST 1R2 OBS 4 °C COR 4 °C
[signature]		5-11-12	1630					INST OBS °C COR °C
				Patel T-H.	Trace Analysis	5-12-12	10:25am	INST 1R2 OBS 3.6 °C COR 3.5 °C

LAB USE ONLY
Intact (Y) / N
Headspace Y / N / NA
Log-in-Review [initials]

REMARKS:
* CS-samples composite see attached sheet for instructions. 7-samples total for TPH 8015
Composite WS-samples run as one for checked analysis
Store all remaining sample for possible future analysis

- [ ] Dry Weight Basis Required
- [ ] TRRP Report Required
- [ ] Check If Special Reporting Limits Are Needed

(24)

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier #

ORIGINAL COPY

LAB Order ID # 12051404

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9, Lubbock, Texas 79424, Tel (806) 794-1296, Fax (806) 794-1298, 1 (800) 378-1296

5002 Basin Street, Suite A1, Midland, Texas 79703, Tel (432) 689-6301, Fax (432) 689-6313

200 East Sunset Rd., Suite E, El Paso, Texas 79922, Tel (915) 585-3443, Fax (915) 585-4944, 1 (888) 588-3443

BioAquatic Testing, 2501 Mayes Rd., Ste 100, Carrollton, Texas 75006, Tel (972) 242-7750

Company Name: AMEC
Phone #: (505) 821-1801
Address: (Street, City, Zip) 8519 Jefferson, NE Albuquerque, NM
Fax #: (505) 821-7371
Contact Person: David Janney
E-mail: david.janney@amec.com
Invoice to: (If different from above)
Project #:
Project Name: Lightning Dock Area 47-7
Project Location (including state): Lordsburg, NM
Sampler Signature: [signature]

ANALYSIS REQUEST (Circle or Specify Method No.)

Analyses listed: MTBE 8021 / 602 / 8260 / 624; BTEX 8021 / 602 / 8260 / 624; (TPH 418.1) / TX1005 / TX1005 Ext(C35); (TPH) 8015 GRO / DRO / TVHC; PAH 8270 / 625; Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7; TCLP Metals Ag As Ba Cd Cr Pb Se Hg; TCLP Volatiles; TCLP Semi Volatiles; TCLP Pesticides; RCI; GC/MS Vol (8260) / 624; GC/MS Semi. Vol (8270) / 625; PCB's 8082 / 608; Pesticides 8081 / 608; BOD, TSS, pH; Moisture Content; Cl, Fl, SO4, NO3, NO2, Alkalinity; Na, Ca, Mg, K, TDS, EC; general chemistry 136.3; Turn Around Time if different from standard; Hold

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX	PRESERVATIVE METHOD	DATE	TIME	Analysis	Turn Around Time	Hold
297295	WS-4B	1	4oz	SOIL	ICE	5-10-12	2:45pm	Hold		X
1	WS-5B	1	4oz	SOIL	ICE	" "	2:50pm	Hold		X
	~~Pond~~ 1 (composite 5/23/12 BW)	~~[illegible]~~	~~300 ml~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	64	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
[signature]	AMEC	5-11-12	11:40am	[signature]		5/11/12	1140	INST ___ OBS 4 °C COR 4 °C
[signature]		5-11-12	1630					INST ___ OBS ___ °C COR ___ °C
				Patel T.H.	Trace Analysis	5-12-12	11:25am	INST I-I OBS 3.6 °C COR 3.5 °C

LAB USE ONLY
Intact (Y) / N
Headspace Y / N / NA
Log-in-Review

REMARKS:
Store remaining soil samples after use for future possible analysis

- [ ] Dry Weight Basis Required
- [ ] TRRP Report Required
- [ ] Check If Special Reporting Limits Are Needed

(24)

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier # Courier

ORIGINAL COPY

APPENDIX C

OCD Form C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: Los Lobos Renewable Power, LLC (Cyrq Energy/ Lightning Dock Geothermal H1-01, LLC)	Contact: Michael Hayter
Address 136 South Main Street, Salt Lake City, Utah	Telephone No. 801.875.4200
Facility Name Lightning Dock Geothermal Project LDG 47-7	Facility Type Geothermal power exploration location

Surface Owner	Mineral Owner	API No.
Los Lobos Renewable Power, LLC (Lightning Dock Geothermal HI-01, LLC)	United States Government Federal Geothermal lease NM 34790	30-023-20016

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	South Line	Feet from the	West Line	County
	7	25S	19W	1155		2366		Hidalgo

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Hydrocarbon/Diesel	Volume of Release Unknown	Volume Recovered: NA
Source of Release: Overfilling of diesel fuel tank on drilling rig during drilling operations	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Cause of problem was overfilling of diesel fuel tank on drilling rig during drilling operations at well LDG 47-7. Overfilling caused fuel to contact the soil and seep into the shallow subsurface. This is estimated to be a minor release of less than five barrels.

Describe Area Affected and Cleanup Action Taken.* Following completion of drilling activities and demobilization of the rig, a stained area was discovery on the soil surface. The stained area was approximately 1400 square feet. Soil was excavated over this area to depths of 3.5 to 7 feet below ground surface. Soil samples were collected in 14 locations in the bottom of the excavation. Each sample was screened with a photo-ionization detector and visual and olfactory senses. Seven two-point composite samples were submitted to Trace Analysis Lab of El Paso, Texas. All composite soil samples contained less than 100 parts per million total petroleum hydrocarbons. Approximately 200 cubic yards of soil was removed and characterized for proper disposal at the Butterfield Landfill in Deming New Mexico. Two five-point soil samples were collected from the 200 cubic yard stockpile and submitted to Trace Analysis Lab. The TPH concentrations were 3460 ppm and 1418 ppm.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: David Janney, PG	OIL CONSERVATION DIVISION	
Printed Name: David Janney, PG	Approved by Environmental Specialist:	
Title: Agent for Los Lobos Renewable Power, LLC	Approval Date:	Expiration Date:
E-mail Address: david.janney@amec.com	Conditions of Approval:	Attached ☐
Date: 5/29/2012 Phone: 505.821.1801		

* Attach Additional Sheets If Necessary

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, May 15, 2012 1:23 PM
To: 'Janney, David'
Cc: VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Lightning Dock Geothermal Project Well 47-7 Inquiry

David:

Good afternoon. Any releases on federal lands must be resolved through the BLM too? I believe that you indicated that you are already working with the BLM too.

The OCD needs your initial and/or final reports within 15-days or by COB on Wednesday May 30, 2012.

Regarding any waste streams generated from spill/releases of hydrocarbons, please review the "Waste" thumbnail (Page 9 see below) for RCRA Solid Waste Facilities that are authorized to receive special wastes from OCD activities near the facility. You may want to double check with the nearby Butterfield Trail Regional Landfill to see whether they now accept special wastes from geothermal operations. You will need document that waste streams are properly disposed and/or treated.

Sent: Friday, November 21, 2008 1:22 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Lightning Dock Geothermal Power Project (Hidalgo Co.) Waste Streams

Carl: I reviewed the Solid Waste Rules on geothermal waste and it does come under the regulatory authority of OCD. As a result the waste must be taken to a solid waste facility permitted to accept OCD waste. Currently the only landfills permitted to accept OCD waste are the San Juan Regional Landfill near Aztec, NM, the Rio Rancho Landfill in Rio Rancho, NM and the Valencia Regional Landfill - 15 miles west of Los Lunas, NM all operated by Waste Management of New Mexico. It is possible that the Red Rocks Landfill near Thoreau, NM may have a permit for OCD by May of 2009. At this time those are the only facilities permitted to accept OCD waste.

Terry Nelson
Permit Section Manager
NMED-SWB
1190 St. Francis Dr.
PO Box 5469, Santa Fe, NM 87502-5469
Phone: 505-827-2328
Fax: 505-827-2902
terry.nelson1 @state.nm.us
www.nmenv.state.nm.us

Please contact me if you have questions. 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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: 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

---

From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, May 15, 2012 1:05 PM
To: Chavez, Carl J, EMNRD
Cc: Michelle Henrie; 'Nick Goodman'; mike.hayter@cyrqenergy.com
Subject: RE: Lightning Dock Geothermal Project Well 47-7 Inquiry

Greetings Mr. Chavez:

Thank you for taking my call earlier today to discuss this matter.

As we discussed, we have identified what we believe to be a diesel fuel spill at the 47-7 location as well as the 53-7, 55-7 locations, and a portable genset north of our office trailer. We are not sure when the spills occurred.

We believe that these are all minor spills and that the 47-7 location is less than three barrels; the 53-7 is less than two barrels; and the 55-7 and genset are each less than one barrel. As we discussed, we will file the C-141 forms for each of these locations and we only need to report this to OCD.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, May 15, 2012 9:42 AM
To: Janney, David
Cc: Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: Lightning Dock Geothermal Project Well 47-7 Inquiry

David:

Good morning. I am writing to inquire about an excavation and stockpiled soils near Well 47-7. Could you please explain the reason for the excavation and stockpiled soils observed in the field?

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
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, April 12, 2012 11:32 AM
To: Chavez, Carl J, EMNRD
Subject: Note to File Regarding the Los Lobos Renewable Power, LLC Lightning Dock Geotheral Project and Recent Tracer Testing Water Quality Issues and HB-201

Carl convened an internal telephone communication meeting on 4/11/2012 between the OCD Santa Fe and OCD Artesia District Office regarding various project issues and specifically the above subject issue.

The meeting was attendees were: Jami Bailey (OCD Director), Gabrielle Gerholt (OCD Gen. Counsel), David Brooks (OCD Project Attorney), Glenn von Gonten (OCD Acting Environmental Bureau Chief), Randy Dade (OCD Artesia Office District Supervisor), T.C. Shepard (OCD Artesia Project Geologist), and Carl Chavez (OCD Environmental Engineer)..

Based on the discussion of my C-141 review document of the operator's submittal on 3/22 related to the above subject, the OCD Director did not authorize ground water sampling based on the tracer incident. The OCD Director directed Attorney David Brooks to respond to Mr. McCant's 3/11/2012 e-mail to various state and federal agencies regarding the tracer test.

In addition, at the meeting, David was directed to resolve any OSE/OCD issues with the OSE related to the tracer test and the recently signed HB-201 (high temperature: 250F or greater) affecting geothermal jurisdiction.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Thursday, April 12, 2012 10:36 AM
To: dunjabp@yahoo.com
Cc: Chavez, Carl J, EMNRD; VonGonten, Glenn, EMNRD
Subject: Dye Injection by Los Lobos Renewable Power, LLC (subsidiary of Cyrq); Lightning Dock Area

Categories: Red Category

Dear Mr. McCants

After receiving the reports of pink dye appearing in the waters at Americulture's fish farm, the Oil Conservation Division demanded a full report of this incident from Los Lobos Renewable Power. Los Lobos furnished us with a report including chemical information of the dye substance used.

Based on the information received, we do not find any indication that the dye substance contains constituents that have been identified as water contaminants by the New Mexico Water Quality Control Commission, or are otherwise harmful to human health or safety. Our hydrologists believe the dye will dissipate in a short time. If this proves not to be the case, please let us know.

In the meantime, we have specifically informed Los Lobos that they must not inject any substance into the aquifer except geothermal waters covered by their existing permit without first filing a notice of intent with the Oil Conservation Division and obtaining our approval.

Sincerely

David K. Brooks
Assistant General Counsel
Energy, Minerals & Natural Resources Department
505-476-3450

Chavez, Carl J, EMNRD

From: Tim McCants [dunjabp@yahoo.com]
Sent: Tuesday, April 03, 2012 10:54 AM
To: Chavez, Carl J, EMNRD
Cc: Tom McCants; mccantsplumbing@yahoo.com; Phillips, Haddy L., OSE
Subject: Re: Americulture State Well No. 1 Has Pink Water

Greetings Carl,

Thanks for the info. As for us pursuing test on our domestic wells (3) located near State Well No. 1 at the expense of Cryq Energy with OCD oversight, we feel that this will not be necessary at this point and time.

As explained by you and the EPA concerning the dissipation of the tracking dye, along with the proposed fresh water injection by Cryg Energy, this should resolve any issues we may have concerning water quality.

Unless other issues and/or circumstances warrant additional action, we will trust in the compliance and oversight of both the OCD and OSE that all actions here forth by Cryq Energy are monitored closely, and that all applicable laws are abided by and actions scrutinized as necessary so that the rights of others who own/share this same resource, water and mineral, are protected.

Thanks again and best regards.

Tim

cc: Tom McCants
William McCants
OSE Haddi Phillips

--- On **Fri, 3/30/12, Chavez, Carl J, EMNRD <*CarlJ.Chavez@state.nm.us*>** wrote:

From: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Subject: Americulture State Well No. 1 Has Pink Water
To: "Tim McCants" <dunjabp@yahoo.com>
Date: Friday, March 30, 2012, 11:09 PM

Tim:

Per your inquiry on which Americulture well was impacted the other day.

HB-201 was signed (see attachment). I know that it was signed in March of 2012, and I believe it was July on the effective date, but seem to recall an earlier date. I'll have to look into this further.

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/

"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at: http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, March 30, 2012 9:13 AM
To: Chavez, Carl J, EMNRD
Cc: Brooks, David K., EMNRD
Subject: Lightning Dock Geothermal Project Area Tracer Test Related Note to File- McCant Phone Call

This message is written to document a phone call with Mr. Tim McCant (geothermal well owner) yesterday morning at around 9:30 a.m. I returned Mr. McCant's phone message. He was concerned about the recent tracer test and potential impact to his geothermal wells south of the point of injection.

Based on the operator's report, an 800 ft. radius of exposure (ROE) was determined, which excluded the McCant wells. However, in conversation and review of the operator's map, the well legend designation for Well 41 within the ROE and designated "McCants Well Home Heating- Federal" is actually a Burgett Well according to Mr. McCant.

Mr. McCant also inquired about the Americulture Wells (No.s 1 , 2 & 3) and which well was impacted. OCD had initially thought is was the Americulture No. 2 well; then the No. 1 well; and finally based on the only well which appeared to have a pipeline feeding into the Americulture facility, thought it may be the No. 3 well. Consequently, OCD e-mailed Americulture for clarification of the actual well allegedly impacted by the tracer chemical "Rhodamine WT". In addition, the OCD inquired about permission to sample the well and conditions that the OCD may sample the well(s), if allowed. Some wells have no pumps; therefore, equipment may be necessary to extract a water sample following proper environmental protocols.

The OCD inquired about Mr. McCant's permission to sample a well(s) with similar conditions as stated above. Mr. McCant indicated that he would respond via e-mail with a response. There were concerns about allowing just the operator to sample wells without a government agency splitting samples or conducting all of the work to sample the well without the operator, etc.

The OCD indicated that it was considering sampling some wells in the vicinity of the tracer well injection point; however, OCD Management would need to consider conditions for an OCD Representative to sample any well related to this water well issue.

********** END **********

Carl J. Chavez, CHMM
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, March 30, 2012 8:05 AM
To: 'Damon Seawright'
Cc: 'Damon Seawright'; Brooks, David K., EMNRD
Subject: Americulture Well Inquiry

Damon:

Good morning. Could you tell me if the color of your well water is still pink?

Also, the C-141 Report from operator does not specify the specific Americulture Well that was allegedly impacted by the tracer test, i.e., Americulture State No. 1, 2 or 3. Could you please confirm? For example, if the impacted well is the No. 3 well (OSE# A-45-A-S-3) at 110 – 120 ft., this is a significant distance from the Burgett State Well No. 7, than the Americulture 1 and 2 Wells.

Based on your response to above question, if the OCD was allowed to sample your well(s), the OCD needs to know if pumps are already in position, etc. to determine the sampling method. The OCD would require Americulture's permission to sample any well. In addition, the OCD may require the operator to provide the sampling equipment for an OCD Representative to collect samples (operator usually split-samples) following EPA QA/QC and DQO environmental procedures, i.e., Chain-of-Custody, Sampling Protocols, etc. If Americulture does not allow the above, this may require the OCD to hire a consultant in order to complete sampling as described above, which may require more time.

Thank you in advance for your prompt response to this message. Thank you.

Carl J. Chavez, CHMM
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Lightning Dock Geothermal Burgett State Well No. 7 Rhodamine WT Tracer Injection C-141 Evaluation, Observations, and Recommendations

By Carl Chavez (OCD) 3/29/2012

Background:

Previously on the Drinking Water Contaminant Candidate List, "Rhodamine WT" was recently removed because the EPA anticipates no adverse health effects when the dye is used as a tracer [Federal Register, 1998]*. Water quality criteria established by the National Sanitation Foundation (Standards and Publications, available at http://www.nsf.org, 2001) for Rhodamine WT are 0.1 ug/L for drinking water, 10 ug/L for water entering a drinking water plant, and 100 ug/L for ground water not associated with drinking water production (American National Standards Institute/National Sanitation Foundation Standard 60) [Federal Register, 1998]. The concern identified from literature is when the Rhodamine WT mixes with nitrite/nitrate rich water, a daughter SVOC compound called "Diethylnitrosamine" (DENA) (CAS# 55-18-5) may form, which has water quality limits associated with it.

* Flury, Markus and Wai, Nu Nu "Dyes as Tracer for Vadose Zone Hydrogeology (April 2003)

GTHT-001 Well File Information:

Burgett State Well No. 7 was drilled in 1983 by Burgett to a depth of 550 ft. Well is cased with 8 in. casing to 150 ft., with 6 in. casing 100 ft. Well is equipped with a 20 gpm Turbine pump. In 1993 the well was test pumped. Well is not in use and is a geothermal well.

The Americulture State Well No. 1 is 399 ft. TD with open borehole from 279 to 399 ft. and temperature noted at ~232F based on a written note on a project map. A G-101 form was not found in the OCD file for this well (only Americulture Wells No. 1 and 3 were found in the file).

Tracer Test Procedure:

The tracer (50 kg) was mixed with 400 gallon of water and had an initial tracer mixture concentration of 33,021.5 ppm. This mixture was then mixed with 800 gal. more water to bring the tracer concentration to 11,007 ppm before injection started. The Burgett State Well No. 7 was later flushed with about 2.275 million gallons of local fresh water to dilute the tracer chemical as part of the corrective actions taken by the operator.

The injection into the Burgett State Well No.7 occurred on 1/23/2012 from Noon to 1:00 p.m. Americulture claimed that it noticed a pink discoloration in the Americulture State Well No. 1 located approximately 660 ft. south of the Burgett Well No. 7 of the geothermal water on 2/16/2012, approximately 24 days after the tracer was injected. The travel time was calculated to be about 27.5 ft/day (100 darcy/2057 gpd/ft2), which even under 30 psi pressure during injection would likely not be possible under isotropic saturated aquifer conditions. However, in saturated media like the Gila Conglomerate with fractures, voids, etc., this could be possible.

The tracer front calculations that OCD found in the literature and attempted to use to calculate the expected tracer front distance may not be appropriate. For example, if one were to enter the injection volume of 400 gallons used for the initial tracer injection, the tracer front estimate would be within 5 feet from the well. The operator later injected a total of 2.275 million gallons to flush and dilute the tracer, which would under 30 psi of head push the tracer to the actual 800

ft. radius from the injection well and the 800 ft. was determined from field sampling by the operator. However, the operator was not planning to use this volume for the initial tracer test; therefore, pre-calculations to estimate the tracer test should be completed with the proper algorithms with proper assumptions. This is also why a less toxic tracer chemical should be selected when non-project wells are nearby the tracer test area.

Hydrogeologic Information in the Vicinity of the Tracer Test:

Americulture, Inc. Well No. 3 Hydrogeology: 0 – 270 ft. Tert. – Quaternary Alluvium; 270 – 284 ft. Tert. Gila Conglomerate transitional unit; 284 – 645 ft. Tert. Gila Conglomerate (numerous lost circulation zones); 645 – 860 ft. Rhyolite (fast penetration compared to rhyolite w/ numerous lost circulation zones); and 860 – 910 ft. Welded tuff. The water table is at about 70 ft. bgl and there is a major fault system running through the Animas Valley, which may contain numerous commingled saturated formations. The saturated thickness of the aquifer is estimated to be about 790 ft. The deepest environmental laboratory analytical data at ~ 3,400 ft. was fresh water, and there currently is no water quality information in the project area defining the basal depth of protectable fresh ground water. There is limited water quality at depth in the project area to estimate the water quality at depth and the basal depth of the fresh water zone.

C-141 Review Observations and/or Comments:

- Operator sent MSDS for Acid Red 52, but Rhodamine WT's synonym appears to be "Acid Red 388" and it contains 2.6% Trimellitic Acid. Aquatic Toxicological Information is as follows: LC50 (Rainbow Trout): >320 mg/L; and LC50 (Daphinia Magna): 170 mg/L.
- Operator sent OCD Tracer Test Work Plan on 2/18/2012, but did not follow it when they injected into the Burgett State Well No. 7 on 1/23/2012.
- The OCD directed the operator to work directly with the OSE on the tracer test on 1/19/2012, but according to Ms. Henrie's response to the OCD 3/7 letter on whom from OSE the operator worked with, here response on 3/22/2012 was that the operator worked with nobody from the OSE on the tracer test.
- OCD never authorized or approved the injection of the Rhodamine WT tracer chemical into any injection well.
- The Americulture State Well No. 1 is about 660 ft. away from the Burgett State Well No. 7 (tracer injection well) and from the injection date and time (1/23/2012 Noon) and the noticed discoloration at the Americulture Well (2/16/2012), the tracer appears to have taken approximately 24 days travel time to be detected. This equates to about 27.5 ft/day (100 darcies/2057 gpd/ft2), which does not appear to be feasible under isotropic aquifer normal hydraulic gradient travel time conditions; consequently, the 30 psi injection pressure (~ 70 ft.head or stand column of water) along with the Gila Conglomerate and fault fracturing may account for the speed of detection.
- Algorithm No. 1 equation estimate below appears to be more approximate to the tracer injection front than the Algorithm No.2
- The operator could have estimated the potential for impact to any nearby wells from the tracer test with contaminant hydrogeology tracer test algorithms to prevent impacts to non-project wells.
- The MSDS provided by the operator does not appear to be the correct one, since the Rhodamine WT corresponds to "Acrid Red 388" and not Acid Red 52. Acid Red 388 has toxicological information including biological data for consideration of any wildlife impacts from its use.

- Based on the operator sampling for Rhodamine WT and the 800 ft. radius of impact from the tracer injection well, the Americulture State Well No. 1 and nearby McCant well appear to have been impacted.
- While the operator includes a letter from John Shomaker & Associates, Inc. dated February 23, 2012, stating, "Rhodamine WT is an EPA approved fluorescent dye used for aquifer characterization, as a water tracer in surface and groundwater systems, and a means of measuring various hydraulic parameters.* It is also an NSF- approved for use in such studies." *

  * See, e.g., Stone, A.T., 2000, Specialty chemicals in the environment: American Chemical Society, Symposia papers presented before the Div. of Environmental Chemistry, Preprints o Extended Abstracts, v. 40, no. 1, pp. 167 - 169

Problem:

To determine whether the proper viscosity was used-in arriving-at this permeability; the Travel-time for a pressure transient to pass beyond the tracer front needs to be calculated. The distance to the tracer front may be estimated from the following equations:

Algorithm No. 1:

r_{tracer} ~ radius to tracer front, feet
V* = 2,274,800 gallons (total flushing)
h = 835 feet (790 ft.)
Φ = 0.2
0.13368 = constant

* From Cyrq Energy LLC C-141 Information

r_{tracer}** ~ $[(0.13368\ V/\pi(h)\Phi)]1/2$

** From OCD UIC Fall-Off Test Program: Subsurface Construction Corp. Calculations

Where:

r_{tracer}~ $[(0.13368\ V/\pi(h)\Phi)]1/2$

r_{tracer} ~ radius to tracer front, feet
V = total volume injected into the injection interval, gallons
h = formation thickness, feet
Φ = formation porosity, fraction
0.13368 = constant

Solution 1:

r_{tracer}~ $[(0.13368\ V/\pi(h)\Phi)]1/2$
r_{tracer}~ $[(0.13368\ V/\pi(h)\Phi)]1/2$~ 580 feet

Cyrq estimated 800 feet impacts to shallow completed wells within an 800 ft. radius from the Burgett State Well No. 7 (~ 500 ft. TD with 150 ft. casing)

Algorithm No. 2:

$R_f = (Qt/ \pi bn)1/2$

Where:

R_f = average frontal position of the injected water at the end of the injection period (ft.)
Q = rate of injection (~170 – 200 gpm)
t = total time of injection (60 minutes)
b = aquifer thickness (*Burgett State Well No. 7: ~790 ft.*)
n = porosity (*estimated at 0.2 for conglomerate*)

* Fetter, C.W. "Contaminant Hydrogeology" 1993

Solution 2:

$R_f = (Qt/\pi bn)1/2$
$R_{f\ 170gpm} = [(170\ gpm)(60\ min)/(3.1416)(330\ ft)(0.2)]1/2 \sim 7\ ft.$
$R_{f\ 200gpm} = [(200\ gpm)(60\ min)/(3.1416)(330\ ft)(0.2)]1/2 \sim 8\ ft.$

Sampling Data Comparison with Available Water Quality Criteria Analysis:

Due to volume and concentration of the tracer chemical and potential for diethylnitrosamine to form when mixed with nitrite/nitrate rich ground water, the OCD would not expect to detect it in the Americulture State Well No. 1 or McCant Well that are within 800 ft. from the Burgett State Well No.7 (tracer injection well). In addition, the ground water is a geothermal resource with heat that would tend to volatilize off any VOCs/SVOCs in water media. In addition, water samples would likely require cooling at surface before sample collection, refrigeration, and delivery to the environmental analytical laboratory. From the C-141 corrective action(s), the operator's consultant's corrective action well testing indicated that wells within an 800 ft. radius from the tracer injection wells have been impacted based on fluorometric meter readings. However, the coloration of dye would not be expected to indicate that the diethylnitrosamine, if present, is also in the discolored ground water of any impacted wells.

Water Quality Considerations:

Rhodamine WT with 2.6% Trimellitic Acid * LC50 (Rainbow Trout): >320 mg/L and LC50 (Daphinia Magna): 170 mg/L

Water quality criteria established by the National Sanitation Foundation- NSF (Standards and Publications, available at http://www.nsf.org, 2001) for Rhodamine WT are 0.1 ug/L for drinking water, 10 ug/L for water entering a drinking water plant, and 100 ug/L for ground water not associated with drinking water production (American National Standards Institute/National Sanitation Foundation Standard 60) [Federal Register, 1998].

* MSDS "Acid Red 388"

Diethylnitrosamine** Biological Effects Fish (Creek Chub): 900 – 1100 mg/L

** Handbook o Environmental Data on Organic Chemicals (Second Edition)

Cyrq Well Sampling* for Fluorescent Dye Results:** Two samples of thermal water had quantifiable dye tracer at concentrations of 38.6 and 87 ug/L. No agricultural or domestic (potable) wells had detectable dye tracer (< 0.1 ug/L relative concentration).

*** "Results of Groundwater Sampling For a Dye Tracer Conducted February 29 and March 1, 2012" Cotton City, Hidalgo County New Mexico (March 5, 2012) Geochemical, LLC

Recommendations:

1) After noting that the Cyrq well sampling results exhibited Rhodamine WT concentrations up to 87 ug/L, the OCD notices that these levels are above the NSF Standards provided above. Consequently, I recommend that if any environmental laboratory water quality analyses is to be conducted, the OCD should collect SVOC samples to be analyzed for diethylnitrosamine from the Americulture State No. 1 Well and the nearby McCant Well just NW of the Americulture Buildings that are within 800 ft. of the Burgett State No. 7 Well (tracer injection well) within the impacted area according to the operator's report.

General chemistry sampling would likely be negligible based on the quantity of the tracer product injected over a one-hour period at about 30 psi (~ 70 ft. head) at 200 gpm with an approximate concentration of 33,022 mg/L (50 kilograms mixed with 400 gal water). A duplicate sample would also be collected to verify environmental laboratory QA/QC.

2) The OCD Attorney should assess whether an OCD Letter of Violation or Notice of Violation should be issued based on the tracer test conducted by the operator.

3) If future tracer tests are conducted, the operator should select the least toxic tracer for the test and complete hydrogeologic calculations to determine the radius of impact in order to prevent impacts to nearby non-geothermal project wells.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Los Lobos Renewable Power, LLC	Contact	Mike Hayter (801) 875-4200 or
Address	136 S. Main, Ste. 600, Salt Lake City, UT 84101	Telephone No.	David Janney (505) 821-1801
Facility Name	Lightning Dock\	Facility Type	Geothermal

Surface Owner State Trust Land	Mineral Owner State (Lessee is Rosette, Inc.)	API No. None

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	6	25 S	19 W	345'	South line	930'	East line	Hidalgo

Latitude 32.152859°N **Longitude** 108.830964°W

NATURE OF RELEASE

Type of Release Minor	Volume of Release 400 gallons (9.53 barrels)	Volume Recovered 0
Source of Release Tracer dye injected for testing	Date and Hour of Occurrence January 23, 2012, noon-1:00 PM	Date and Hour of Discovery Approx. February 16, 2012
Was Immediate Notice Given? ☒ Yes (Prior Notice) ☐ No ☐ Not Required	If YES, To Whom? Work Plan sent by David Janney(AMEC), to Randy Dade and Craig Shapard (Artesia OCD) and Carl Chavez (Santa Fe OCD) on January19, 2012; follow up telephone discussion by Michael Hayter (Los Lobos RP, LLC) and David Janney (AMEC) to Jami Bailey, David Brooks, and Carl Chavez (Santa Fe OCD) on January 19, 2012, at approximately 1:30 PM.	
By Whom? David Janney, AMEC	Date and Hour See above	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.* N/A		

Describe Cause of Problem and Remedial Action Taken.* Injection of tracer dye in Rosette's State Well #7 (State Engineer well number A-36-A S17) for tracer test.

Purpose for Test. During pump testing of Well LDG 45-7 in December 2011, monitoring of Rosette State Well #7 suggested that this well could be connected with Well LDG 45-7. The tracer test was conducted for aquifer delineation to determine whether there is any relationship between wells drilled in the shallow geothermal outflow (such as Rosette State Well #7) and wells drilled into the deep geothermal aquifer (such as Wells LDG 45-7 and 53-7).

Tracer Dye Chemical Constituents. An MSDS and additional information about Rhodamine WT is contained at Exhibit 1. Operator does not know the percentage of pure Rhodamine WT provided by the supplier, and reasonably believes that chemical constituents included impurities to some degree.

Injection of Tracer Dye. 50 kilos of tracer dye was dissolved in a tank containing 400 gallons of fresh water. This solution was injected into Rosette State Well #7. During tracer injection, the wellhead pressure never went above 20 psi on the wellhead.

Flushing of Tracer Dye. The solution was first flushed with 800 gallons of water. Then, over a period of seven days, fresh water was injected into Rosette State Well #7 in the following approximate amounts: (a) 24,000 gallons of trucked water, and (b) 2,250,000 gallons of water from a water storage tank owned by Rosette, Inc. The source of injected water was one to three cold freshwater wells owned by Rosette, Inc., State Engineer well numbers A-36-A-S10, A-36-A-S11, and A-36-A-S14, which are connected by pipeline to the water storage tank owned by Rosette, Inc. During water injection, the wellhead pressure never went above 30 psi. After approximately 24 hours, injection was by gravity without any added pressure.

Test Results and Dye Discovery. During closed-loop testing, which started prior to the tracer test and was conducted through February 3, 2012, there was no tracer from Rosette State Well #7 found in Wells LDG 45-7 and 53-7. On or about February 16, 2012, we understand that a neighboring property owner, AmeriCulture, Inc., discovered tracer dye in the geothermal fluid it was using from a nearby well, Rosette State Well #1, which is the same shallow geothermal outflow into which the dye was injected. Operator was not made aware of the discovery until February 22, 2012.

Investigative Action: Sampling. Operator learned of community concern that the tracer dye may be migrating to non-geothermal water wells used for drinking water and agriculture. On February 29 and March 1, 2012, Dr. Gregory P. Miller, Geochemical, LLC, conducted a sampling and analysis program to evaluate the presence of tracer dye in potable water and agricultural wells. Sixteen wells were sampled. Dye fluorescence analysis was conducted in the laboratory of Dr. Bruce Thompson, University of New Mexico, on March 2, 2012. Laboratory analysis with a tracer dye detection limit of 0.1 parts per billion was used to test the water. Tracer dye was detected only in geothermal wells within 800 feet of the dye tracer test injection well. The remaining 14 agricultural and potable water wells did not contain dye tracer. Dr. Miller's report is attached as Exhibit 2.

Remedial Action: Treatment. In addition, Operator understands that the holding ponds used for raising tilapia fish at AmeriCulture's facility have been tinted with a pink hue. Pursuant to a Joint Facility Joint Facility Operating Agreement (JFOA) dated September 6, 1995, Operator must reasonably indemnify AmeriCulture against harms arising out of its activities undertaken pursuant to the JFOA. For this reason, Dr. Gregory P. Miller, Geochemical, LLC, visited the AmeriCulture facility on March 1, 7, and 13, 2012 to discuss and plan for water treatment to remove the tracer dye. Dr. Miller verified the feasibility of carbon treatment in hot water at the laboratory of Dr. Bruce Thompson, University of New Mexico, on March 5, 2012. Dr. Miller then began working with Calgon Carbon Corporation and Siemens on March 6, 2012, to determine treatment options. Kenneth Hale from AMEC visited the AmeriCulture facility on March 13, 2012 to begin designing a water treatment system that will use carbon filtration to remove tracer dye from the geothermal water before it enters into the AmeriCulture facility. This treatment system and treatment program were offered to AmeriCulture on March 20, 2012. See Exhibit 3.

Additional Remedial Concerns. To Operator's knowledge, tracer dye is not a "toxic pollutant" as defined in 20.6.2.7 NMAC nor have the standards of 20.6.2.3103 NMAC been exceeded. However, Operator has received from AmeriCulture an article, Exhibit 4, which indicates that Rhodamine WT, when combined with nitrites, could possibly form Diethylnitrosamine. (Several Nitrosamines are on the "toxic pollutant" list, but Diethylnitrosamine is not). Nitrites could exist in AmeriCulture's fish ponds. See Exhibit 4. Because the proposed treatment system and treatment program will remove the tracer dye before geothermal water enters the AmeriCulture facility, this concern for possible formation of Diethylnitrosamine is being addressed as well. Dr. Miller offered to sample the AmeriCulture fish ponds for Nitrosamines on March 1, 7, and 13, 2012, and was not permitted to do so.

Describe Area Affected and Cleanup Action Taken.* Through the sampling program described above, the affected area has been identified. The affected area is solely the shallow geothermal aquifer only in geothermal wells within 800 feet of the dye tracer test injection well. No drinking water or irrigation wells have been affected.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: M. Hayter	OIL CONSERVATION DIVISION	
Printed Name: Michael Hayter	Approved by Environmental Specialist:	
Title: Director	Approval Date:	Expiration Date:
E-mail Address: michael.hayter@cyrqenergy.com	Conditions of Approval:	Attached ☐
Date: 3/21/2012 Phone: 801-875-4700		

* Attach Additional Sheets If Necessary

Presto Dyechem Co
60 North Front St
Philadelphia, PA 19106
215-627-1864

Material Safety Data Sheet

July 15, 2011

SECTION I - Material Identity

Item Name	Fluorescent Red Dye
Part Number/Trade Name	Acid red 52
Chemical Formula	C27 H30 N2 O7 S2.Na
CAGE Code	25521
Part Number Indicator	A
MSDS Number	189644
HAZ Code	B

SECTION II - Manufacturer's Information

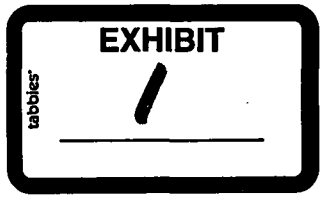
Manufacturer Name	Presto Dyechem Co
Street	60 North Front St
City	Philadelphia
State	PA
Country	US
Zip Code	19106
Emergency Phone	215-627-1864
Information Phone	215-627-1864

MSDS Preparer's Infomation

Date MSDS Prepared/Revised	01/01/2006
Active Indicator	Y

SECTION III - Physical/Chemical Characteristics

Appearance/Odor	Red POWDER
Boiling Point	NA
Melting Point	NA
Vapor Pressure	NA
Vapor Density	NA
Specific Gravity	1
Solubility in Water	COMPLETE
Container Type	R
Container Pressure Code	1
Temperature Code	4
Product State Code	S



SECTION IV - Fire and Explosion Hazard Data

Flash Point Method	NA
Lower Explosion Limit	NA
Upper Explosion Limit	NA
Extinguishing Media	WATER, DRY CHEMICAL, CO2
Special Fire Fighting Procedures	WEAR SCBA
Unusual Fire/Explosion Hazards	NONE

SECTION V - Reactivity Data

Stability	YES
Stability Conditions to Avoid	WILL PRECIPITATE WITH ACIDS
Materials to Avoid	OXIDIZING AGENTS
Hazardous Decomposition Products	BURNING WILL PRODUCE OXIDES OF CARBON AND NITROGEN
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	WILL NOT OCCUR

SECTION VI - Health Hazard Data

Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute and Chronic	NONE DOCUMENTED
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Explanation of Carcinogenity	NONE
Symptoms of Overexposure	NOT KNOWN
Medical Cond. Aggravated by Exposure	NONE KNOWN
Emergency/First Aid Procedures	[EYES] FLUSH WITH WATER [SKIN] WASH WITH SOAP AND WATER [INHAL] MOVE TO FRESH AIR. [INGEST] DILUTE WITH WATER, INDUCE VOMITING.

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	WEAR APPROPRIATE SAFETY EQUIPMENT. CONTAIN AND CLEAN UP SPILL. CONTAIN LIQUIDS USING ABSORBANTS, SWEEP POWDERS CAREFULLY MINIMIZING DUSTING. SHOVEL ALL SPILL MATERIAL INTO DISPOSAL DRUM.
Neutralizing Agent	NR
Waste Disposal Method	BURY OR INCINERATE ACCORDING TO FEDERAL, STATE AND LOCAL REGULATIONS. CONTAINERS SHOULD BE TRIPLE RINSED ACCORDING TO FEDERAL REGULATIONS.
Handling and Storage Precautions	HANDLE THIS PRODUCT WITH CARE

	AND AVOID PERSONAL CONTACT.
Other Precautions.....	NR

SECTION VIII - Control Measures

Respiratory Protection.....	NIOSH APPROVED RESPIRATOR MOLDEX 2200
Ventilation.....	LOCAL EXHAUST
Protective Gloves.....	RUBBER
Eye Protection.....	SAFETY GLASSES WITH SIDE SHIELDS
Other Protective Equipment.....	WEAR APRON/COVERALLS TO MINIMIZE SKIN CONTACT
Work Hygenic Practices.....	WASH THOROUGHLY AFTER HANDLING

SECTION IX - Label Data

Protect Eye.....	YES
Protect Skin.....	YES
Protect Respiratory.....	YES
Chronic Indicator.....	NO
Contact Code.....	SLIGHT
Fire Code.....	1
Health Code.....	0
React Code.....	0
Specific Hazard and Precaution.....	NO TARGET ORGANS LISTED FOR CHRONIC EXPOSURES

SECTION X - Transportation Data

Container Quantity.....	1
Unit of Measure.....	GM

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G).....	0
Volatile Organic Compounds (G/L).....	0

SECTION XII - Ingredients/Identity Information

Color Index #.....	45100
Ingredient Name.....	Xanthene
CAS Number.....	3520-42-1
Proprietary.....	NO
Percent.....	0
OSHA PEL.....	NE
ACGIH TLV.....	NE

sole responsibility of the user. All materials that may present unknown health hazards are described herein. We cannot guarantee that these are the only hazards that exist.

MHenrie | Land ▫ Water ▫ Law

March 22, 2012

Director Jami Bailey
Division Director
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Carl Chavez
Environmental Bureau
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Re: Los Lobos Renewable Power

Dear Director Bailey and Mr. Chavez:

Enclosed per your request, please find a form C-141 relating to my client's injection of tracer dye into the shallow geothermal aquifer near its proposed power plant facility in Hidalgo County, New Mexico. I recognize that your office needs information about the injection given AmeriCulture's complaint. I also understand that there is not a "perfect fit" form for this situation, which seems to be novel in many ways. So, per your guidance, we have prepared the form C-141 and also attached some additional information to provide your office with requested information.

In this letter, I specifically wanted to address what I consider to be a grey area in regulations. I also wanted to answer your question about communications with the State Engineer's Office.

Los Lobos' Discharge Permit for the geothermal project states as follows:

> **15. Spill Reporting**: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and shall conduct corrective actions pursuant to WQCC Regulation 20.6.2.1203 NMAC and 19.15.29 NMAC. The owner/operator shall notify both the OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days. The owner/operator shall notify OCD of any fire, break, leak, spill or blowout at any geothermal drilling, producing, transporting, treating, and disposal or utilization facility in the State of New Mexico by the person operating or controlling the facility pursuant to 19.14.36.8 NMAC.

michelle@mhenrie.com P.O. Box 7035 ▫ Albuquerque, New Mexico ▫ 87194-7035
505-842-1800 126 E. DeVargas ▫ Santa Fe, New Mexico ▫ 87501

The above-cited regulations are (a) the Water Quality Control Commission Regulations for Ground and Surface Water Protection and (b) the Oil and Gas Regulations for Release Notification. The EPA has given New Mexico primacy in water quality issues. The Water Quality Control Act gives NMED jurisdiction over most water quality issues. Some water quality issues have been delegated to OCD. Reading the above-cited Regulations together, I understand them to say that where OCD has jurisdiction, notice of "spills" etc. is to OCD and follows OCD requirements, not NMED's. Both regulations discuss corrective actions, and both cite to the same triggering standards for clean up: either "toxic pollutants" or exceedance of the thresholds stated at 20.6.2.3103 NMAC. In addition, there are separate Geothermal Regulations specific to "Fire, Breaks, Leaks, Spills and Blowouts" at 19.14.36.8 NMAC, which don't trigger at amounts less than 25 barrels.

I want to reiterate that I do not believe that this situation involves "toxic pollutants" or any exceedance of the thresholds stated at 20.6.2.3103 NMAC. Nevertheless, as you will see in the form C-141, corrective or remedial actions have been taken. Those actions have been taken (a) to address community concerns and (b), specifically with regard to AmeriCulture, pursuant to a contractual indemnity provision.

With that backdrop, I fully recognize that there were several uncertainties about whether and how to permit a tracer test in a low temperature geothermal aquifer. One question is how to characterize the injection of an EPA-approved tracer dye like Rhodamine WT. In your letter, you were express (and I appreciated the clarification) that your office is not now asserting that the tracer test was an "unauthorized" discharge or release. Absent the clarification, I would be concerned that use of form C-141 suggests that such an injection is a "release" per the Oil and Gas Regulations (oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixtures of those chemicals or contaminants that occur during drilling, producing, storing, disposing, injecting, transporting, servicing or processing and to establish reporting procedures. 19.15.29.6 NMAC). In recent communications with NMED Staff, I understand that their office often receives Notices of Intent to discharge for tracer tests so they know what is going on—but these tests do not necessarily require a permit. Going forward, for tracer tests in geothermal aquifers, we might suggest such a path for OCD.

I think another uncertainty stems from the situation involving a low-temperature geothermal aquifer. As between the State Engineer and the OCD, the Legislature has given a dividing line: 250° F. So, for use of water under 250° F, the Water Code governs and water rights are required. But what about determinations relating to geothermal water quality under the Water Quality Act? Does the temperature matter? I have heard different positions on this issue.

From your letter, I appreciated a third area of uncertainty. Your office apparently characterized the tracer test as a matter of "aquifer delineation." This helped me understand why your office thought that the State Engineer's Office should be involved because the State Engineer manages the waters of the State.

However, in my experience with the Office of the State Engineer, they do not permit the injection of tracer dye—which, in their eyes, is a water quality issue, not a water rights issue. My client relied on my experience, and I am not aware of any discussions with anyone from the State Engineer's Office about this issue prior to the test.

After my client performed this tracer test, I talked with several State Engineer employees who confirmed that my understanding was correct, including WRAP Director, John Romero. That being said, this tracer test involved more than dye injection—it also involved flushing. The State Engineer's Office does need to permit the use of water to flush the dye, and I am now working with the District III Office of the State Engineer to come into compliance on this issue.

Please let us know if we can provide any more information.

Yours sincerely,

Michelle Henrie
Attorney for Lightning Dock Geothermal HI-01, LLC and Los Lobos Renewable Power, LLC

cc. OCD District II Office, Artesia

JOHN SHOMAKER & ASSOCIATES, INC.
WATER-RESOURCE AND ENVIRONMENTAL CONSULTANTS
2611 BROADBENT PARKWAY NE
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-3407, FAX (505) 345-9920
www.shomaker.com

February 23, 2012

Michelle Henrie, Attorney at Law
126 East DeVargas
Santa Fe, New Mexico 87501

by email: michelle@mhenrie.com

Re: Cyrq Energy, dye tracers in groundwater

Dear Michelle:

You asked about the use of dye tracers, and Rhodamine WT in particular, in water-resource studies. Tracer studies have been used for many years to measure groundwater velocities, and are described in standard textbooks on groundwater.[1] Both the U.S. Environmental Protection Agency (EPA) and the U.S. Geological Survey have conducted and published many studies using dye-tracers in a wide variety of their groundwater and surface-water investigations, and many other studies are reported in the scientific literature. The University of New Mexico Water Resources Program is currently conducting a dye-tracer study in Albuquerque, to determine the disposition of septic-tank effluent and the timing of its arrival at the water table.

Rhodamine WT is an EPA-approved fluorescent dye used for aquifer characterization, as a water tracer in surface and groundwater systems, and a means of measuring various hydraulic parameters.[2] It is also NSF-approved for use in such studies.

Our firm has used Rhodamine as a tracer to mark the drilling water during the drilling of a supply well, to provide a means of determining when well-development was essentially complete.

Sincerely,

JOHN SHOMAKER & ASSOCIATES, INC.

John W. Shomaker, Ph.D.

Cc: Nicholas Goodman, Cyrq Energy
Michael Hayter, Cyrq Energy

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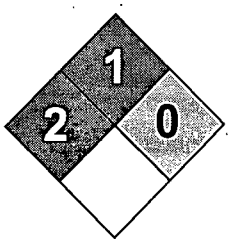
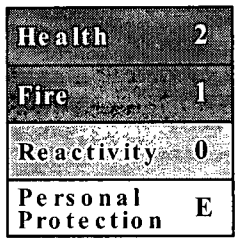
[1] See, e.g., Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, Inc., 604 p., at p. 427..

[2] See, e.g., Stone, A.T., 2000, Specialty chemicals in the environment: American Chemical Society, Symposia papers presented before the Div. of Environmental Chemistry, Preprints of Extended Abstracts, v. 40, no. 1, pp. 167-169.





Material Safety Data Sheet
Acid Red 52 MSDS

Section 1: Chemical Product and Company Identification

Product Name: Acid Red 52

Catalog Codes: SLA3805

CAS#: 3520-42-1

RTECS: BP6750000

TSCA: TSCA 8(b) inventory: Acid Red 52

CI#: Not available.

Synonym: Acid Leather Red KB, Acid Rhodamine B, Amacid Rhodamine B, Amido Rhodamine B, Brilliant Acid Rhodamine 2B, Food Red 106, Pontacyl Brilliant Pink; Acid Red 52, CI4 5100; Sulforhodamine B

Chemical Name: Xanthrene; Ammonium, (6-(diethylamino)-9-(2,4-disulfophenyl)-3H-xanthen-3-ylidene)diethyl-, hydroxide,inn er salt, sodium salt

Chemical Formula: C27-H29-N2-Na-O7-S2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Acid Red 52	3520-42-1	100

Toxicological Data on Ingredients: Acid Red 52: ORAL (LD50): Acute: 10300 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion:
These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), sulfur oxides (SO2, SO3...). Some metallic oxides.

Fire Hazards in Presence of Various Substances: Slightly flammable to flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: As with most organic solids, fire is possible at elevated temperatures

Special Remarks on Explosion Hazards:
Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 580.66 g/mole

Color: Dull Purple.

pH (1% soln/water): Not available.

Boiling Point: Not available.

Melting Point: Not available.

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, dust generation, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 10300 mg/kg [Mouse].

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:
Skin: May cause skin irritation. Eyes: May cause eye irritation. Inhalation: May cause respiratory tract irritation. Ingestion: May cause gastrointestinal tract irritation. The toxicological properties of this substance have not been fully investigated.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Acid Red 52

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 03:37 PM

Last Updated: 11/01/2010 12:00 PM

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Results of Groundwater Sampling For a Dye Tracer Conducted February 29 and March 1, 2012

Cotton City, Hidalgo County, New Mexico

March 5, 2012

Prepared for:

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EXHIBIT
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Executive Summary

A dye tracer test was conducted in geothermal wells located near Cotton City, Hidalgo County, New Mexico in late January 2012. The purpose of the test was to determine the physical properties of the geothermal reservoir. Public concern was expressed that the tracer may be migrating to non-thermal water wells used for domestic use and agriculture. A sampling and analysis program was conducted to evaluate the presence of dye in potable water and agricultural wells. Sixteen wells were sampled at distances from under 200 feet to over 7 miles from the dye tracer injection point. Laboratory analysis with a detection limit of 0.1 parts-per-billion (ppb) dye was used to test the water.

Dye tracer was detected only in geothermal wells within 800 feet of the dye tracer test injection well. The remaining 14 agricultural and potable water wells did not contain dye tracer.

Introduction

A dye tracer test was conducted at the Cyrq Energy Lightning Dock geothermal project located near Cotton City, Hidalgo County, New Mexico in late January 2012. The appearance of dye tracer was noted in other thermal wells adjacent to the tracer test. When dye tracer was noted in these other wells public concern was expressed that the tracer may be migrating to non-thermal wells used for agriculture and private water supply.

Geochemical, LLC was retained for a fast-track sampling and analysis program to evaluate the presence of dye tracer in selected wells in the vicinity of the geothermal dye tracer test. The major objective of the program was to confirm the presence or absence of dye tracer in private wells used for potable water. All Geochemical, LLC activities were conducted by the Principal of the company, Dr. Gregory P. Miller, or under his direct observation.

Sampling Locations

Sampling locations were selected through coordination with:

- Ed Kerr, Hidalgo County Commissioner;
- Kacie Peterson and Steve Harman, on-site representatives of Cyrq Energy;
- Damon Seawright of AmeriCulture, a thermal water user adjacent to the test site; and,
- Dale Burgett, a thermal water user adjacent to the test site.

Sample sites were first chosen on the basis of public interest – well owners that had expressed a desire to have their well(s) tested to either Cyrq Energy or the County Commissioners' office. The county also arrainged for Geochemical, LLC to sample water at the adjacent AmeriCulture facility. Additionally, Cyrq Energy sought permission for Geochemical, LLC to sample wells operated by Dale Burgett.

The greatest constraint on the number and locations of groundwater samples was time. Public and regulatory interest in the distribution of dye tracer in groundwater in the vicinity of the tracer test required immediate answers. Accordingly, the sampling program was limited to existing wells. An additional constraint on selecting sampling locations was the availability of wells for sampling. Wells without operating pumps were excluded as time constraints prevented installation of appropriate pumps and/or power supplies.

Sixteen wells were sampled during the February 29 and March 1, 2012 effort. The locations of the sampled wells are depicted in **Figure 1** and **Figure 2**. Well locations are determined from handheld field GPS readings, inspection using Google Earth, and cross checks with the New Mexico Office of the State Engineer's WATERS database. **Table 1** lists the well locations, users and sampling information.

Sampling Methods

The rapid response required for this activity precluded development and peer-review of a sampling and analysis plan. The sampling program relied on professional experience and judgment to collect groundwater samples representative of aquifer condition. Two sampling techniques were used: purging and sampling by time; and, purging and sampling according to indicators of geochemical stabilization.

Groundwater sampling with the highest quality level is accomplished using wells, screens, casing and pumps designed for the purpose, in an array that is designed to answer a specific question. In this project, adaptations were required to use existing wells and pumps.

Samples were collected at nine domestic wells from a threaded spigot (hose bib) to which a pre-cleaned (bleach), deionized water rinsed, air-dried nylon threaded hose barb is attached. The hose barb is fitted with new vinyl tubing of sufficient length for the sampler to have a work area (3 to 8 feet). The hose bib is opened and the rate adjusted to approximately 1-2 gallons per minute. Flow from the tubing is directed to a ¼ gallon polyethylene container that is fitted within a 5 gallon polyethylene pail. Flow rate is gauged using the 5 gallon pail and timed to the minute.

Flow into the smaller container is monitored for the "field parameters" of pH, Specific Conductance (to 10 uS/cm), Temperature (to 0.2 °C), and Oxidation-Reduction Potential (ORP to 1 mV). Field parameters are measured frequently using calibrated instrumentation and recorded. Calibrations were conducted using the manufacturer instructions before each field day with a calibration check performed at the end of the day.

The use of parameter stabilization is a preferred practice in groundwater sampling because it is a chemical rather than volumetric method of determining when the water discharging from the well is representative of the aquifer. Ideally, running calculations are made evaluating the rate

of change of stability criteria. Here, parameter stabilization was evaluated using professional judgment rather than by calculation to limit time on each well to about 30 minutes. Purge volumes before stabilization varied from 20 to 45 gallons.

After parameter stabilization a sample is collected from the flowing groundwater stream at the end of the vinyl tubing in a 500 ml high-density polyethylene bottle, rinsing the bottle and cap with flowing sample three times prior to sample collection. Bottles were labeled uniquely with indelible marker, water-tight bagged individually, and placed on ice immediately after collection. Samples have remained in Dr. Miller's custody from sampling through the date of this report.

Unlike the domestic wells, the five non-thermal agricultural wells and two thermal wells sampled did not have convenient sampling ports or hose bibs. It was not possible to use the hose bib and tubing apparatus, or practical to collect a series of field parameter measurements on these wells. In these cases the wells sampled were either running at the time of arrival, or were run on arrival - discharging to the ground or tanks for sufficient time to clear water contained in the casing and distribution line. Samples from these six wells were either collected directly into sample containers, or were collected in a new clean 5 gallon pail and sub-sampled from the pail. In all cases, samples and bottles are handled as described in the preceding paragraph (rinsing, labeling and preservation as described above).

Clean sampling procedures were used to the extent practical. Sampling equipment was new and unused ,or had been cleaned or stored clean prior to starting the sampling program. Disposable, powder-free Nitrile gloves were donned for all sampling equipment and instrument handling. Glove changes were made just prior to bottle handling and sampling. Tubing was always discarded between samples. All disposable sampling equipment (5-gallon pails, hose bibs, ¼ gallon containers) were discarded when contact with visible dye was noted. Dr. Miller avoided inadvertent contact with dye by remaining away from equipment and areas used for tracer test preparation.

Dye Detection and Quantification Analysis Method

Dye tracers are uniquely useful in hydrology studies because they are visible to the naked eye at very low concentrations (~1 ppb) and are detectable at much smaller concentrations using spectroscopy. Spectrophotometers measure the wavelength of light emitted by dyes when excited with another light source. Dyes differ in the wavelengths that they are excited by and

emit. The presence or absence of a dye can be determined by fluorescence (emission) at a particular wavelength.

Dye fluorescence analysis was conducted in the laboratory of Dr. Bruce Thompson, University of New Mexico, on March 2, 2012. The analysis was conducted by a research assistant under the supervision of Dr. Thompson. Dr. Miller was present for all analytical procedures conducted on the 16 groundwater samples with Dr. Thompson's review of the methods.

A Varian Cary Eclipse Fluorescence Spectrophotometer was used. A dye standard was prepared from material from the January 2012 dye tracer study, as supplied by Cyrq Energy. Commercial tracer dyes vary in the amount of pure dye contained in the bulk chemical. Dye standards prepared in the lab were assigned a concentration using the assumption that the dye is 100% pure, and are thus relative concentrations. This assumption is always conservative in that relative concentrations are always greater than true concentrations. The detection limit determined for this effort was 0.1 ppb relative concentration using maximum excitation. A linear calibration curve using medium excitation was prepared using 1.0, 10.1 and 101 ppb relative concentration standards for quantitative analysis of samples with visible dye (>> 1 ppb relative).

Results

Table 1 presents the analytical results for the sampled wells. Two samples of thermal water had quantifiable dye tracer at concentrations of 38.6 and 87.0 ppb relative to pure dye. No agricultural or domestic (potable) wells had detectable dye tracer (<0.1 ppb relative concentration).

Summary

A rapid response sampling program was conducted on to test for dye tracer in non-thermal groundwater near the site of a geothermal system dye tracer test. Sixteen wells were sampled, two thermal and 14 non-thermal. Dye detections were confined to thermal waters. Dye tracer was not found in non-thermal water.

Table 1. Wells sampled for dye tracer near Cotton City, Hidalgo County, New Mexico.

Sample ID[1]	Sample Date	Sample Time	Dye Concentration (ppb)[2]	OSE Well Number[3]	UTM Easting (meters)[4]	UTM Northing (meters)[4]	Sampling Method	Water User
A0141	29-Feb-12	1200	ND	A0141	12701727	3562522	Stabilization	Clyde Mahan
A0145	29-Feb-12	1248	ND	A0145	12703265	3561269	Stabilization	Linda Ventimiglia
A0055	29-Feb-12	1343	ND	A0055	12700745	3562570	Stabilization	Myra Mahan
MT01	29-Feb-12	1439	ND		12701139	3562401	Stabilization	Mark Thomas
GK01	29-Feb-12	1550	ND		12702990	3568589	Timed Purge	Greg Kerr
A0018	29-Feb-12	1601	ND	A0018	12702974	3570885	Stabilization	Ed Kerr
AC Hot	29-Feb-12	1724	87.0		12704503	3559223	Timed Purge	Damon Seawright
AC Cold	29-Feb-12	1740	ND		12702046	3558968	Timed Purge	Damon Seawright
A0091	1-Mar-12	930	38.6	A0091	12704509	3559405	Timed Purge	Dale Burgett
A0012	1-Mar-12	1016	ND	A0012	12702522	3556942	Stabilization	Colt Rudiger
A0276	1-Mar-12	1120	ND	A0276	12701958	3553368	Stabilization	Jim Victor
VVC	1-Mar-12	1200	ND	A0253	12699959	3559275	Stabilization	Valley View Church
A0083	1-Mar-12	1313	ND	A0083	12702078	3558948	Stabilization	McCant
DB1	1-Mar-12	1400	ND		12701671	3558907	Timed Purge	Dale Burgett
DB2	1-Mar-12	1414	ND		12701687	3558872	Timed Purge	Dale Burgett
DB3	1-Mar-12	1426	ND		12701680	3558866	Timed Purge	Dale Burgett

[1] Sample ID used for analytical work and Figure 1

[2] Relative to original dye concentration of 100%

[3] Some OSE well numbers unresolved by the date of this report

[4] Readings by handheld GPS, NAD 83

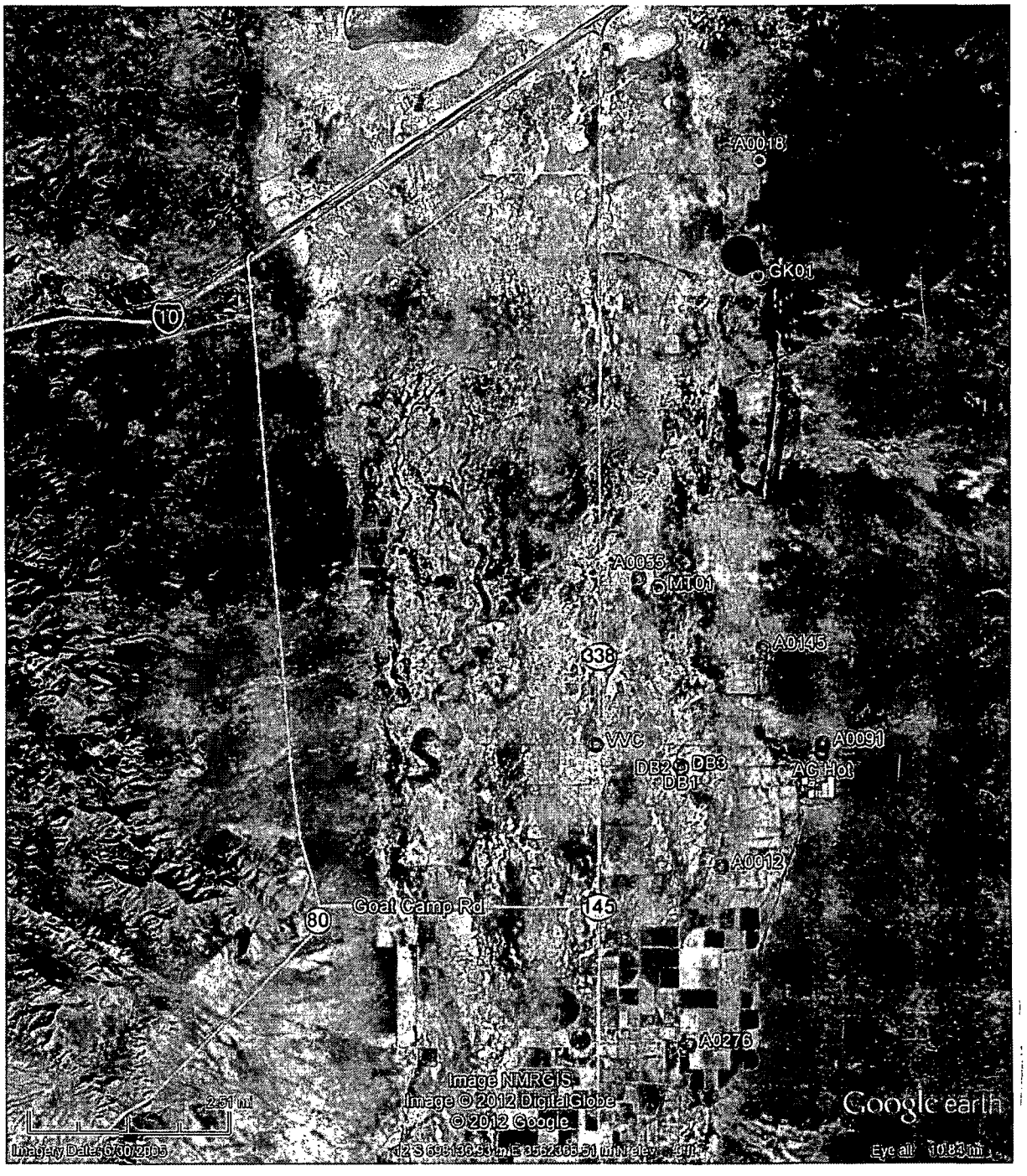

Figure 1. Map showing wells sampled for dye tracer near Cotton City, Hidalgo County, New Mexico on February 29 and March 1, 2012. Wells depicted in red are geothermal. The two geothermal wells are also the only locations where dye tracer was found. Not all wells are depicted in the center of the figure for clarity. See Figure 2 for detail of the Figure 1 center.

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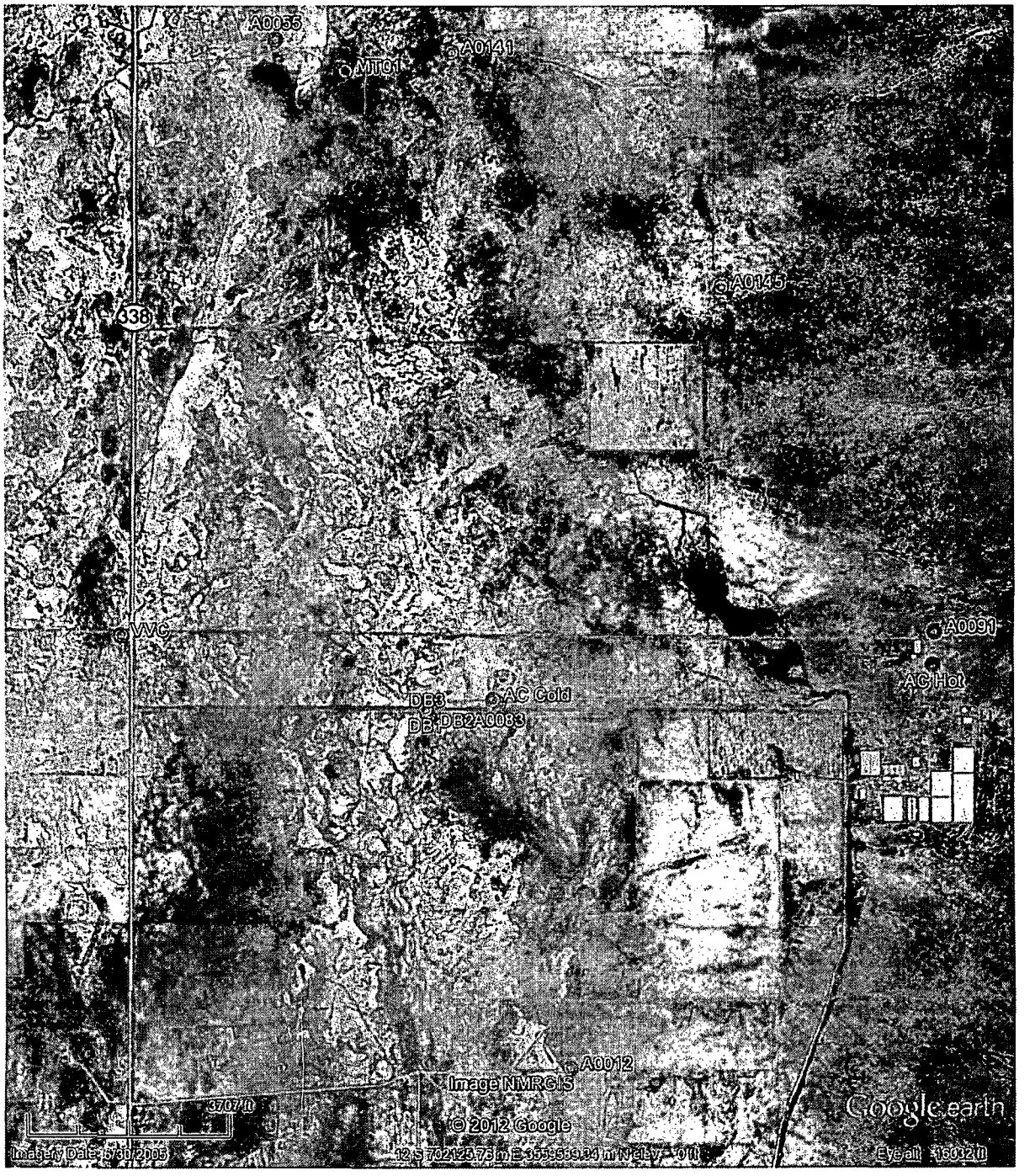

Figure 2. Detail of center section of Figure 1. Dye tracer was not detected in all domestic and agricultural wells (blue) shown here. The injection point, State Well 7, lies about 200 feet north of thermal well A0091.

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Lightning Dock Geothermal HI-01, LLC
Kearns Building, Suite 600
136 South Main Street
Salt Lake City, UT 84101

March 20, 2012

Mr. Damon Seawright
President
AmeriCulture, Inc.
25 Tilapia Trail
Animas, NM 88020

Re: Water Quality Remediation Services

Dear Mr. Seawright,

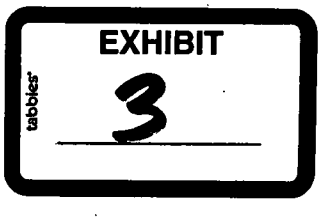
This letter agreement (this "Agreement"), if signed by you, as authorized representative of AmeriCulture, Inc. (together with its shareholders, directors, officers, and successors in interest, "AmeriCulture"), on or before March 31, 2012, sets forth the agreement between AmeriCulture and Lightning Dock Geothermal HI-01, LLC ("LDG"), with respect to certain water quality remediation services we will provide in connection with LDG's injection in January 2012 of Rhodamine-WT tracer dye into a geothermal well near AmeriCulture's property (the "Occurrence"). In this Agreement, AmeriCulture and LDG are each a "Party" and, together, may be referred to as the "Parties."

This Agreement is being entered into pursuant to that certain Joint Facility Operating Agreement dated September 6, 1995 (the "JFOA"), that delineates the Parties' mutual rights and responsibilities with regard to the geothermal resource under their respective properties. Section IV.B.4 of the JFOA obligates LDG to indemnify AmeriCulture against harms arising out of any activities of LDG permitted by the JFOA.

AmeriCulture operates a commercial tilapia production facility (the "Tilapia Farm") on property located in Hidalgo County, and has alleged that the Occurrence has resulted in some or all of the tilapia fish being raised and sold by AmeriCulture being tinted with a pink hue. This Agreement lays out our mutual responsibilities with regard to remediating any harm caused as a result of the Occurrence.

1. LDG's Provision of a Water Treatment System.

Promptly after the full execution of this Agreement, and subject to any events of force majeure, LDG shall supply and install, and shall thereafter operate and maintain, a water treatment system ("System") substantially in the form as described in Exhibit A hereto, for the purpose of reducing Rhodamine-WT concentrations in the water used to cultivate fish at the Tilapia Farm.



The System will be owned by LDG, and the supply, construction, operation, and maintenance of the System shall be without cost to AmeriCulture, provided that AmeriCulture fully cooperates, assists and allows LDG and its agents and contractors to access AmeriCulture property as necessary and as more fully described in paragraph 2 below.

LDG will periodically monitor and test the quality of the water entering into AmeriCulture's tilapia fish tanks and the operation of the System to ensure its continued functioning. LDG shall have the right to maintain and alter the System as necessary to ensure the water being used to cultivate fish at the Tilapia Farm is substantially free of Rhodamine-WT. The Parties agree to evaluate the effectiveness of the System at least every two years and to make a determination of whether the System continues to be needed.

LDG shall have the right, in its sole discretion, to terminate its obligations under this paragraph 1 if (a) AmeriCulture ceases operation of the Tilapia Farm, or (b) AmeriCulture breaches any of its obligations under this Agreement. In the event that LDG elects to terminate its obligations pursuant to the foregoing sentence, it has the right, but not the obligation, to dismantle and remove the System.

2. AmeriCulture's Consideration.

AmeriCulture agrees, without condition, qualification or payment, to provide LDG and its representatives, contractors and subcontractors, access at all reasonable times to AmeriCulture's property as necessary for the implementation of LDG's obligations under paragraph 1 above, including but not limited to (a) constructing, operating, monitoring, maintaining and implementing the System; (b) conducting investigations relating to contamination at or near the Tilapia Farm; (c) obtaining water samples from the Tilapia Farm and related wells as frequently as weekly; and (d) assessing the need for, planning, or implementing additional response actions at or near the Tilapia Farm.

In further consideration of LDG's obligations hereunder, AmeriCulture restates and reaffirms the JFOA.

3. Non-Disparagement.

AmeriCulture agrees that it will not directly or indirectly make, repeat or publish any false or disparaging, negative, unflattering, or accusatory remarks or references, whether oral or in writing, regarding LDG, its officers, directors, employees and affiliates, in any dealings with third parties including any members of the press or media, and LDG's customers, potential customers, suppliers, contractors and employees.

4. Complete and Binding Agreement; Amendments.

This Agreement sets forth all of the terms and conditions of the agreement between the Parties concerning the subject matter hereof and supersedes any prior oral communications. This Agreement may be amended only by a written document signed by the Parties.

5. Severability.

In the event that any of the provisions of this Agreement are found by a judicial or other tribunal to be unenforceable, the remaining provisions of this Agreement will remain enforceable.

6. Nonadmission.

This Agreement is being entered into solely for the purpose of settling disputed claims, and shall not be construed as: (a) an admission by LDG of any (i) liability or wrongdoing to AmeriCulture, (ii) breach of any agreement, or (iii) violation of a statute, law or regulation; or (b) a waiver of any defenses as to those matters within the scope of this Agreement. LDG specifically denies any liability or wrongdoing with respect to the Occurrence, and AmeriCulture agrees that it will not state, suggest or imply the contrary to anyone, either directly or indirectly, whether through counsel or otherwise.

7. Governing Law.

This Agreement shall be governed by New Mexico law.

8. Dispute Resolution; Waiver of Jury Trial.

Any dispute that arises in connection with this Agreement and that is not resolved informally by the Parties within thirty (60) days after notice of the dispute is given to a Party may be referred by either Party to the American Arbitration Association for arbitration. The arbitration shall be conducted by one (1) mutually agreeable, impartial arbitrator in Albuquerque, New Mexico. The award of the arbitrator shall be final and binding upon the Parties without right of appeal to the courts. Notwithstanding the foregoing, any Party may seek injunctive relief to prevent immediate harm arising from the breach of the other Party's obligations hereunder. To the fullest extent permitted by law, each of the Parties hereby waives any right to trial by jury with respect to any dispute arising out of or relating to the enforcement, interpretation or existence of this Agreement which may be brought in a court of law.

9. Costs.

Each Party shall pay its own costs and fees, including attorneys' fees and other legal fees in connection with and enforcement of this Agreement.

10. Counterparts.

This Agreement may be signed by the Parties in multiple counterparts, each of which shall constitute an original, but all of which together shall be deemed one and the same instrument. No Party to this Agreement shall be bound hereby until a counterpart of this Agreement has been executed by all Parties hereto.

[SIGNATURES FOLLOW ON NEXT PAGE]

Sincerely,

LIGHTNING DOCK GEOTHERMAL HI-01, LLC

Nicholas Goodman

Printed: Nicholas Goodman

Title: Chief Executive Officer

Date: March 20, 2012

Acknowledged and Agreed,

AMERICULTURE, INC.

_____

Printed: Damon Seawright

Title: President

Date: March ___, 2012

EXHIBIT A - DESCRIPTION OF WATER TREATMENT SYSTEM

[SEE ATTACHED]

Water Treatment System – Rhodamine Removal
AmeriCulture Facility, New Mexico
CERQ Energy

Concept Summary

The water treatment system will reduce the rhodamine concentration in the process water using granular activated carbon (GAC) as an adsorbent. GAC adsorbent of rhodamine has been bench tested (by others) and is considered an efficient media for rhodamine removal from high temperature water. The water temperature has been reported to range from 180 to 240 degrees F. The new water treatment system will tie into the existing 3" carbon steel (CS) line that runs from the existing well to the existing, 12-inch diameter CS standpipe. The tie-in will be achieved with 3" galvanized steel (GS) piping. Hot (geothermal) well water (180-240°F), will be diverted to a 5,000 gallon, vertical, surge tank where steam will be permitted to vent and large particles will be permitted to settle out of suspension. The surge tank will be fitted with a steam vent to prevent over pressurization, as well as a manway and drain valve to facilitate the removal of settled solids. The process stream will flow from the surge tank through a 3" GS line, to a pump regulated at a flow rate of approximately 100 gallons per minute at 50 psi, to match the incoming flow rate during production well operations. An identical, redundant pump will be installed in parallel to allow servicing of the pumps without having to shut down the entire system. A level transmitter located in the surge tank will control the variable frequency drive of the operating pump to maintain a proper water operating level in the tank, balancing process flow to production flow. A low level set point will be established for low water pump shut off. A high level set point will also be established to activate a local, high water alarm light. A magnetic flow meter with a local, flow indicator and a pressure indicator will be located downstream of the pumps.

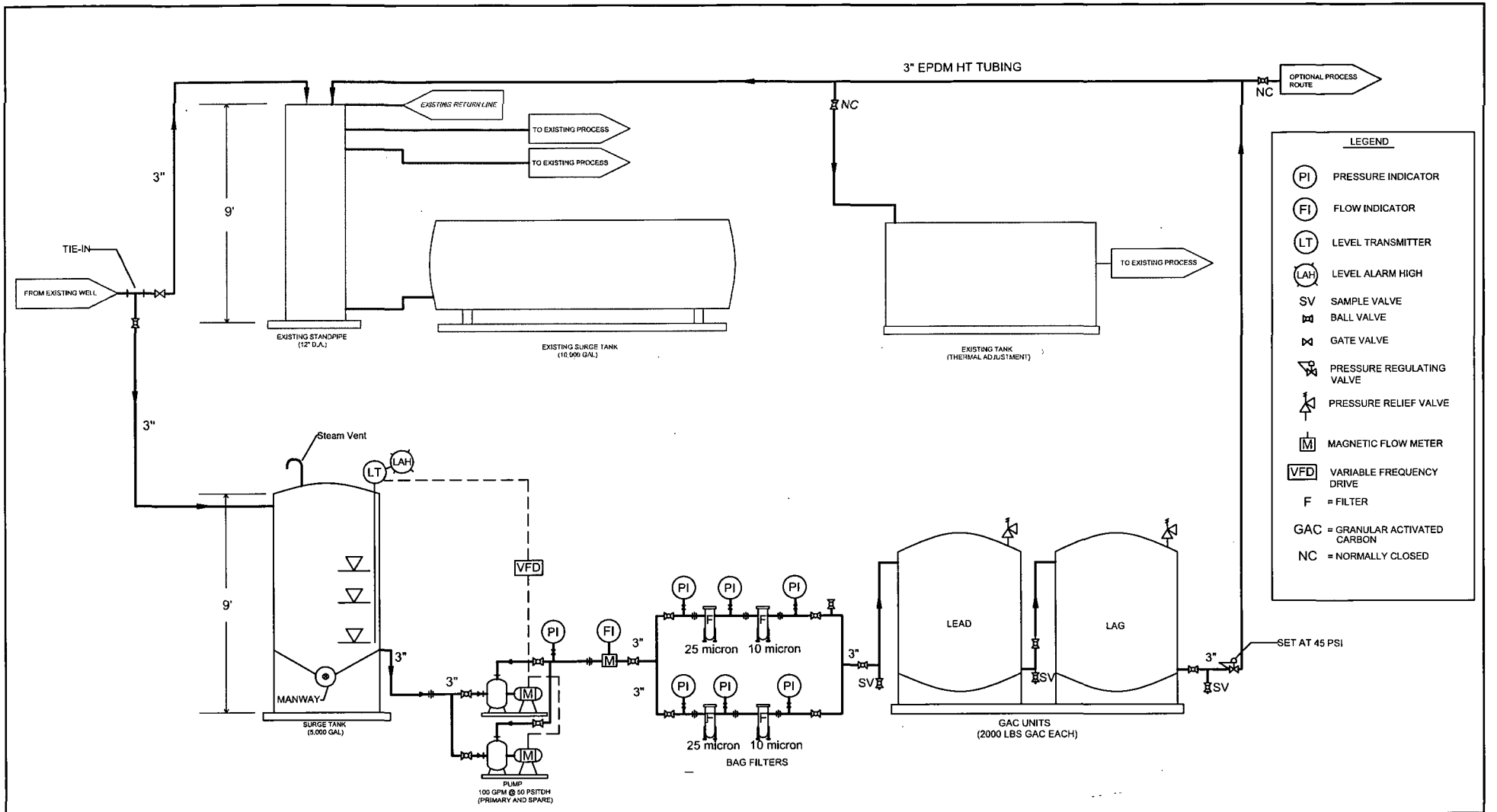
The water from the pump will flow through a 3" line to a bank of two bag filters. The first bag filter will have a filter element of 25 microns, and the second will have a filter element of 10 microns. A second bank of identical filters will be installed in parallel in order to allow filter element changes without system shutdown. A pressure indicator will be located before and after each filter housing to provide a means of monitoring filter performance and indicating when filter changes are necessary. The filters will remove large particulates anticipated to accumulate in the surge tank. Removal of these particulates will increase the life of the GAC media.

After passing through the filters, the water will flow through a 3" line to two GAC vessels installed in series. Each vessel will contain 2000 lbs of GAC. The first vessel, or Lead vessel, will remove the majority of the rhodamine in the water, and the second vessel, or Lag, will polish the stream to ensure that rhodamine levels are below detection limits. When the media in the lead vessel reaches rhodamine breakthrough, the media will be refreshed, and placed back online as the new lag vessel. The old lag vessel will be plumbed to become the new lead vessel. Sample valves will be located before, between, and after the GAC units allowing the operator to analyze the performance of the units and to determine media replacement schedules.

A pressure regulator will be located downstream of the GAC units in order to keep the system pressurized and prevent steam flashing within the treatment system. After the pressure regulator, the process stream will be directed either to the existing standpipe or the existing thermal adjustment tank, as needed, before being delivered to the existing process by the facility operator.

The new water treatment components will be installed on a concrete pad near the tie-in point adjacent to the existing standpipe and surge tank. A 20 ft X 20 ft X 8 inch pad is anticipated. The components will be assembled and connected in the field with galvanized steel fittings and EDPM high temperature hose.

Figure 1 shows the General Process Flow Diagram for the system, Table 1 contains an Equipment and Materials Schedule, and Appendix A contains Manufacturer's Data Sheets for the equipment and materials.



CLIENT: CYRQ ENERGY	DWN BY: KWJ	PROJECT: AMERICULTURE FACILITY PROJECT	DATE: 03/16/12
AMEC Environment & Infrastructure, 8519 Jefferson, NE, Albuquerque, NM 87113	CHK'D BY: DAK		PROJECT NO: 1151700102
	DATUM: N/A	TITLE: GENERAL PROCESS FLOW DIAGRAM RHODAMINE / WATER TREATMENT SYSTEM	REV. NO.: -
	PROJECTION: NTS		FIGURE NO. 1
	SCALE: AS SHOWN		

Water Treatment System - Rhodamine Removal
AmeriCulture Facility, New Mexico
CERQ Energy

Table 1. Equipment and Materials Schedule

Item	Description	Model	Qty	Unit
1	Goulds Pumps™ Frame Mounted End Suction Stainless Steel Pump	4SHFMR2C2	2	Ea
2	AC Tech™ Variable Frequency AC Drive	ESV552N02TXD	1	Ea
3	Gems Sensors and Controls™ Ultrasonic Level Transmitter	UCL-510	1	Ea
4	Pentek™ Bag Filter Assembly	AC8024S3	4	Ea
5	Siemens Water Technologies™ Granular Activated Carbon Vessels	HP®2000SS	2	Ea
6	Badger Meter™ Magnetic Flow Meter	M Series, 3-Inch	1	Ea
7	Sani-Tech® High Temperature Food Grade Hose	GFDA-2000, 3000	TBD	LF

Equipment and Materials Schedule

Item 1

GOULDS PUMPS

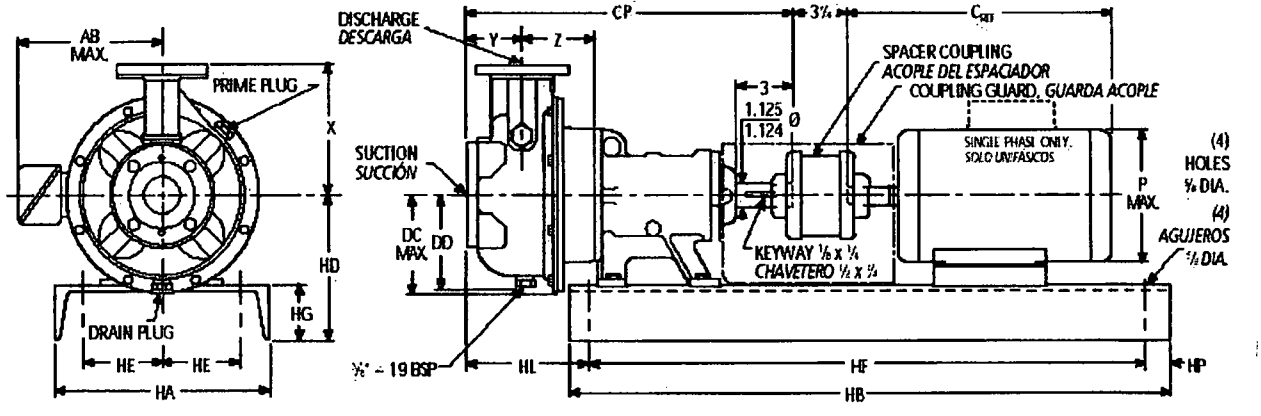
Unit Dimensions

SSH Frame Mounted
End Suction Stainless Steel Pumps
MODEL : 4SHFRM2C2

Hydraulic Data					Motor Data	SSH S Group	Qty.
Maximum Flow	Flow at Duty Point	Maximum TDH	TDH at Duty Point	$NPSH_R$	Voltage / Phase / Enclosure	Model	
199 US g.p.m.	100 US g.p.m.	141 ft	115 ft	7 ft	460V 3PH TEFC	4SHFRM2C2	1

Submittal Prepared for: _____ Job: _____
Engineer: _____ Contractor: _____
Submittal Prepared by: Wood, Jack Company: _____
Submittal Date: 2012-03-15 Approved by: _____ Date: _____

Channel Steel Bedplate, Clockwise Rotation Viewed from Drive End;
Fundación de Acero, Rotación en Dirección de las Agujas del Reloj Visto desde el Extremo del Motor



Dimension	Value	Dimension	Value
AB	7 3/8	HG	3
C ref	18	HP	1
CP	16 1/2	P max	9 5/8
CPmax	16 1/2	X	6 3/8
DC	5	Y	3 1/4
DD	4 3/4	Z	3 5/8
HA	12		
HB	31		
HD	8 1/4		
HE	4 1/4		
HF	29		

Printed from data file
2012-03-15

GOULDS PUMPS

Submittal Data

SSH Frame Mounted
End Suction Stainless Steel Pumps
MODEL : 4SHFRM2C2

Hydraulic Data					Motor Data	SSH S Group	Qty.
Maximum Flow	Flow at Duty Point	Maximum TDH	TDH at Duty Point	$NPSH_R$	Voltage / Phase / Enclosure	Model	
199 US g.p.m.	100 US g.p.m.	141 ft	115 ft	7 ft	460V 3PH TEFC	4SHFRM2C2	1

Submittal Prepared for: _____ Job: _____
Engineer: _____ Contractor: _____
Submittal Prepared by: Wood, Jack Company: _____
Submittal Date: 2012-03-15 Approved by: _____ Date: _____

Engineering Data

Pump Code: 4SHFRM2C2
Pump Size: 1 1/2 x 2 1/2 - 6
Pump Max Horsepower: 6.3437 hp
Pump Horsepower at Rating Point: 5.30 hp
Pump Shut Off Head: 141 ft
Motor Speed: 3450 rpm
Max. Temperature: 212 °F
Liquid: Water
Motor Code: H11142
System Input Power: 3~ 460 V
Motor Rated Horsepower: 7.50 hp
Max. Frequency 60
Electrical Enclosures: TEFC
Motor Standard: NEMA
Suction Flange Standard: ANSI
Suction Flange Rating: Class 150
Suction Size: 2 1/2" 316SS
Discharge Flange Standard: ANSI
Discharge Flange Rating: Class 150
Discharge: 1 1/2" 316SS
Approximate Net Weight: 99 lb
Impeller Size: 6 1/16"
Impeller Construction: Closed
Impeller Type: Radial impeller
Impeller Material:
316L Stainless Steel
Sense of Rotation: Clockwise from the drive end
Shaft Seal: Carbon/Sil-Carbide/EPR

Standard Equipment / Capability:

Close coupled or frame mounted end suction pump.
All liquid handling components of AISI 316L statinless steel.
Flanged connections to mate with standard ANSI 150 lb raised face flange.
Discharge is top centerline for piping flexibility.
Close coupled version uses standard NEMA JM frame motors.
Frame mounted version uses standard NEMA T frame motors.
Uses standard John Crane Type 21 mechanical seal.
Maximum working pressures to 230 PSI
Maximum temperatures to 250 F
Enclosed impeller with replaceable wear ring for high efficiency and long pump life.

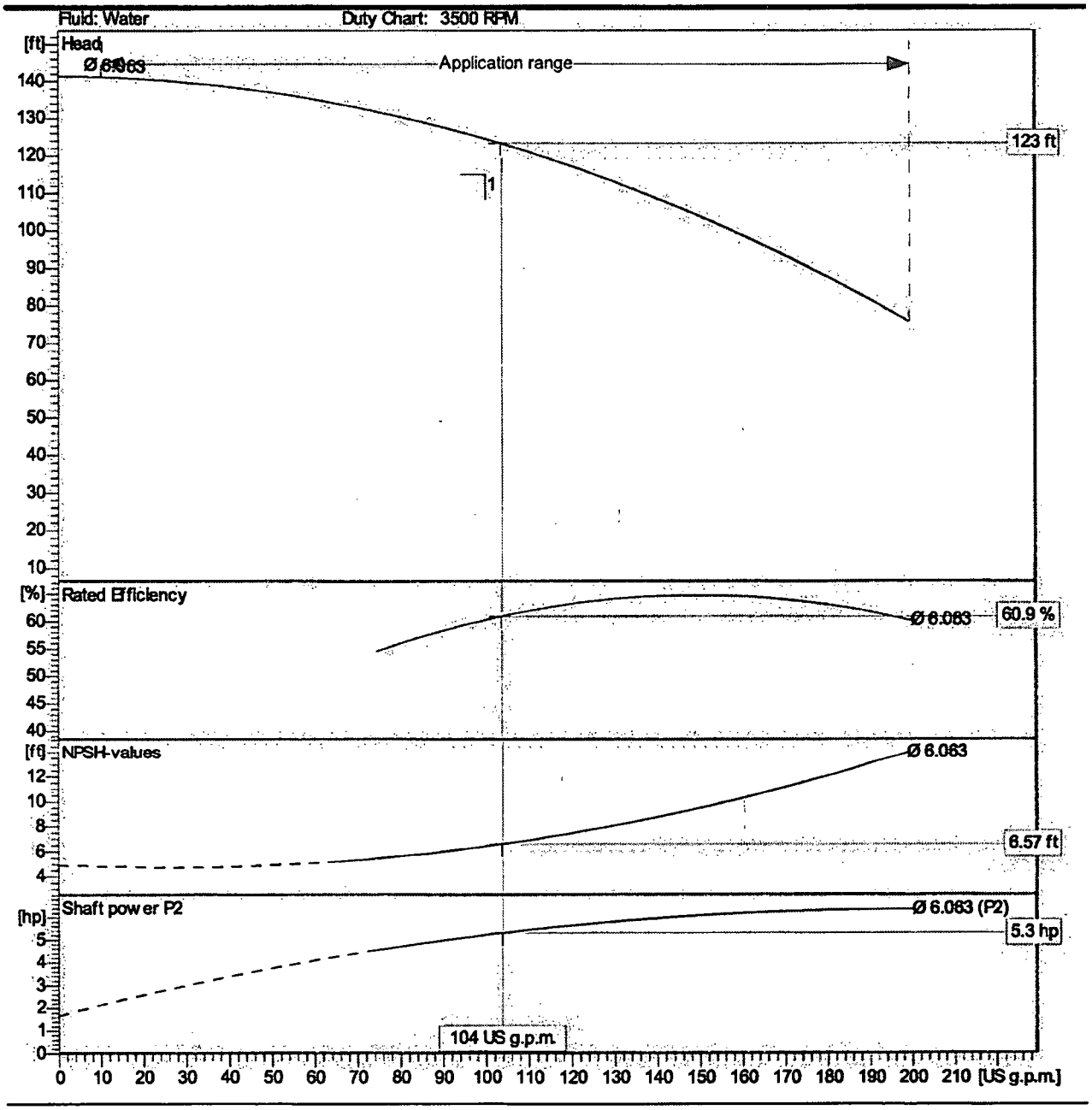
GOULDS PUMPS

Performance Data

SSH Frame Mounted
End Suction Stainless Steel Pumps
MODEL : 4SHFRM2C2

Hydraulic Data					Motor Data	SSH S Group	Qty.
Maximum Flow	Flow at Duty Point	Maximum TDH	TDH at Duty Point	$NPSH_R$	Voltage / Phase / Enclosure	Model	
199 US g.p.m.	100 US g.p.m.	141 ft	115 ft	7 ft	460V 3PH TEFC	4SHFRM2C2	1

Submittal Prepared for: _____ Job: _____
Engineer: _____ Contractor: _____
Submittal Prepared by: Wood, Jack Company: _____
Submittal Date: 2012-03-15 Approved by: _____ Date: _____



Printed from data file
2012-03-15

Equipment and Materials Schedule

Item 2

AC Tech

(800) 894-0412 (208) 368-0415 (Fax)
info@ctiautomation.net

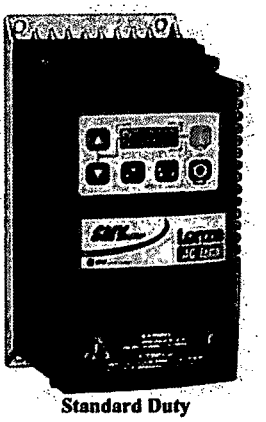
Product Selection Guide
New Products
User Manuals
Software
Catalogs
Datasheets
How To/FAQs
Product Articles

Standard Duty NEMA 1 (IP31)

- **Brochure/Catalog**
- **Operating Instructions**

The SMVector NEMA 1 (IP31) is the most common and cost effective drive enclosure for a wide range of applications including packaging, material handling / conveying, positive displacement pumping, and HVAC systems. The power ranges of the SMVector with NEMA 1 (IP31) include:

- 120/240V - 1Phase Input, up to 1.5 HP (1.1 kW)
- 200/240V - 1 or 3 Phase Input, up to 3.0 HP (2.2 kW)
- 200/240V - 3 Phase Input, up to 20 HP (15 kW)
- 400/480V - 3 Phase Input, up to 60 HP (45 kW)
- 480/600V - 3 Phase Input, up to 60 HP (45 kW)



Standard Duty

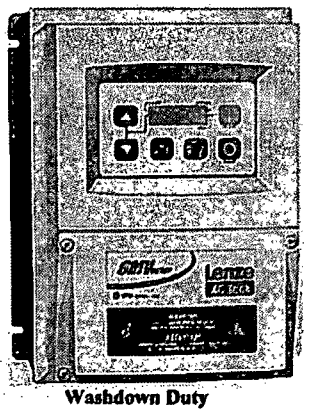
If you are looking for **AC Tech SMVector Drives**, please call us at **(800) 894-0412** or email us at **info@ctiautomation.net** we will do our best to help you find the AC Tech SMVector NEMA 1 VFD that you are looking for at the most competitive prices possible. If you are searching for AC Tech SMVector NEMA 4 Inverter technical information (data-sheets) please use the datasheets or product selection guide page links.

Washdown Duty NEMA 4X (IP65)

- **Brochure/Catalog**
- **Operating Instructions**

The SMVector NEMA 4X (IP65) is available in two enclosure materials for indoor only use and for indoor/outdoor use. These rugged enclosure options are ideal for many industries including food / beverage, waste water, chemical metering and processing, and pharmaceuticals. The power ranges of the SMVector in NEMA 4X include:

- 120/240V - 1Phase Input, up to 1.5 HP (1.1kW)
- 200/240V - 1 or 3 Phase Input, up to 3.0 HP (2.2 kW)
- 200/240V - 3 Phase Input, up to 20 HP (15 kW)
- 400/480V - 3 Phase Input, up to 30 HP (22 kW)
- 480/600V - 3 Phase Input, up to 30 HP (22 kW)



Washdown Duty

NEMA 4X (IP65) with Integral Disconnect

- **Brochure/Catalog**
- **Operating Instructions**

The SMVector with Integral Disconnect is available in a rugged NEMA 4X (IP65) indoor enclosure ideal for many industries including food / beverage, waste water, chemical metering and processing, pharmaceuticals and more. The integral disconnect switch offers the ability to isolate the motor for maintenance and servicing. Also the disconnect switch handle is lockable and is made of red and yellow materials for high visibility. The power ranges of the SMVector in NEMA 4X with Integral Disconnect include:

LEESON Drives

The SM Series Vector Control is designed for easy installation into your control panel. The compact size of this control, along with its contactor style design, takes up little room in your control panel and makes it easy to wire to. This control is easy to program and has auto tuning to make sure you get all the performance you need. It is designed for either Vector or V/Hz mode.

Hitachi Drives

The L100-M Series Inverter Drive features state-of-the-art circuitry and components to provide high performance. The housing footprint is exceptionally small, given the size of the corresponding motor. The Hitachi L100 product line includes more than a dozen inverter models to cover motor sizes from 1/4 horsepower to 10 horsepower, in either 230 VAC or 460 VAC power input versions.

Hp	kW	I_N [A]	Model	Size	Model	Size
120/240V* - 1 Phase Input (3 Phase Output)						
0.5	0.37	2.4	ESV371N01SXC	R1	ESV371N01SMC	AA1
1	0.75	4.2	ESV751N01SXC	R1	ESV751N01SMC	AA1
1.5	1.1	6.0	ESV112N01SXC	R2	ESV112N01SMC	AA2
0.5	0.37	2.4	ESV371N01SXE	R1	ESV371N01SMC	AA1
1	0.75	4.2	ESV751N01SXE	R1	ESV751N01SMC	AA1
1.5	1.1	6.0	ESV112N01SXE	R2	ESV112N01SMC	AA2
*120/240V models provide 0-230V output even with 120V input applied.						
Power		**Output Current**	**NEMA4X Indoor [C] / Outdoor [E]**		**NEMA4X w/Disconnect Indoor**	
Hp	**kW**	**I_N [A]**	**Model**	**Size**	**Model**	**Size**
200/240V - 1 or 3 Phase Input (3 Phase Output)						
0.5	0.37	2.4	ESV371N02YXC	R1	ESV371N02YMC	AA1
1	0.75	4.2	ESV751N02YXC	R1	ESV751N02YMC	AA1
1.5	1.1	6.0	ESV112N02YXC	R2	ESV112N02YMC	AA2
2	1.5	7.0	ESV152N02YXC	R2	ESV152N02YMC	AA2
3	2.2	9.6	ESV222N02YXC	S1	ESV222N02YMC	AD1
0.5	0.37	2.4	ESV371N02YXE	R1	ESV371N02YMC	AA1
1	0.75	4.2	ESV751N02YXE	R1	ESV751N02YMC	AA1
1.5	1.1	6.0	ESV112N02YXE	R2	ESV112N02YMC	AA2
2	1.5	7.0	ESV152N02YXE	R2	ESV152N02YMC	AA2
3	2.2	9.6	ESV222N02YXE	S1	ESV222N02YMC	AD1
*Filter versions are also available in 1-phase: Replace the "YX" in the Model Part Number with an "SF". **Filter versions are also available in 1-phase: Replace the "YM" in the Model Part Number with an "SL".						
Power		**Output Current**	**NEMA4X Indoor [C or D] / Outdoor [E or F]**		**NEMA4X w/Disconnect Indoor**	
Hp	**kW**	**I_N [A]**	**Model**	**Size**	**Model**	**Size**
200/240V - 3 Phase Input (3 Phase Output)						
5	4	16.5	ESV402N02TXC	V1	ESV402N02TMC	AC1
7.5	5.5	23	ESV552N02TXD	T1	ESV552N02TMD	AB1
10	7.5	29	ESV752N02TXD	T1	ESV752N02TMD	AB1
15	11	42	ESV113N02TXD	W1	ESV113N02TMD	AF1
20	15	54	ESV153N02TXD	W1	ESV153N02TMD	AF1
5	4	16.5	ESV402N02TXE	V1	ESV402N02TMC	AC1
7.5	5.5	23	ESV552N02TXF	T1	ESV552N02TMD	AB1
10	7.5	29	ESV752N02TXF	T1	ESV752N02TMD	AB1
15	11	42	ESV113N02TXF	W1	ESV113N02TMD	AF1
20	15	54	ESV153N02TXF	W1	ESV153N02TMD	AF1

Equipment and Materials Schedule

Item 3

UCL-510 — Transmitter/Multipoint Switching Combo

- 49-inch (1.25m) range. Compact sensor with 2˝ dead band and beam width are optimized for small tank applications
- 1˝ NPT mounting
- Reliable, non-contact alternative to float and conductivity level sensors for corrosive, sticky or dirty media
- Outputs continuous level and provides full pump or valve control
- PVDF transducer for corrosive liquid media

The UCL-510 is a general purpose ultrasonic sensor providing non-contact level detection up to 49.2˝ (1.25m), with 4 relays for switch or control functions and continuous level measurement. This compact unit offers a non-contact alternative to our float or conductance sensors in small tank chemical feed or handling applications when corrosive, sticky or dirty media is involved.

The configuration software, supplied with the sensor, provides flexible system integration or retrofit of existing level devices with configuration control. Integral level automation functions can further reduce system costs through the reduction of external control hardware. The analog output enables local tank level indication, remote PLC monitoring or automation fuctions. Gems UCL-510 is the non-contact solution for small tank level switch, control and measurement.

Specifications

Range	49.2˝ (1.25 m)
Accuracy	0.125˝ (3 mm)
Resolution	0.019˝ (0.5 mm)
Beam Width	2˝ (5 cm)
Dead Band	2˝ (5 cm)
Supply Voltage	24VDC (loop)
Loop Resistance	400Ω max.
Consumption	0.5W
Signal Output	4-20 mA, two-wire (when loop powered)
Contact Type	(4) SPST relays 1A
Loop Fail-Safety	4 mA, 20 mA, 21 mA, 22 mA or hold last
Relay Fail-Safety	Power loss: Hold last; Power on: Open, close or hold last
Hysteresis	Selectable
Configuration Software	PC Windows® USB 2.0
Temp. Comp.	Automatic over range
Process Temp.	20°F to 140°F (-7°C to +60°C)
Ambient Temp.	-31°F to +140°F (-35°C to +60°C)
Pressure	MWP = 30 PSI
Enclosure	Type 6P encapsulated, corrosion resistant & submersible
Encl. Material	PC/ABS FR
Strain Relief Mat.	Santoprene®
Trans. Material	PVDF
Cable Length	48˝ (1.2 m)
Cable Jacket Mat.	Polyurethane
Process Mount	1˝ NPT (1˝ G)
Mount. Gasket	Viton®
Classification	General Purpose
Approvals	CE, cFMus

Typical Applications

- Water and Waste Water
- Control Automation
- Chemical Feed
- Food and Beverage
- Acids, Inks, Paints
- Slurries

Control and Switch Functions

- 2 pumps with 2 alarms
- 1 pump with 3 alarms
- 2 pumps (lead-lag) with 2 alarms
- 2 pumps (duplexing) with 2 alarms
- 4 level switch points

Versatile Application

Controller

- Auto fill/empty
- Can control 2 pumps/valves
- Lead/lag
- Duplex
- Unused relays may be used as additional alarms

The UCL-510 feature programmable level intelligence and can be reconfigured for different sensing duties (such as switch actuation points) after installation. This is an advantage over our float or conductivity type sensors. The user-friendly configuration software provides un-matched accuracy and programming for control applications. Multi-function relay control, coupled with 4-20 mA output generates amazing control capabilities. Advanced signal processing techniques provides the UCL-510 with next generation digital processing for control. The UCL-510 is level control made simple.

Switching

- High level alarm (1-4)
- Low level alarm (1-4)
- Any combination of high and/or low alarms

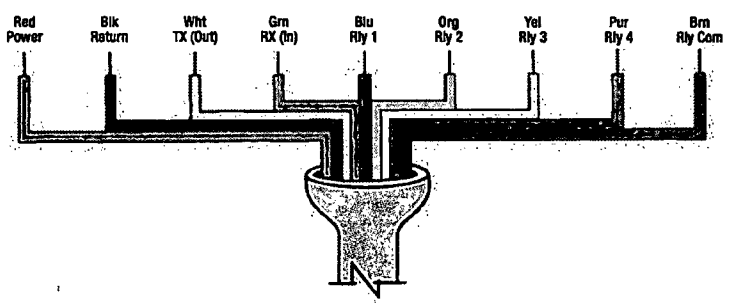
The UCL-510 provides a non-contact alternative to our float and conductivity probes multipoint level switches. It combines 4 built in SPST relays, with a selectable hysteresis that eliminates relay chatter from turbulent media. Additionally, non-contact sensors are immune to the performance issues influenced by changes in a media's specific gravity.

Continuous Transmitter

- Adjustable 4-20 mA output
- Reversible output
- Interface directly to local display and/or to PLC, SCADA, DCS systems
- Remote displays/controllers can increase relay functionality

The UCL-510 is a good non-contact alternative to our XT float type transmitters for challenging media that can damage moving parts. The UCL-510 is for sticky, scaling or corrosive media. It provides exceptional measurement accuracy (0.125"), resolution (0.019") and repeatability ensuring overall system performance reliability.

Wiring



How To Order

Select by Part Number.

Description	Part Number
UCL-510 Transmitter/Multipoint Switch with Configuration Software and Fob	225100
Replacement/Additional Configuration Fob	227100

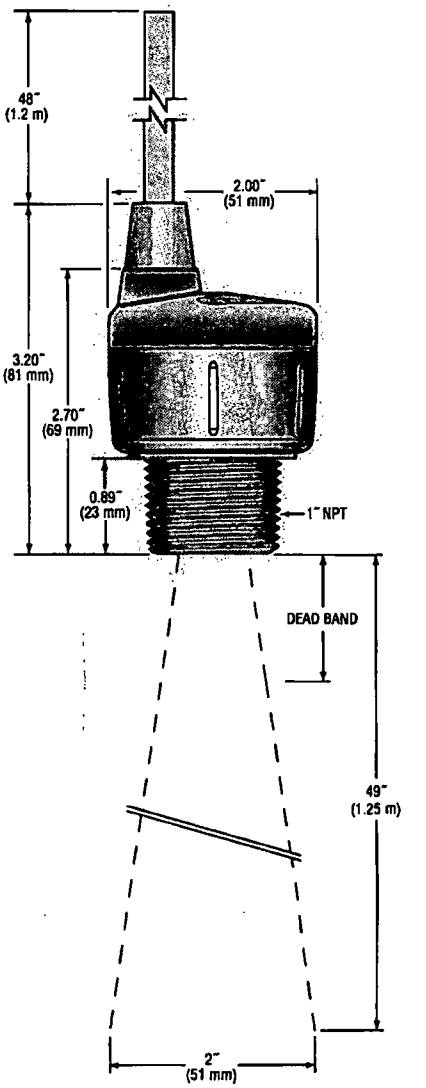
Configuration Software

- Free download @ GemsSensors.com/software
- Windows XP or 2000 compatible; USB 2.0 connection
- Provides configuration, file management (saving, printing, backup), and troubleshooting

The user interface allows you to take complete visual control of your set-up and configuration. Using simple menus and visual representations, the confusion of target calibration are gone. Once you have completed your configuration design, simply click "Write to Unit" and the UCL-510 is configured. It also enables multiple UCL-510's to be configured with just a click of the button. It even generates viewable and printable PDF wiring diagrams of your configurations to simplify and ensure proper field installation.

Gems supplies the USB Fob required to use the configuration software with each UCL-510 sensor. Replacements or additional Fobs may be ordered separately.

Dimensions



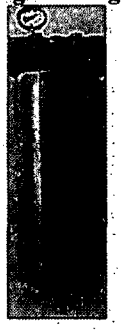
Equipment and Materials Schedule

Item 4

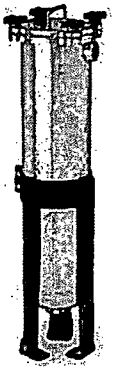
Bag Filter Vessel Housing Assemblies & Filter Bags

#10 Polypropylene Bag Housings

#20 Polypropylene Bag Housings

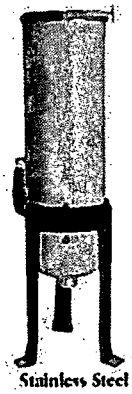


Steel High Flow Bag GP Housings



Steel ASME Coded Bag AC Housings

Steel Strap Band Bag Filter Housings



PBH-410 Specs:
> Polypropylene
> Lightweight
> Resists Corrosion
> Up to 50 gpm
> Up to 100 deg F
> Up to 100 psi
> From $135-$150

PBH-420 Specs:
> Polypropylene
> Lightweight
> Resists Corrosion
> Up to 50 gpm
> Up to 100 deg F
> Up to 90 psi
> From $158-$178

High Flow Specs:
> Steel
> Adjustable Legs
> Viton Cover Seal
> Up to 220 gpm
> Up to 300 deg F
> Up to 200 psi
> From $493-$2100

ASME UM Stamp:
> Steel
> Adjustable Legs
> Hinged Cover
> Up to 220 gpm
> Up to 300 deg F
> Up to 150 psi
> From $1249-$3255

Steel Strap Band:
> Steel
> Adjustable Legs
> Easy to Use
> Up to 220 gpm
> Up to 300 deg F
> Up to 150 psi
> From $432-$2266

PBH-410-1
(1" Inlet/Outlet)
$139.99 Each

PBH-410-15
(1.5" Inlet/Outlet)
$149.99 Each

PBH-420-1
(1" Inlet/Outlet)
$167.99 Each

PBH-420-15
(1.5" Inlet/Outlet)
$177.99 Each

Replacement Bags:
Use 4" W x 8-5/8" L Filter Bags below

Replacement Bags:
Use 4" W x 18" L Filter Bags below

PBH-410 Parts & Accessories:

PBR-410-BK 10" Replacement Basket

144357 Replacement Ball Valve

PBH-420 Parts & Accessories:

PBR-420-BK 20" Replacement Basket

144357 Replacement Ball Valve

Aluminum

OK if pH 6.5-8.5 & TDS under 500

GP801AL2
Filter Bag Size #1
7" W x 16.5" L Bag
100 psi 90 gpm 2"

GP802AL2
Filter Bag Size #2
7" W x 32" L Bag
100 psi 200 gpm 2"

GP802AL3
Filter Bag Size #2
7" W x 32" L Bag
100 psi 220 gpm 3"

GP503AL1.25
Filter Bag Size #3
4.1" W x 8" L Bag
200 psi 20 gpm

Carbon Steel

Ok with high pH

AC801CS2
Filter Bag Size #1
7" W x 16.5" L Bag
(2.0 Cubic Feet)
15" Basket
90 GPM thru 2" Pipe

AC802CS3
Filter Bag Size #2
7" W x 32" L Bag
(4.4 Cubic Feet)
30" Basket
220 GPM thru 3" Pipe

PL88 #1 Series
7" W x 16.5" L Bag
(2.0 Cubic Feet)
15" Basket
220 GPM

Carbon 2" NPT
Carbon 2" Flange
Carbon 3" Flange
304 SS 2" NPT
304 SS 2" Flange
304 SS 3" Flange
316 SS 2" NPT
316 SS 2" Flange
316 SS 3" Flange

PL88 #2 Series
7" W x 32" L Bag
(4.4 Cubic Feet)
30" Basket
220 GPM

Carbon 2" NPT

Pentek AC8024S3 ASME Coded 304 Stainless Steel Filter Bag Housing

3" Inlet/Outlet; 304 Stainless Steel; Use Filter Bag Size #2

- Features
- Specs
- Replacements

- Pentek AC8024S3 ASME Filter Bag Housing Specs:
- **Housing Material:** 304 Stainless Steel
- **Basket:** Stainless Steel
- **Maximum Flow Rate:** 220 GPM
- **Inlet/Outlet Size:** 3"
- **Maximum Pressure:** 150 PSI
- **Maximum Water Temperature:** 300 F
- **Filter Bag Size:** 2
- **Leg Type:** Band Clamp
- **Diameter:** 8.0 Inches
- **Dimension A (In.):** 6 Inches
- **Dimension B (In.):** 42 Inches
- **Dimension C (In.):** 45-5/16 Inches
- **Dimension D (In.):** 22 Inches
- **Standards:** ASME Coded Section VIII Div.1

Equipment and Materials Schedule

Item 5

HP®2000SS Liquid Phase Adsorber

Applications

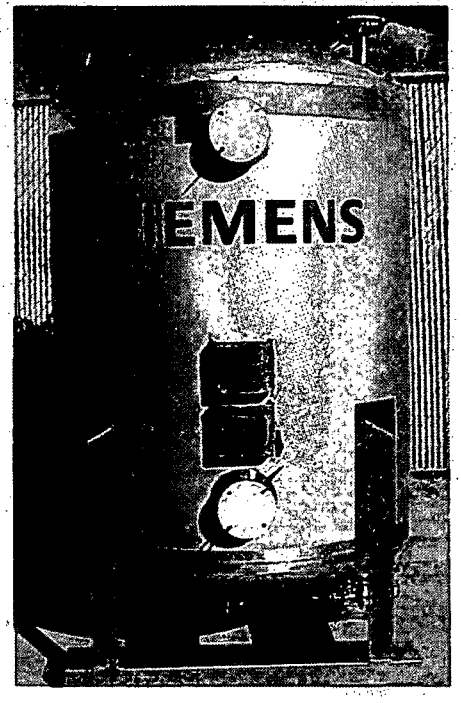
The HP®2000SS is a carbon adsorber designed for high pressure, high temperature, or corrosive liquid phase treatment applications where stainless steel materials of construction are required. Applications for the HP®2000SS include:

- Process purification – byproduct removal, decolorization
- Wastewater treatment
- Chemical spill cleanups
- Storage tank cleanouts

Installation, Startup and Operation

Siemens can provide a total service package that includes utilizing OSHA trained personnel providing on-site carbon changeouts, packaging and transportation of spent carbon for recycling at our reactivation facilities, where the organic contaminants are thermally destroyed.

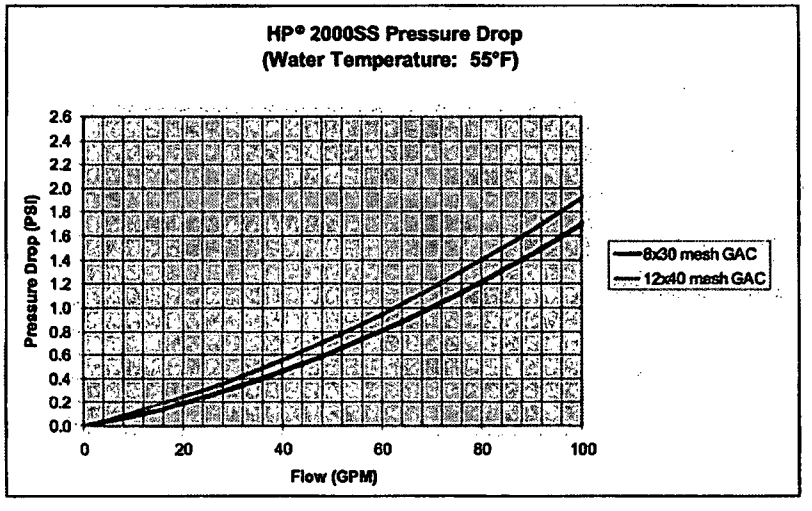
We provide instructions on sampling the spent carbon and completion of our spent carbon profile form. Spent carbon acceptance testing can be performed at our certified laboratory. When requested a certificate of reactivation will be issued.



Benefits and design features

- Ready to use adsorber, simple installation and operation
- ASME code section VIII (stamped) vessel
- 316SS construction
- Suitable for applications to 125 psig and 200° F
- Flanged process connections
- Rupture Disc for pressure relief
- 1" drain port and 3" media outlet port
- Top 14"x18" manway allows for easy internal inspection
- Fork channels and lifting lugs provided for movement/placement of unit on site
- Adsorber is UN/DOT approved transportation container for RCRA hazardous spent carbon

Specifications: HP® 2000SS	
Dimensions, diameter x overall height (approx.)	54" x 98"
Inlet connection	3" flanged
Outlet connection	3" flanged
Drain / sample connection	1" flanged
Vent connection	2" flanged with rupture disc
Media outlet	3" flanged
Top manway	14"x18" elliptical
Internal distributors	316SS
Carbon fill volume (cu. ft.)	68
Cross sectional area (sq. ft.)	15.9
Approximate carbon weight (lbs.)	2,000
Empty weight (lbs.)	1,500
System operating weight (lbs.)	7,300
Pressure, psig (max.)	125
Temperature, deg. F (max)	200
Maximum flow rate (gpm)	100
Contact time at max flow (minutes)	5



Warning
Safety Note: Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.

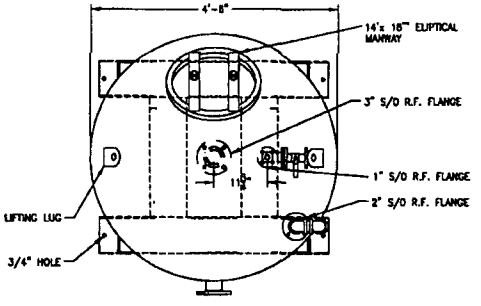
All information presented herein is believed reliable and in accordance with accepted engineering practices. Siemens makes no warranties as to completeness of information. Users are responsible for evaluating individual product suitability for specific applications. Siemens assumes no liability whatsoever for any special, indirect or consequential damages arising from the sale, resale or misuse of its products.

Siemens Industry, Inc.
11711 Reading Road
Red Bluff, CA 96080

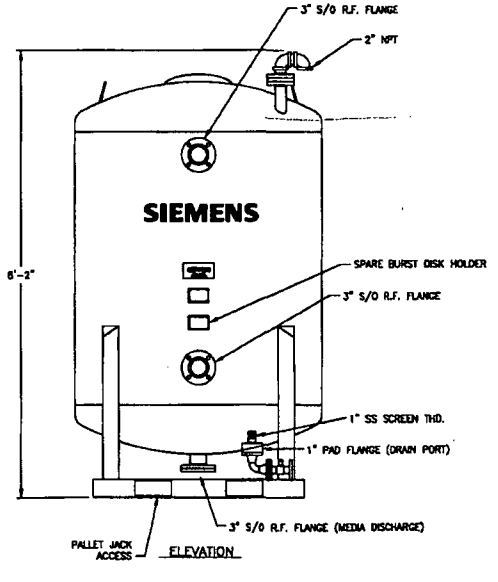
866-613-5620

www.siemens.com/es

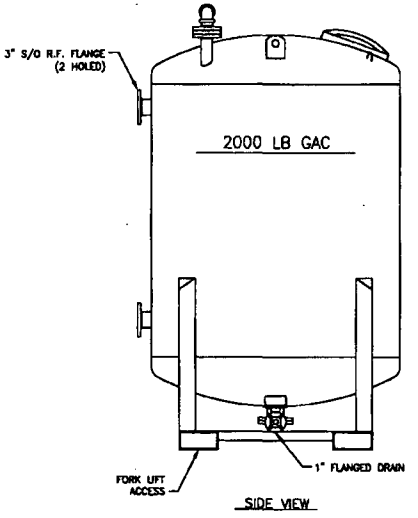
Subject to change without prior notice
Order No.: WS-HP2000SS-DS - 1011
Printed in USA



TOP VIEW



ELEVATION



SIDE VIEW

NOTES: UNLESS SPECIFIED OTHERWISE

1. DESIGN DATA:
   PRESSURE VESSEL-125 PSIG (MAX), 200°F
   ASME CODE STAMPED MAX FLOW 100 GPM
   68 CU. FT. ACTIVATED CARBON
2. MATERIAL:
   316L SS
3. APPROXIMATE WEIGHTS:
   EMPTY VESSEL : ..... 1,500 LBS
   SHIPPING WITH MEDIA: ..... 3,500 LBS
   OPERATIONAL (WATER) : ..... 7,300 LBS
4. EPDM GASKET MATERIAL

DESIGNER AIR	DATE 9-28-11	TITLE HP2000 SS 125 PSI
CHECKED	DATE	CLIENT
ENGINEER	DATE	SIEMENS Water Technologies RED BLUFF, CA
MANAGER	DATE	
FILE		
SCALE NONE		PROJECT / DRAWING HP2000SS-SALES / SHEET 1 OF 1 / REV 0

STD: BORDER-D10E-24X36D1 | WITL REF: | BAR = 1" AT PLOT SCALE | REV | DESCRIPTION | DATE | DRN | CHKD | APVD | ECN

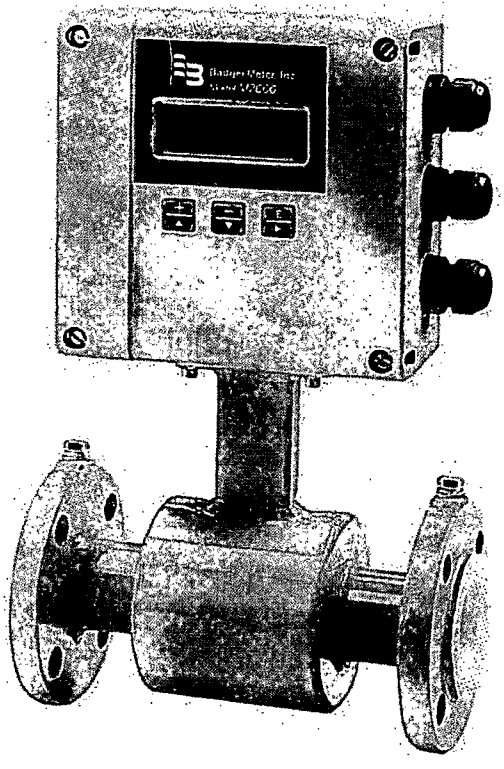
Equipment and Materials Schedule

Item 6

Badger Meter

M-Series® Mag Meter

Model M-2000

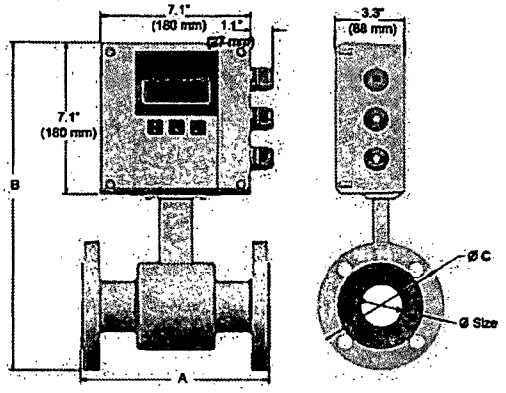


IMPORTANT:
This manual contains important information.
READ AND KEEP FOR REFERENCE.

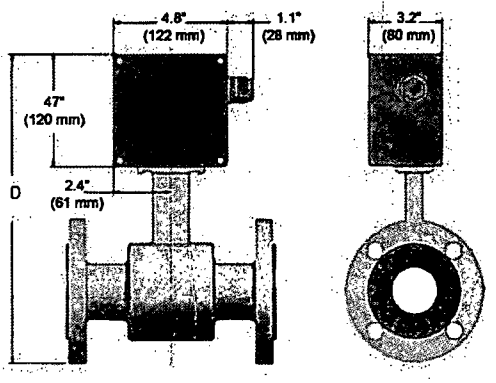
IOM-175-03 (4-11)
PN: 53400-190 Rev 3

Installation & Operation Manual

Appendix: Detector Specifications



Meter with M-2000 amplifier



Meter with junction box for remote M-2000 amplifier

Size		A		B		C		D		Est. Weight with M-2000		Flow Range			
												LPM		GPM	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	kg	min	max	min	max
1/4	6	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.063	20	0.02	5
5/16	8	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.114	34	0.03	9
3/8	10	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.177	53	0.05	14
1/2	15	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.416	125	0.11	33
3/4	20	6.7	170	14.2	361	3.9	99	11.5	293	13	5.5	0.75	225	0.2	59
1	25	8.9	225	14.4	366	4.3	108	11.7	298	18	8.0	1.20	350	0.3	93
1 1/4	32	8.9	225	15.2	386	4.6	117	12.5	318	20	9.0	2.00	575	0.5	152
1 1/2	40	8.9	225	15.4	390	5.0	127	12.7	322	21	9.5	3.00	900	0.8	239
2	50	8.9	225	15.9	403	6.0	152	13.2	335	26	11.5	4.70	1400	1	373
2 1/2	65	11.0	280	17.1	434	7.0	178	14.4	366	52	23.5	8	2400	2	631
3	80	11.0	280	17.3	440	7.5	191	14.7	372	54	24.5	12	3600	3	956
4	100	11.0	280	18.4	466	9.0	229	15.7	398	56	25.5	19	5600	5	1493
5	125	15.8	400	19.6	498	10.0	254	16.9	430	58	26.0	30	8800	8	2334
6	150	15.8	400	20.6	524	11.0	279	17.9	456	60	27.0	40	12700	11	3361
8	200	15.8	400	22.5	572	13.5	343	20.4	518	86	39.0	75	22600	20	5975
10	250	19.7	500	26.8	681	16.0	406	24.1	613	178	81.0	120	35300	30	9336
12	300	19.7	500	28.9	734	19.0	483	26.2	666	207	94.0	170	50800	45	13444
14	350	19.7	500	30.8	782	21.0	533	28.2	716	258	117	230	69200	60	18299
16	400	23.6	590	33.7	856	23.5	597	31.0	788	306	139	300	90400	80	23901
18	450	23.6	590	35.0	890	25.0	635	32.4	822	400	181	380	114000	100	30250
20	500	23.6	590	38.2	969	27.5	699	35.5	901	493	224	470	140000	125	37346
22	550	23.6	590	39.6	1005	29.5	749	36.9	937	523	237	570	170000	150	45188
24	600	23.6	590	42.2	1071	32.0	813	39.5	1003	552	251	680	200000	180	53778
28	700	23.6	590	46.2	1173	36.5	927	44.0	1118	648	294	920	275000	240	73100
30	750	31.5	800	48.3	1228	39.0	984	45.7	1161	702	319	1060	315000	280	84000
32	800	31.5	800	52.2	1325	41.4	1015	49.5	1257	768	349	1200	361000	320	95600
36	900	31.5	800	55.3	1405	46.0	1168	54.1	1374	848	385	1500	457000	400	121000
40	1000	31.5	800	60.0	1525	50.2	1230	57.4	1457	922	419	1900	565000	500	149300
42	1050	36.0	914	66.0	1675	53.0	1346	63.4	1610	1198	499	2100	620000	550	164600
48	1200	39.4	1000	69.9	1775	59.4	1455	67.2	1707	1208	549	2700	814000	720	215100
54	1400	39.4	1000	78.5	1995	68.4	1675	75.9	1927	1362	619	3700	1100000	980	292700

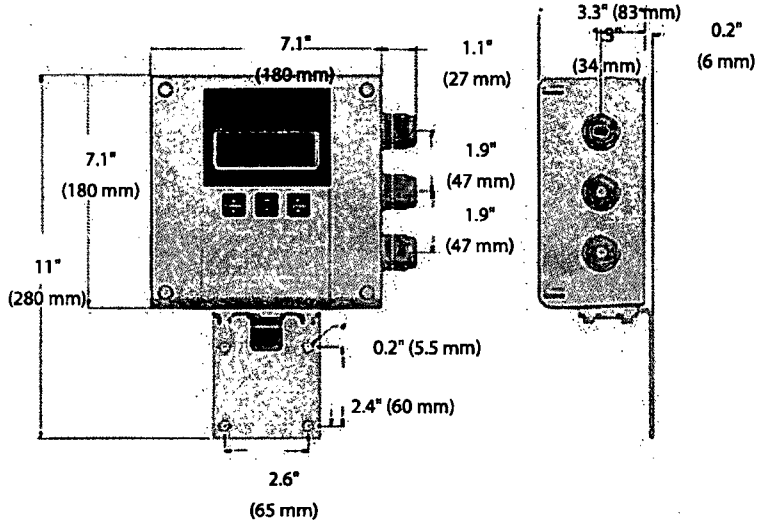
Flow Range: 0.1 - 39.4 fps (0.03-12 m/s)
Sizes: 1/4 inch to 54 inches (6 mm to 1400 mm)
Min. Conductivity: ≥ 5 micromhos/cm
Accuracy:
± 0.25 percent of rate for velocities greater than 1.64 ft/s (0.50 m/s)
± 0.004 ft/s (± 0.001 m/s) for velocities less than 1.64 ft/s (0.50 m/s)
Electrode Materials: Standard: Alloy C
Optional: 316 stainless steel, gold/platinum plated, tantalum, platinum/rhodium
Liner Material: PFA up to 3/8 inch, PTFE 1/2 inch to 24 inches, Soft and Hard Rubber from 1 to 54 inches, Halar® from 14 to 40 inches
NSF Listed: Models with hard rubber liner 4-inch size and up; PTFE liner - All sizes.

Fluid Temperature:
With Remote Amplifier:
PFA, PTFE & Halar 311°F (155°C)
Rubber 178°F, (80°C)
With Meter Mounted Amplifier:
PFA, PTFE & Halar 212°F (100°C)
Rubber 178°F, (80°C)
Pressure Limits:
Maximum allowable non-shock pressure and temperature ratings for steel pipe flanges, according to American National Standard ANSI B16.5. (Example: 150-pound flanges, rated 285 PSI at ambient temperature.) (Example: 300-pound flange rated 740 PSI at ambient temperature.)
Coil Power: Pulsed DC
Ambient Temperature: -4°F to 140°F (-20°C to 60°C)

Pipe Spool Material: 316 stainless steel
Meter Housing Material: Carbon steel welded
Flanges: Carbon steel - Standard (ANSI B16.5 Class 150 RF)
316 stainless steel - Optional
Meter Enclosure Classification: NEMA 4X (IP66)
Optional: Submersible NEMA 6P (remote amplifier required)
Junction Box Enclosure Protection:
(for remote amplifier option) Powder coated die-cast aluminum, NEMA 4 (IP65)
Cable Entries: 1/2-inch NPT Cord Grip
Optional Stainless Steel Grounding Rings:

Meter Size	Thickness (of one ring)
up through 10 inches	.135 inch
12 to 20 inches	.187 inch

Appendix: Amplifier Specifications



Power Supply:
AC supply (85-265 VAC)
Typical power: 20 VA or 15 Watts
Max. power: 26 VA or 20 Watts
Optional DC supply (10-36 VDC)
Typical power: 10 Watts
Max. power: 14 Watts

Accuracy: ± 0.25 percent of rate for velocities greater than 1.64 ft/s (0.50 m/s)
± 0.004 ft/s (± 0.001 m/s) for velocities less than 1.64 ft/s (0.50 m/s)

Repeatability: ± 0.1 percent

Flow Range: 0.10 to 39.4 ft/s (0.03 to 12 m/s)

Fluid Conductivity: Minimum 5.0 micromhos/cm

Flow Direction: Unidirectional or bidirectional two separate totalizers (programmable)

Totalization: Programmable/resettable
Unidirectional: T1, T2
Bidirectional: T+ (Fwd), T- (Rev), Tn (Net)

Minimum Fluid Conductivity: 5.0 micromhos/cm

Processing: 32-bit DSP

Analog Output: 4-20 mA, 0-20 mA, 0-10 mA, 2-10 mA (programmable and scalable)
Voltage sourced 24 VDC – isolated
Maximum loop resistance < 800 ohms

Digital Outputs: Four total, configurable
24 VDC sourcing active output (up to two),100 mA total, 50 mA each; sinking open collector output (up to four), 30 VDC Max, 100 mA each; AC solid-state relay (up to two), 48 VAC, 500 mA max.

Pulse Outputs: Scalable up to 10 kHz, passive open collector up to 10 kHz, active switched 24 VDC. Up to two outputs (forward and reverse). Pulse width programmable from 1-1,000 ms or 50 percent duty cycle.

Frequency Output: Scalable up to 10 kHz, open collector up to 1 kHz, solid-state relay

Misc Outputs: High/low flow alarm (0-100 percent of flow), error alarm, empty pipe alarm, flow direction, preset batch alarm, 24 VDC supply

Noise Dampening: Programmable 0-30 seconds.

Empty Pipe Detection: Field tunable for optimum performance based on specific application

Excitation Frequency: 1 Hz, 3.75 Hz, 7.5 Hz or 15 Hz (factory optimized to pipe diameter)

Digital Input: Max. 30 VDC (programmable – positive zero return, external totalizer reset or preset batch start)

Units of Measure: Ounces, pounds, liters, US gallon, imperial gallon, barrel, hectoliter, megagallon, cubic meters, cubic feet, acre feet

Galvanic Separation: 250 volts

Low-flow-cutoff: Programmable 0-10 percent of max. flow

LCD Display: 4 x 20 character display with backlight

Programming: Three-button, external manual or remotely

Housing: Cast aluminum, powder-coated paint

Housing Rating: NEMA 4X (IP66)

Mounting: Meter mount or remote wall mount (bracket supplied)

Cable Connection: 1/2-inch NPT Cord Grip (three)

Ambient Temperature: -4 to 140° F (-20 to 60° C)

Serial Communication: RS232 – Modbus RTU or remote display

Logging: Power loss totalization

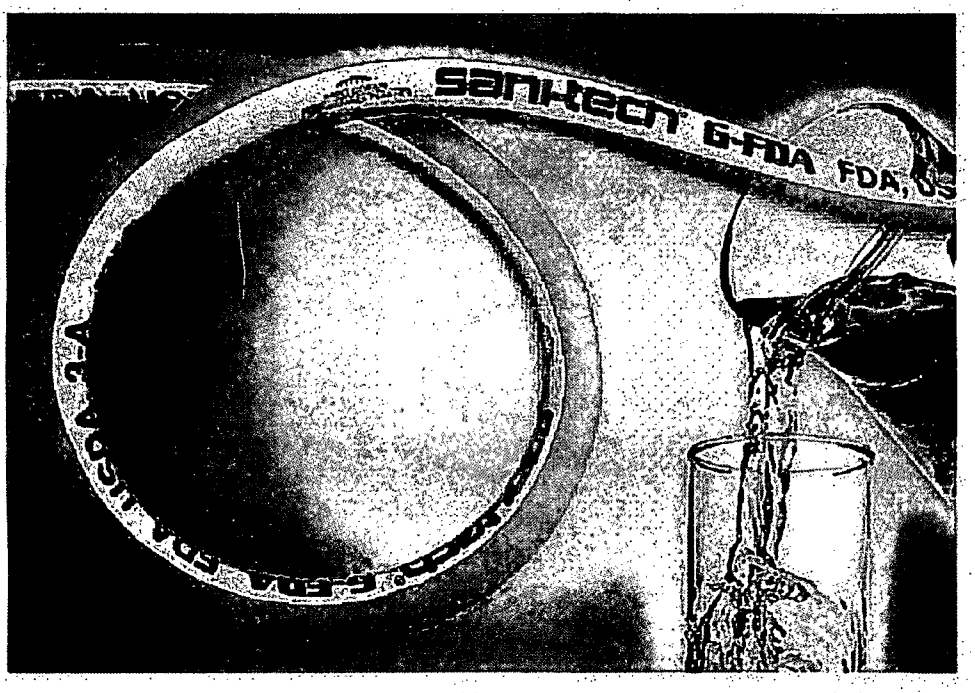
Relative Humidity: Up to 90 percent non-condensing

Locations: Indoor and outdoor

Equipment and Materials Schedule

Item 7

Sani-Tech® G-FDA



High temperature food grade rubber hose

Features/Benefits

- Sanitary suction and discharge hose
- White EPDM liner
- EPDM cover and reinforcements designed to withstand rough handling and high temperatures
- Full vacuum rating
- Food oil and ozone resistant
- Custom laylines available
- Specially designed to handle oil-based materials
- Imparts no taste or odor

Temperature Rating

- -40°F to +300°F (-40°C to +148°C)

Typical Applications

- High purity water
- Bulk food transfer
- Beverage
- Dairy
- Cosmetics
- CIP applications

Available End Connections

- PermaSeal® crimp-style fittings
- Over 40 fitting styles available in a wide range of materials
- 316L stainless steel standard material of construction

High Temperature EPDM Suction and Discharge Service

Sani-Tech® G-FDA is built for higher temperatures and more chemically demanding applications. It boasts our highest temperature rating for any non-fluoropolymer-lined rubber covered hose.

The non-PVC, non-butyl, FDA-approved, all EPDM liner will not impart any taste or odor.

A robust dual-helix wire reinforcement allows the EPDM liner to withstand full vacuum, making it the best EPDM-lined hose for suction and discharge service.

SAINT-GOBAIN
PERFORMANCE PLASTICS

Sani-Tech® G-FDA Hose Specifications

Part Number	Inside Diameter		Outside Diameter		Max.* Working Pressure	Min. Bend Radius**		Vacuum	Min. Burst Pressure	Weight	Max. Length
	in.	mm.	in.	mm.	PSI	in.	mm.	in HG	PSI	lb./ft.	ft.
GFDA-0500	.500	12.7	.931	23.6	150	2.50	63.5	29.9	600	0.23	100
GFDA-0750	.750	19.1	1.182	30.0	150	3.75	95.3	29.9	600	0.31	100
GFDA-1000	1.000	25.4	1.500	38.1	150	4.00	101.6	29.9	600	0.391	100
GFDA-1500	1.500	38.1	2.090	53.1	150	5.00	127.0	29.9	600	0.81	100
→ GFDA-2000	2.000	50.8	2.600	66.0	150	6.00	152.4	29.9	600	1.16	100
GFDA-2500	2.500	63.5	3.173	80.6	150	7.00	177.8	29.9	600	1.70	100
→ GFDA-3000	3.000	76.2	3.718	94.4	150	8.00	203.2	29.9	600	1.96	100
GFDA-4000	4.000	101.6	4.781	121.4	150 1	1.00	279.4	29.9	600	3.01	100

** Based on ambient condition on exterior of hose. Elevated temperatures and characteristics of medium being transferred can affect working pressures and burst pressures.*

*** Measured on the inner surface of the curved portion. Data is based on static applications. For dynamic or cyclic applications, consult factory.*

Industry Approvals and Compliances
- FDA
- USDA
- 3-A

Construction
- Inner tube: white EPDM
- Cover: gray EPDM bonded to liner with dual-helix wire reinforcement

Temperature Rating
- -40°F to +300°F
- -40°C to +148°C

Maximum Length
- 50 feet (GFDA-2500)
- 60 feet (all other sizes)

Distributed By:

Saint-Gobain Performance Plastics
460 Milltown Road
Bridgewater, NJ 08807
Tel: (800) 435-3992
Fax: (908) 575-0459

SAINT-GOBAIN
PERFORMANCE PLASTICS

Our products are manufactured under a quality management system registered and complying with 3-A Sanitary Standards where noted and with ISO 9001:2000, which has been independently certified by BVQI.

The Progressive Fish-Culturist 48:301–302, 1986

Potential for Nitrosamine Formation in Seven Fishery Chemicals

S. L. ABIDI, V. K. DAWSON, AND R. C. HUBLEY, JR.

U.S. Fish and Wildlife Service
National Fishery Research Laboratory
Post Office Box 818
La Crosse, Wisconsin 54602, USA

Abstract.—In recent years, nitrosamines have been reported as possible causes of cancer, mutations, or birth defects. Inasmuch as these compounds may be formed by the interaction of certain amines with nitrite in the aquatic environment, we evaluated seven fishery chemicals for their potential to form nitrosamines: the experimental fish toxicant digeranylethanolamine (GD-174); the four therapeutants Terramycin, erythromycin, Hyamine 1622, and Hyamine 3500; and the two tracer dyes rhodamine B and rhodamine WT. The results indicate that the controlled use of the seven fishery chemicals in natural environments will not lead to the formation of nitrosamines.

A wide range of nitrosamine structures, several of which occur in foodstuffs (Crosby and Sawyer 1976), have been reported to cause cancer, mutations, or birth defects (Olajos 1977). Reactions between nitrite and certain amine compounds in an aquatic environment might be expected to result in the formation of nitrosamine, and Meyers and Hendricks (1982) reported that several nitrosamines caused cancer in fish. As part of a Congressional mandate, the U.S. Environmental Protection Agency (1977) required that all pesticides—including fishery chemicals—be tested for their potential to form nitrosamines by interaction with nitrite.

The objective of the present work was to determine if nitrosamines were formed either in water or in fish treated with certain chemicals used in fish culture or management. The chemicals selected were the experimental carp toxicant digeranylethanolamine (GD-174); the four therapeutants Terramycin, erythromycin, Hyamine 1622, and Hyamine 3500; and the two tracer dyes rhodamine B and rhodamine WT. Several other fishery chemicals were excluded from this study because their molecular structure did not contain the nitrogen group involved in the formation of nitrosamines.

Methods

All reagents and solvents used were analytical grade. Inorganic and organic salts were obtained from Alpha Products, Danvers, Massachusetts; sodium alkanesulfonate from Eastman Kodak, Rochester, New York; 2-propanol from Aldrich, Milwaukee, Wisconsin; solvents for high performance liquid chromatography and silica gel from J. T. Baker, Philipsburg, New Jersey; and other chromatographic solvents from Burdick and Jackson Laboratories, Muskegon, Michigan.

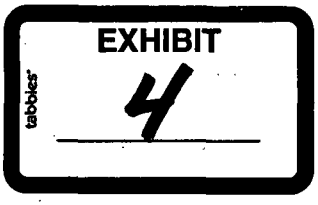
Fishery chemicals used in this study and their respective suppliers were as follows: GD-174 (technical), Glidden Durkee Corporation; Terramycin (technical) and erythromycin (technical), Sigma Chemical Company; Hyamine 1622 (50% liquid) and Hyamine 3500 (technical and 50% liquid), Rohm and Haas; and rhodamine B (powder) and rhodamine WT (20% aqueous solution), E. I. du Pont de Nemours Company.

Nitrosamine detection involved the use of gas chromatography (GC), high performance liquid chromatography (HPLC), and thermal energy analysis (TEA). Instrument characteristics used were those of Abidi (1982, 1984).

Before the experiments, we examined all products and reagents for possible contamination with nitrosamines, using steam distillation, extraction, ion exchange chromatography, and GC–TEA analysis procedures described by Abidi (1982).

Inspection for nitrosamine formation was conducted in water from the laboratory wells and the Black River, Wisconsin. The chemicals were allowed to interact for 24 h and samples were taken at intervals of 0.5, 2, 3, 6, 12, or 24 h, as appropriate for the compound under study. Nitrite-N was added at a rate of either 10 or 100 μg/L above its background levels. Resulting nitrite-N levels in the test solutions were 10, 20, 30, 100, 110, or 120 μg/L. Temperature was maintained at 20, 50, or 90°C and pH at 2, 5, or 7.

Whole-body homogenates of fish exposed to fishery chemicals and nitrite were checked for nitrosamine formation by tissue extraction, cleanup by column and thin-layer chromatography, and analysis by HPLC–TEA. Results of analyses were confirmed by GC–mass spectrometry (Abidi 1984).



Results and Discussion

There was no evidence of nitrosamine contamination in any of the fishery chemicals or reagents (level of detection 0.1 ng/g). Nitrosamines were not formed during reactions of nitrate with Terramycin, erythromycin, or the Hyamines. Forced reactions of three compounds—GD-174 and rhodamines B and WT—resulted in the formation of traces of nitrosamines under rigorous laboratory conditions of low pH and high temperature (Table 1), but no nitrosamines were found under conditions that normally occur in the natural environment. S. M. Johnson and T. R. Steinheimer (paper read at the American Chemical Society national meeting, 1984) also found that nitrosamines were not formed with rhodamine WT during simulated and actual field studies. The rate of nitrosamine formation from all three compounds was significantly greater at pH 5.0 than at pH 7.0. However, the most important factor that governed nitrosamine formation was the concentration of nitrite present.

A new nitrosamine derived from GD-174, isolated and identified as *N*-nitrosogeranylethanolamine by S. L. Abidi (paper read at the American Chemical Society national meeting, 1980), was observed in whole-body homogenates of fish treated with GD-174, but only at low concentrations (<0.5 ng/g).

Of the chemicals evaluated, three produced trace concentrations of nitrosamines only when the medium was highly enriched with nitrite-N at more than 100 μg/L. Concentrations of nitrite that were required for the formation of nitrosamines are unlikely to occur in nature because nitrite is unstable in natural water systems and is readily oxidized to nitrate by nitrifying bacteria. Waters with concentrations of nitrite high enough to allow nitrosamine formation would be considered heavily polluted and unacceptable for discharge, culture waters, or potable waters. Also, the conditions of high temperature (90°C) and low pH needed to form nitrosamines are not likely to be present in natural or fish culture water systems. We conclude that the controlled use of the seven fishery chemicals in natural environments will not lead to the formation of nitrosamines.

TABLE 1.—Formation of nitrosamines from reactions of fishery chemicals with nitrite. Reaction conditions were: nitrite : amine ratio, 3; temperature, 90°C; pH, 4.5; reaction preiod, 2 h.

Fishery chemical	Yield (g/mole amine)[a]	Nitrosamine formed
GD-174	18.1	*N*-nitrosogeranylethanolamine
Terramycin	ND	
Erythromycin	ND	
Hyamine 1622	ND	
Hyamine 3500	ND	
Rhodamine B	1.9	Diethylnitrosamine
Rhodamine WT	3.0	Diethylnitrosamine

[a] ND = None detected (limit of detection 0.1 ng/g).

References

Abidi, S. L. 1982. Detection of diethylnitrosamine in nitrite-rich water following treatment with rhodamine flow tracers. Water Research 16:199–204.

Abidi, S. L. 1984. Chromatographic investigations of the configurational and geometrical isomerism of allylic n-terpenyl-n-hydroxyethyl-nitrosamines. Journal of Chromatography 288:277–292.

Crosby, N. T., and R. Sawyer. 1976. Determination of nitrosamines in food products. Residue Reviews 64:77.

Meyers, T. R., and J. D. Hendricks. 1982. A summary of tissue lesions in aquatic animals induced by controlled exposures to environmental contaminants, chemotherapeutic agents, and potential carcinogens. U.S. National Marine Fisheries Service Marine Fisheries Review 44(12):1–17.

Olajos, E. J. 1977. Biological interactions of N-nitroso compounds. Ecotoxicology and Environmental Safety 1:175.

U.S. Environmental Protection Agency. 1977. EPA requires registrants and applicants of pesticide products containing N-nitroso contaminants to submit analyses of that pesticide. Federal Register 42(189): 51640–51641.

Chavez, Carl J, EMNRD

From: Damon Seawright [dseawright@gmail.com]
Sent: Tuesday, March 13, 2012 2:25 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Americulture Well Inquiry

Yes. Very pink.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, March 13, 2012 1:43 PM
To: Damon Seawright
Cc: Damon Seawright
Subject: Americulture Well Inquiry

Damon:

Good afternoon. Could you tell me if the color of your well water is still pink?

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John H. Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

MARCH 7, 2012

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113

Re: Los Lobos Renewable Power, L.C.
Discharge Permit GTHT-001
Chemical Tracer Release
Hidalgo County, New Mexico

Dear Mr. Janney:

This letter concerns your injection of a chemical dye into the geothermal aquifer at the Los Lobos site on January 23, 2012 in order to conduct a tracer test for aquifer delineation.

As we have advised you by telephone, we have received a complaint concerning this incident from Mr. Damon Seawright of Americulture, Inc., wherein he had described the appearance of the dye in water from his geothermal well(s) on the morning of February 16, 2012. This is a concern we must address because, pursuant to NMSA 71-5-8.F, NMSA 71-5-8.L and 40 USC 1601, the Oil Conservation Division has a regulatory responsibility to oversee injection operations into geothermal reservoirs in order to protect the quality of fresh ground water.

Your discharge permit requires that you notify the OCD within 24 hours of any unauthorized discharge or release and file a written report within 15 days.

We previously advised you on January 19, 2012 that a permit from this agency was not necessary for your proposed tracer test study, but that you should obtain authorization for this proposed operation from the Office of the State Engineer. We said this because the Oil Conservation Division neither requires nor licenses aquifer delineation. Having so advised you, we are not now asserting that your proceeding with this testing operation constituted an "unauthorized" discharge or release.

Nevertheless, in view of Americulture's complaint and the fact that the complaint is within our jurisdiction to investigate pursuant to the statutes and rules cited above, we hereby request that you submit a written report concerning this incident to OCD within 15 days from the date of this letter. Your report should be submitted on our Form C-141 (available on the OCD's website under "Forms") and you should include, on the form or in an attached supplement, responses to the following: (1) the source and quantities of water injected; (2) the well or wells into which injection was accomplished; (3) the injection pressures employed; (4) the chemical constituents and quantities of dye and any other additives, and (5)

any investigative or corrective action you have taken. Please also describe your contacts with the Office of the State Engineer concerning this operation both before and after the referenced injection.

Your report should be submitted to the Environmental Bureau in the Division's Santa Fe office.

We thank you in advance for your cooperation.

Sincerely,

Jami Bailey
OCD Director

JB/cjc

xc: OCD District II Office, Artesia
OCD Online "General Correspondence"

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 29, 2012 11:06 AM
To: Chavez, Carl J, EMNRD
Cc: Brancard, Bill, EMNRD
Subject: Tracer Test & Chemical Complaint Note to File

This note is to document the visit to my office from Mr. Bill Brancard (EMNRD- Lead Counsel) today at around 9:45 a.m. related the above subject. Mr. Brancard stopped by to share information on the above subject with the Office of the State Engineer (OSE).

Mr. Brancard responded to my inquiry about New Mexico Oil Conservation Division (OCD) Compliance and Enforcement issues associated with the complaint and subsequent investigation by the OCD of the complaint whether the OCD would pursue violations with the operator.

Mr. Brancard responded that the OCD has verified that on January 19, 2012, the OCD directed the operator to the Office of State Engineer (OSE) on the tracer test and that the OSE is currently investigating the complaint received by the OCD and it is the OSE who has jurisdiction over the matter.

This note concludes the New Mexico Oil Conservation Division's (OCD) investigation of the complaint received on 2/21/2012..

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, February 28, 2012 4:42 PM
To: Brancard, Bill, EMNRD
Cc: Bailey, Jami, EMNRD; Brooks, David K., EMNRD
Subject: FW: Morning report for LDG 53-7

Bill:

I discovered the e-mail below to David Janney after the 1/19/2012 telephone call.....

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Janney, David [mailto:david.janney@amec.com]
Sent: Thursday, January 19, 2012 5:05 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Morning report for LDG 53-7

Carl:

Thank you for getting your team together for the call and providing this summary.

We are going to have a formal response to your October 12, 2011 letter to you as soon as possible.

Thank you for assisting us with this important energy project.

Sincerely,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, January 19, 2012 2:12 PM
To: Janney, David

Cc: Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: FW: Morning report for LDG 53-7

David:

Good afternoon. Subsequent to our telephone conference call this afternoon, the OCD Director informed me after the January 5, 2012 meeting with Los Lobos Renewable Power, LLC. Principal.(Los Lobos) and the New Mexico OSE that the OSE would handle the tracer issue associated with any well testing requirements of the OSE. In addition, this morning submittal of G-101s, etc. where Los Lobos was seeking OCD approval to use the Rosette, Inc. State Wells No.s. 1, 3, 4 and 5 for the OSE Tracer Test does not involve approval from the OCD. OCD clarified that any existing wells where the well may become a geothermal project well would need to go through the OCD's Administrative Process for approval similar to the existing Well 55-07, any geothermal temperature gradient wells, etc.

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Dade, Randy, EMNRD
Sent: Thursday, January 19, 2012 10:49 AM
To: Chavez, Carl J, EMNRD
Subject: FW: Morning report for LDG 53-7

Here is the report that was sent to me. The API # shows to be; 30-023-20017

Chavez, Carl J, EMNRD

From: Jackson, Charles L., OSE
Sent: Friday, February 24, 2012 4:07 PM
To: Smith, Michael A; Chavez, Carl J, EMNRD
Cc: Phillips, Haddy L., OSE; Whatley, Tom M., OSE
Subject: FW: Tracer test
Attachments: TracerTestFinal Coverletter 1-18-2012.pdf; Raser Cyrq letter rhodamine 2-23-12.pdf

Folks,

We finally received a response from Cyrq in relation to the tracer test. I have forwarded the information that we received. There is no mention of OCD telling Cyrq that they needed a permit from OSE to conduct the test.

Thanks,

<<<>>> <<<>>> <<<>>> <<<>>>
Charles "Tink" Jackson
District 3 Supervisor
New Mexico Gila Basin Watermaster
Office of the State Engineer - WRAP
P.O. Box 844
301 South Tin Street
Deming, New Mexico 88031
(575)546-2851 Office
(575)546-2290 Fax
charles.jackson@state.nm.us
<<<>>> <<<>>> <<<>>> <<<>>>
水マスター

Watch your thoughts; they become words.
Watch your words; they become actions.
Watch your actions; they become habits.
Watch your habits; they become character.
Watch your character; it becomes your destiny.

From: Michael Hayter [mailto:Michael.Hayter@cyrqenergy.com]
Sent: Friday, February 24, 2012 2:18 PM
To: Phillips, Haddy L., OSE; Janney, David; Ben Barker
Cc: Jackson, Charles L., OSE; Whatley, Tom M., OSE; Montano, Samantha R, OSE
Subject: RE: Tracer test

Dear Haddy,

Please see my following responses to your questions.

1. Prior to beginning the tracer test, we notified NMOCD and presented our work plan (see attachment). NMOCD concluded that we did not require a permit from NMOCD for this activity in these types of wells.
2. The test was initiated on January 23, 2012 at noon. We added the tracer solution to the well over a period of one hour.
3. We introduced the tracer into Rosette Inc.'s State geothermal well No. 7.

4. We put tracer into the well on January 23, 2012, as noted, and we monitored two deep geothermal production wells, 45-7 and 53-7, for tracer over the next 10 days.
5. We used Rhodamine WT (see attached letter from Mr. John Shomaker and the information in the work plan submitted to NMOCD)
6. Rhodamine WT is delivered as a solid, in powder form. We are unsure how to compute the requested volume percentage concentration. Under the supervision of the University of Utah's geothermal tracer specialist, Prof. Peter Rose, the dry powder was hydrated in a tank on site and then added to a stream of fresh water flowing at a rate of 170 – 200 gpm into the well to disperse and further dilute the tracer. The concentration of tracer at the pipeline injection point was about 0.27% by weight. The tracer was injected over a period of one hour and dilution during that time would reduce the concentration at bottom hole to around 0.09% by weight.

Regards,
Mike

From: Phillips, Haddy L., OSE [mailto:haddy.phillips@state.nm.us]
Sent: Thursday, February 23, 2012 3:18 PM
To: Janney, David; Michael Hayter; Ben Barker
Cc: Jackson, Charles L., OSE; Whatley, Tom M., OSE; Montano, Samantha R, OSE
Subject: Tracer test

David,

It has come to our attention that a tracer test was performed using the well(s) on Section 6, Township 25 South, Range 19 West, the following information is needed by our agency regarding the tracer test.

1. Who authorized this test to be performed? (Agency, as it was not our district office)
2. could you confirm when the tracer test was initiated,
3. which well injection occurred into, need the exact well(s)
4. over what test duration or time frame,
5. chemical tracer type, I was informed by Mike Smith of BLM that this was Rhodamine WT?
6. and % by volume tracer, and rate of injection for the test?

Haddy Phillips

Water Resource Specialist
Office of State Engineer
District 3 Office
P.O. Box 844
Deming, NM 88031
phone :575-546-2851 Fax: 575-546-2290
haddy.phillips@state.nm.us

JOHN SHOMAKER & ASSOCIATES, INC.
WATER-RESOURCE AND ENVIRONMENTAL CONSULTANTS
2611 BROADBENT PARKWAY NE
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-3407, FAX (505) 345-9920
www.shomaker.com

February 23, 2012

Michelle Henrie, Attorney at Law
126 East DeVargas
Santa Fe, New Mexico 87501

by email: michelle@mhenrie.com

Re: Cyrq Energy, dye tracers in groundwater

Dear Michelle:

You asked about the use of dye tracers, and Rhodamine WT in particular, in water-resource studies. Tracer studies have been used for many years to measure groundwater velocities, and are described in standard textbooks on groundwater.[1] Both the U.S. Environmental Protection Agency (EPA) and the U.S. Geological Survey have conducted and published many studies using dye-tracers in a wide variety of their groundwater and surface-water investigations, and many other studies are reported in the scientific literature. The University of New Mexico Water Resources Program is currently conducting a dye-tracer study in Albuquerque, to determine the disposition of septic-tank effluent and the timing of its arrival at the water table.

Rhodamine WT is an EPA-approved fluorescent dye used for aquifer characterization, as a water tracer in surface and groundwater systems, and a means of measuring various hydraulic parameters.[2] It is also NSF-approved for use in such studies.

Our firm has used Rhodamine as a tracer to mark the drilling water during the drilling of a supply well, to provide a means of determining when well-development was essentially complete.

Sincerely,

JOHN SHOMAKER & ASSOCIATES, INC.

John W. Shomaker, Ph.D.

Cc: Nicholas Goodman, Cyrq Energy
Michael Hayter, Cyrq Energy

---

[1] See, e.g., Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, Inc., 604 p., at p. 427..

[2] See, e.g., Stone, A.T., 2000, Specialty chemicals in the environment: American Chemical Society, Symposia papers presented before the Div. of Environmental Chemistry, Preprints of Extended Abstracts, v. 40, no. 1, pp. 167-169.

January 18, 2012

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

RE: Request for Temporary Approval to Conduct a Tracer Test in State Wells No. 1, No. 3 and No.4 for Lightning Dock Geothermal HI-01, LLC, Hidalgo County, New Mexico

Dear Mr. Dade:

On behalf of Lightning Dock Geothermal HI-01, LLC (LDG), AMEC Environment & Infrastructure (AMEC) requests temporary approval to re-enter three geothermal wells on New Mexico State geothermal lease GTR 303 to conduct a temporary tracer test and, if necessary, conduct geophysical logging. This project is being undertaken jointly by Rosette, Inc.'s new management and LDG. The research and data collected through the proposed temporary tracer test will assist LDG in evaluating the properties of this geothermal reservoir. Based on LDG's research to date, it believes that this geothermal resource will support electricity generation at a utility scale (15 MW).

LDG proposes the following conditions in connection with its proposed testing and data collection.

1. The re-entered wells would include State Well No. 1, State Well No. 3, and State Well No. 4, which are all located in the southeast corner of New Mexico Section 6, Twp 25S, R 19W. The locations of these wells are depicted on Figure 1. This portion of Section 6 is State Trust Land and LDG has received permission from Rosette, Inc. (the lessee), to use these wells for purposes of this test. LDG is not proposing—and does not have the lessee's permission to—use these wells as permanent project wells.

2. AMEC has reviewed the online databases of the Oil Conservation Division, Office of the State Engineer, and the Petroleum Recovery Research Center of New Mexico Tech and has located the permits and bonding verification for State Wells No. 1, No. 3, and No. 4. The attached Form G-103s for each well have been prepared based on the Form G-101s that reside in OCDs on-line database.

3. For the dye used in the tracer test, LDG proposes to mix Rhodamine WT, which is a standard water tracing dye, with fresh cold water from a separate well located in the northwest corner of Section 12, Twp 25S, R 19W, at the approximate coordinates of 32.14818 N and -108.86157 W (Figure 1). Laboratory analytical results for samples collected from this well in Section 12 in

AMEC Environment & Infrastructure, Inc.
8519 Jefferson NE
Albuquerque, New Mexico 87113
505.821.1801 Main
505.821.7371 Fax

1986, 2008, and 2010 indicate that the water quality meets or exceeds the drinking water quality requirements set forth in NMAC 26.6.2. Water quality data for the Section 12 well is presented in Table 1 and the MSDS for Rhodamine WT is attached.

4. The specific actions involved in preparing the water tracing dye are as follows:

   - Place 400 gallons of fresh water from the Section 12 well into a clean poly mixing tank, one 400 gallon batch for each well;
   - Add 50 kg of Rhodamine WT liquid or powder to the tank;
   - Stir or circulate until the liquids are thoroughly mixed.

5. The diluted water tracing dye will be pumped into State Well No. 1, No. 3, or No. 4 at a rate of approximately 30 gallons per minute (gpm) and a pressure of approximately 30 pounds per square inch.

6. Following placement of the water tracing dye into the well(s), the test program requires pumping of additional fresh water from the Section 12 well into the State Wells that have received the tracer at a rate of approximately 300 gpm (for each well) for three to five days.

   During the tracer test period (three to five days), the discharge from the pumped wells will be monitored for the presence of tracer. The discharge will take place under LDG's current discharge permit.

7. Mr. Chavez has also requested that Forms G-101 and G-102 be sent to you, with a copy to him. The Forms G 101 and G102 for each of the State Wells are attached. We would appreciate your review as quickly as possible because LDG is under a deadline to analyze the results of this tracer test by February 1, 2012.

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

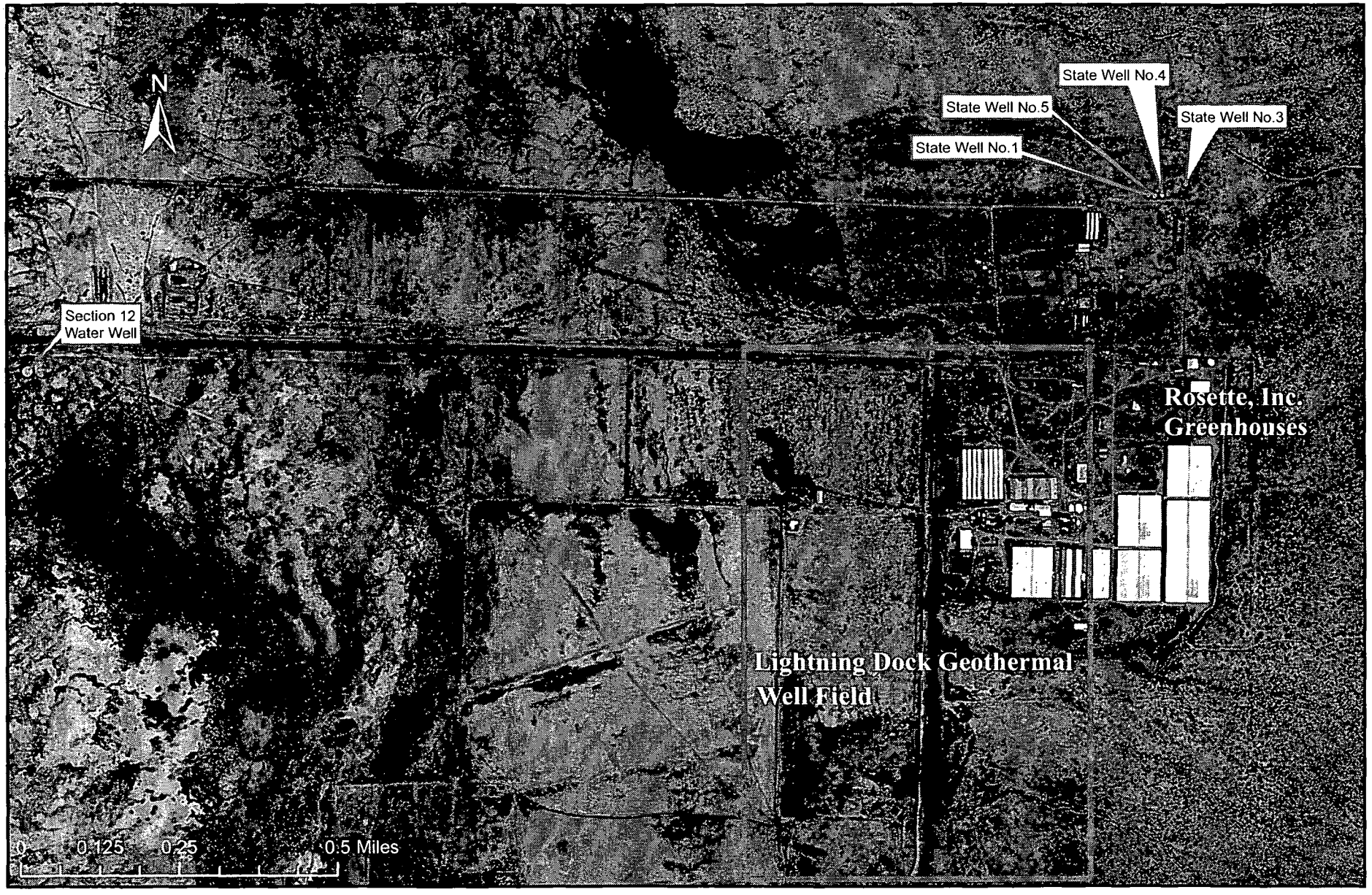
Respectfully submitted,

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

Cc: Mr. Carl J. Chavez, NMOCD
Michael Hayter – Lightning Dock Geothermal
Michelle Henrie – Attorney for Lightning Dock Geothermal

Attachments

Figure 1Locations of the State Wells and the Section 12 Fresh Water Well
Forms G-103
Table 1 Summary of laboratory Analytical Results for the Section 12 Fresh Water Well
MSDS for Rhodamine WT
Forms G-103



CLIENT Lightning Dock Geothermal H1-01, LLC	DWN BY: RLRJR CHKD BY: DJ DATUM: N/A PROJECTION: N/A SCALE: AS SHOWN	PROJECT Lightning Dock Geothermal H1-01, LLC Hidalgo County, New Mexico	REV NO.: – DATE: OCT 2011 PROJECT NO.: 11-517-00102 FIGURE NO.: 1
AMEC Environment & Infrastructure 8519 Jefferson, NE Albuquerque, New Mexico 87113	amec	TITLE Locations of State Well No.1, 3, 4, and 5 and Section 12 Well	

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

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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 C-101) for Such Proposals.)

5. Indicate Type of Lease: State [X] Fee [ ]

5.a State Lease No.: GTR 303

1. Type of well: Geothermal Producer [ ] Temp. Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

7. Unit Agreement Name:

2. Name of Operator: Rosette Inc.

8. Farm or Lease Name: Rosette Inc.

3. Address of Operator: P.O. Box 1618, Roswell, NM 88202-1618

9. Well No.: State Well 1

4. Location of Well: Unit Letter P 1050 Feet From The East Line and 50 Feet From The South Line, Section 6 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 4250' DF

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 one-time tracer test [X]		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.

Please see attached letter:
Request for Temporary Approval to Conduct a Tracer Test
in State Wells No. 1, No. 3, and No. 4 for Lightning Dock Geothermal H1-G1, LLC
Hidalgo, dated January 18, 2012

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

SIGNED David W. Jaramey, PG TITLE Agent for Lightning Dock Geothermal DATE 1/18/2012

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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

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U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State [X] Fee [ ]

5.a State Lease No.: GTR 303

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

1. Type of well: Geothermal Producer [ ] Temp. Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

7. Unit Agreement Name:

2. Name of Operator: Rosette Inc.

8. Farm or Lease Name: Rosette Inc.

3. Address of Operator: P.O. Box 1618, Roswell, NM 88202-1618

9. Well No.: State Well 3

4. Location of Well
Unit Letter O 1520 Feet From The East Line and 100 Feet From The South Line, Section 6 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 4250' DF

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 one-time tracer test [X]		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.

Please see attached letter:

Request for Temporary Approval to Conduct a Tracer Test
in State Wells No. 1, No. 3, and No. 4 for Lightning Dock Geothermal H1-G1, LLC
Hidalgo, dated January 18, 2012

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

SIGNED David W. Jaramillo, PG TITLE Agent for Lightning Dock Geothermal DATE 1/18/2012

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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

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U. S. G. S		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State [X] Fee [ ]

5.a State Lease No.: GTR 303

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 [X] Injection/Disposal [ ]

7. Unit Agreement Name:

2. Name of Operator: Rosette Inc.

8. Farm or Lease Name: Rosette Inc.

3. Address of Operator: P.O. Box 1618, Roswell, NM 88202-1618

9. Well No.: State Well 4

4. Location of Well
Unit Letter P 800 Feet From The East Line and 50 Feet From The South Line, Section 6 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 4250' DF

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 one-time tracer test [X]		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.

Please see attached letter:
Request for Temporary Approval to Conduct a Tracer Test
in State Wells No. 1, No. 3, and No. 4 for Lightning Dock Geothermal H1-G1, LLC
Hidalgo, dated January 18, 2012

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

SIGNED Donald W. Jimmy, PG TITLE Agent for Lightning Dock Geothermal DATE 1/18/2012

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

TABLE 1

Summary of Laboratory Analytical Results for the Section 12 Fresh Water Well

NMAC group	Analytes	NMAC Standard	Analytical Results Sample Date and Sample ID 2010 236040-162	2008 8031235	1986 OCD-5
A					
1	Arsenic (As)	0.1 mg/l	nm	<0.005 mg/l	<0.005 mg/l
2	Barium (Ba)	1 mg/l	nm	0.024 mg/l	<0.1 mg/l
3	Cadmium (Cd)	0.01 mg/l	nm	<0.001 mg/l	<0.1 mg/l
4	Chromium (Cr)	0.05 mg/l	nm	<0.001 mg/l	<0.1 mg/l
5	Cyanide (CN)	0.2 mg/l	nm	<0.01 mg/l	nm
6	Fluoride (F)	1.6 mg/l	**1.05 mg/l**	**1.04 mg/l**	**0.98 mg/l**
7	Lead (Pb)	0.05 mg/l	nm	<0.005 mg/l	<0.1 mg/l
8	Total Mercury (Hg)	0.002 mg/l	nm	<0.0002 mg/l	nm
9	Nitrate (NO3 as N)	10 mg/l	nm	**1.19 mg/l**	nm
10	Selenium (Se)	0.05 mg/l	nm	<0.01 mg/l	<0.1 mg/l
11	Silver (Ag)	0.05 mg/l	nm	<0.005 mg/l	<0.1 mg/l
12	Uranium (U)	0.03 mg/l	nm	nm	nm
13	Radioactivity: Radium (Ra 226-228)	30 pCi/l	nm	nm	nm
14	Benzene	0.01 mg/l	nm	<0.001 mg/l	nm
15	Polychlorinated biphenyls (PCB's)	0.001 mg/l	nm	nm	nm
16	Toluene	0.75 mg/l	nm	<0.001 mg/l	nm
17	Carbon Tetrachloride	0.01 mg/l	nm	<0.001 mg/l	nm
18	1,2-dichloroethane (EDC)	0.01 mg/l	nm	<0.001 mg/l	nm
19	1,1-dichloroethylene (1,1-DCE)	0.005 mg/l	nm	<0.001 mg/l	nm
20	1,1,2,2-tetrachloroethylene (PCE)	0.02 mg/l	nm	<0.001 mg/l	nm
21	1,1,2-trichloroethylene (TCE)	0.1 mg/l	nm	<0.001 mg/l	nm
22	ethylbenze	0.75 mg/l	nm	<0.001 mg/l	nm
23	total xylenes	0.62 mg/l	nm	<0.001 mg/l	nm
24	methylene chloride	0.1 mg/l	nm	<0.005 mg/l	nm
25	chloroform	0.1 mg/l	nm	<0.001 mg/l	nm
26	1,1-dichloroethane	0.025 mg/l	nm	<0.001 mg/l	nm
27	ethlene dibromide (EDB)	0.0001 mg/l	nm	<0.001 mg/l	nm
28	1,1,1-trichloroethane	0.06 mg/l	nm	<0.001 mg/l	nm
29	1,1,2-trichloroethane	0.01 mg/l	nm	<0.001 mg/l	nm
30	1,1,2,2-tetrachloroethane	0.01 mg/l	nm	<0.001 mg/l	nm
31	vinyl chloride	0.001 mg/l	nm	<0.001 mg/l	nm
32	PAH's: total naphthalene + monomethy	0.03 mg/l	nm	<0.005 mg/l	nm
33	benzo-a-pyrene	0.0007 mg/l	nm	nm	nm
B					
1	Chloride (Cl)	250 mg/l	**33.7 mg/l**	**20.4 mg/l**	**18.6 mg/l**
2	Copper (Cu)	1 mg/l	nm	**0.015 mg/l**	<0.1 mg/l
3	Iron (Fe)	1 mg/l	nm	**0.013 mg/l**	<0.1 mg/l
4	Manganese (Mn)	0.2 mg/l	nm	<0.0025 mg/l	<0.05 mg/l
5	Phenols	0.005 mg/l	nm	nm	nm

TABLE 1

Summary of Laboratory Analytical Results for the Section 12 Fresh Water Well

6	Sulfate (SO4)	600 mg/l	**122 mg/l**	**94.8 mg/l**	**80.5 mg/l**
7	Total Dissolved Solids (TDS)	1000 mg/l	**410 mg/l**	**358 mg/l**	**310 mg/l**
8	Zinc (Zn)	10 mg/l	nm	**0.049 mg/l**	<0.1 mg/l
9	pH	6-9	**7.8**	**7.48**	nm
C					
1	Aluminum (Al)	5 mg/l	nm	<0.05 mg/l	<0.1 mg/l
2	Boron (B)	0.75 mg/l	nm	**0.059 mg/l**	<0.1 mg/l
3	Cobalt (Co)	0.05 mg/l	nm	nm	<0.1 mg/l
4	Molybdenum (Mo)	1 mg/l	nm	<0.01 mg/l	<0.1 mg/l
5	Nickel (Ni)	0.2 mg/l	nm	<0.005 mg/l	<0.1 mg/l

Notes:

nm = Not Measured

< 0.nn = not detectable above the detection limit "0.nn mg/l"

Presto Dyechem Co
60 North Front St
Philadelphia, PA 19106
215-627-1864

Material Safety Data Sheet

July 15, 2011

SECTION I - Material Identity

Item Name	Fluorescent Red Dye
Part Number/Trade Name	Acid red 52
Chemical Formula	C27 H30 N2 O7 S2.Na
CAGE Code	25521
Part Number Indicator	A
MSDS Number	189644
HAZ Code	B

SECTION II - Manufacturer's Information

Manufacturer Name	Presto Dyechem Co
Street	60 North Front St
City	Philadelphia
State	PA
Country	US
Zip Code	19106
Emergency Phone	215-627-1864
Information Phone	215-627-1864

MSDS Preparer's Infomation

Date MSDS Prepared/Revised	01/01/2006
Active Indicator	Y

SECTION III - Physical/Chemical Characteristics

Appearance/Odor	Red POWDER
Boiling Point	NA
Melting Point	NA
Vapor Pressure	NA
Vapor Density	NA
Specific Gravity	1
Solubility in Water	COMPLETE
Container Type	R
Container Pressure Code	1
Temperature Code	4
Product State Code	S

SECTION IV - Fire and Explosion Hazard Data

Flash Point Method	NA
Lower Explosion Limit	NA
Upper Explosion Limit	NA
Extinguishing Media	WATER, DRY CHEMICAL, CO2
Special Fire Fighting Procedures	WEAR SCBA
Unusual Fire/Explosion Hazards	NONE

SECTION V - Reactivity Data

Stability	YES
Stability Conditions to Avoid	WILL PRECIPITATE WITH ACIDS
Materials to Avoid	OXIDIZING AGENTS
Hazardous Decomposition Products	BURNING WILL PRODUCE OXIDES OF CARBON AND NITROGEN
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	WILL NOT OCCUR

SECTION VI - Health Hazard Data

Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute and Chronic	NONE DOCUMENTED
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Explanation of Carcinogenity	NONE
Symptoms of Overexposure	NOT KNOWN
Medical Cond. Aggravated by Exposure	NONE KNOWN
Emergency/First Aid Procedures	[EYES] FLUSH WITH WATER [SKIN] WASH WITH SOAP AND WATER [INHAL] MOVE TO FRESH AIR. [INGEST] DILUTE WITH WATER, INDUCE VOMITING.

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	WEAR APPROPRIATE SAFETY EQUIPMENT. CONTAIN AND CLEAN UP SPILL. CONTAIN LIQUIDS USING ABSORBANTS, SWEEP POWDERS CAREFULLY MINIMIZING DUSTING. SHOVEL ALL SPILL MATERIAL INTO DISPOSAL DRUM.
Neutralizing Agent	NR
Waste Disposal Method	BURY OR INCINERATE ACCORDING TO FEDERAL, STATE AND LOCAL REGULATIONS. CONTAINERS SHOULD BE TRIPLE RINSED ACCORDING TO FEDERAL REGULATIONS.
Handling and Storage Precautions	HANDLE THIS PRODUCT WITH CARE

	AND AVOID PERSONAL CONTACT.
Other Precautions.....	NR

SECTION VIII - Control Measures

Respiratory Protection.....	NIOSH APPROVED RESPIRATOR MOLDEX 2200
Ventilation.....	LOCAL EXHAUST
Protective Gloves.....	RUBBER
Eye Protection.....	SAFETY GLASSES WITH SIDE SHIELDS
Other Protective Equipment.....	WEAR APRON/COVERALLS TO MINIMIZE SKIN CONTACT
Work Hygenic Practices.....	WASH THOROUGHLY AFTER HANDLING

SECTION IX - Label Data

Protect Eye.....	YES
Protect Skin.....	YES
Protect Respiratory.....	YES
Chronic Indicator.....	NO
Contact Code.....	SLIGHT
Fire Code.....	1
Health Code.....	0
React Code.....	0
Specific Hazard and Precaution.....	NO TARGET ORGANS LISTED FOR CHRONIC EXPOSURES

SECTION X - Transportation Data

Container Quantity.....	1
Unit of Measure.....	GM

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G).....	0
Volatile Organic Compounds (G/L).....	0

SECTION XII - Ingredients/Identity Information

Color Index #.....	45100
Ingredient Name.....	Xanthene
CAS Number.....	3520-42-1
Proprietary.....	NO
Percent.....	0
OSHA PEL.....	NE
ACGIH TLV.....	NE

sole responsibility of the user. All materials that may present unknown health hazards are described herein. We cannot guarantee that these are the only hazards that exist.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form C-101
Adopted 10-1-74
Revised 10-1-78

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OCT 21 1993
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Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE [X] FEE
5.a State Lease No.: GTR 303

1a. Type of Work: Drill [X] Deepen [ ] Plug Back [ ]
b. Type of Well: Geothermal Producer [ ] Low-Temp Thermal [X] Temp Observation [ ] Injection/Disposal [ ]

7. Unit Agreement Name:
8. Farm or Lease Name: Rosette
9. Well No.: one
2. Name of Operator: Rosette Inc
3. Address of Operator: PO Box 265A Animas, NM 88020
10. Field and Pool, or Wildcat: Lightning Dock
4. Location of Well: UNIT LETTER P LOCATED 1050 FEET FROM THE East LINE AND 50 FEET FROM THE So. LINE OF SEC. 6 TWP. 25s RGE. 19w NMPM
12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
500		Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4250	Cash 2,000.00 #5622	Self	10/20/93

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
9 1/8	8 5/8	32	150.	50	Cir

Hot water could be encountered at 100' if so. Pipe will be set there

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new produ zone. Give blowout preventer program, if any.

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

Signed Dale Bargett Title CEO Date 10/16/93

(This space for State Use)

APPROVED BY R. L. Johnson TITLE DISTRICT SUPERVISOR DATE 10/26/93

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

RECEIVED
OCT 25 AT 1993

Form C-102
Adopted 10-1-7.
Revised 10-1-7.

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Rosette Inc	Rosette State	1

Unit Letter	Section	Township	Range	County
P	6	25 So.	19 E	Hidalgo

Actual Footage Location of Well:
1050 feet from the E. line and 50 feet from the South line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4250	Valley Fill	Lightning Dock	313.59 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

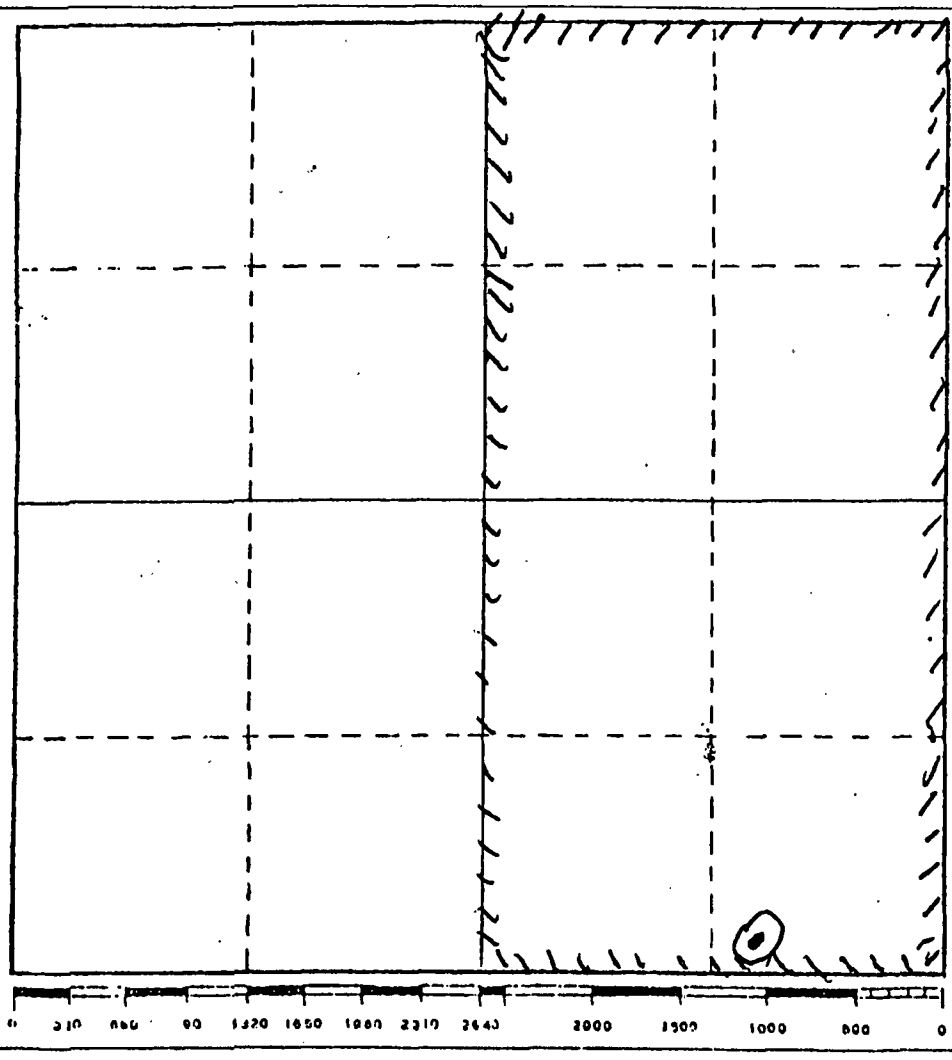
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name: Dale Burgett

Position: CEO

Company: Rosette Inc

Date: 10/16/93

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form C-101
Adopted 10-1-74
Revised 10-1-78

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Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE [X] FEE
5.a State Lease No.: GTR 303

1a. Type of Work: Drill [X] Deepen [ ] Plug Back [ ]

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

7. Unit Agreement Name:

8. Farm or Lease Name: Rosette

2. Name of Operator: Rosette Inc.

9. Well No.: three

3. Address of Operator: P.O. Box 265 A Animas, New Mexico 88020

10. Field and Pool, or Wildcat: Lighting Dock

4. Location of Well: UNIT LETTER O LOCATED 1520 FEET FROM THE East LINE AND 100 FEET FROM THE South LINE OF SEC. 6 TWP. 25 S RGE. 19 W NMPM

12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
500	Valley Fill	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4250	Blanket #9360094	Self	10/20/93

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
9 7/8	8 5/8	32	200	50	cir

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new produ zone. Give blowout preventer program, if any.

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

Signed Robert Burgett Title CEO Date 11/9/93

(This space for State Use)

APPROVED BY By Elphrum TITLE DISTRICT SUPERVISOR DATE 11/24/93

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form C-102
Adopted 10-1-7
Revised 10-1-7

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Rosette Inc.	Rosette State	3

Unit Letter	Section	Township	Range	County
O	6	25 S	19 E	Hidalgo

Actual Footage Location of Well:
1520 feet from the East line and 100 feet from the South line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4250	Valley Fill	Lighting Dock	313.59 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

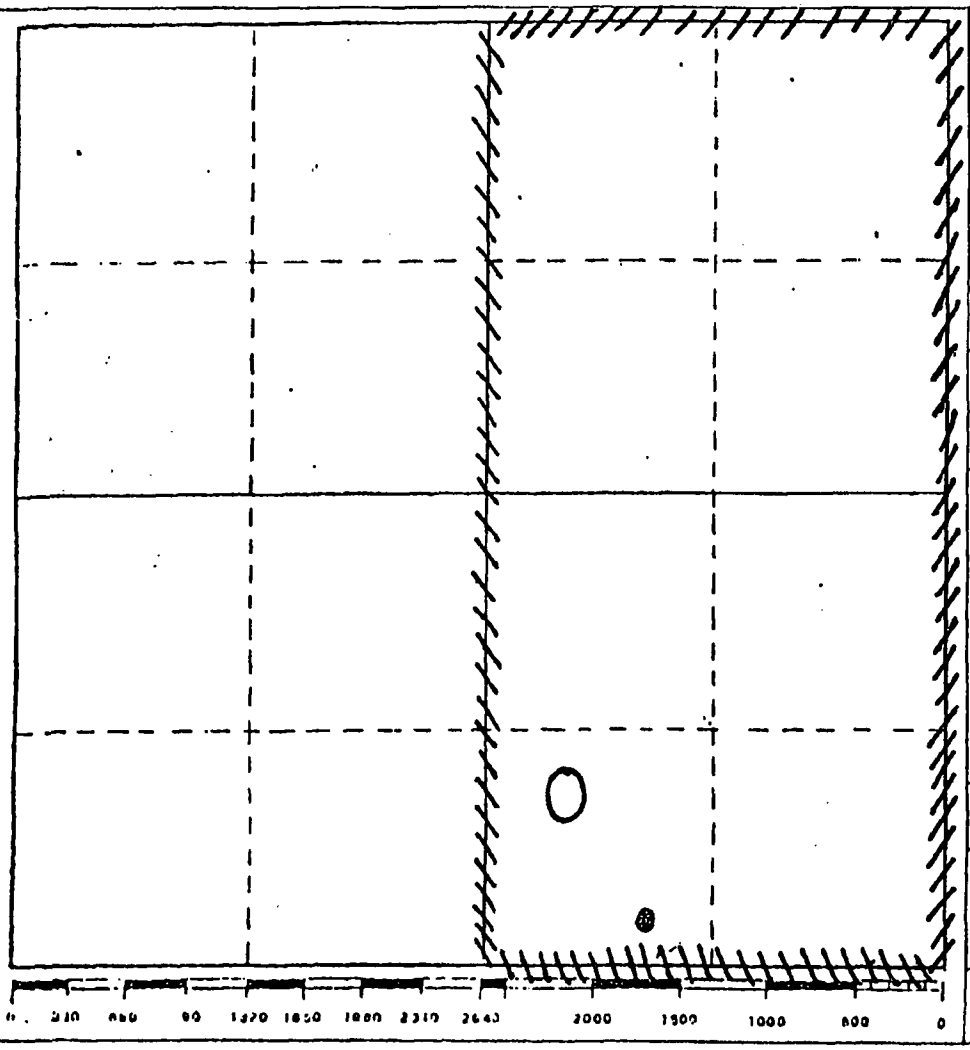
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name: CEO

Position: CEO

Company: Rosette Inc.

Date: Nov 9, 1993

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form C-101
Adopted 10-1-74
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APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE [X] FEE
5.a State Lease No.: GTR 303

1a. Type of Work: Drill [X] Deepen [ ] Plug Back [ ]

7. Unit Agreement Name:

b. Type of Well: Geothermal Producer [ ] Low-Temp Thermal [X] Temp Observation [ ] Injection/Disposal [ ]

8. Farm or Lease Name: Rosette

2. Name of Operator: Rosette Inc.

9. Well No.: 4

3. Address of Operator: P.O. BOX 265 A, Animas, N.M. 88020

10. Field and Pool, or Wildcat: Lighting Dock

4. Location of Well: UNIT LETTER P LOCATED 800 FEET FROM THE East LINE AND 50 FEET FROM THE SOUTH LINE OF SEC. 6 TWP. 25 S RGE. 19 W NMPM

12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
500		Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4250	Blanket Bond	Self	10/20/93

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
9 7/8	8 5/8	32	200	50	cir

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new produ zone. Give blowout preventer program, if any.

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

Signed: Jack Burgett Title: CEO Date: 11/22/93

(This space for State Use)

APPROVED BY: R E Johnson TITLE: DISTRICT SUPERVISOR DATE: 12/1/93

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form G-102
Adopted 10-1-7
Revised 10-1-7

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Rosette Inc.	Rosette State	4

Unit Letter	Section	Township	Range	County
P	6	25 S	19 W	Hidalgo

Actual Footage Location of Well:
800 feet from the East line and 50 feet from the North line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4250	Valley Fill	Lighting Dock	313.59 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

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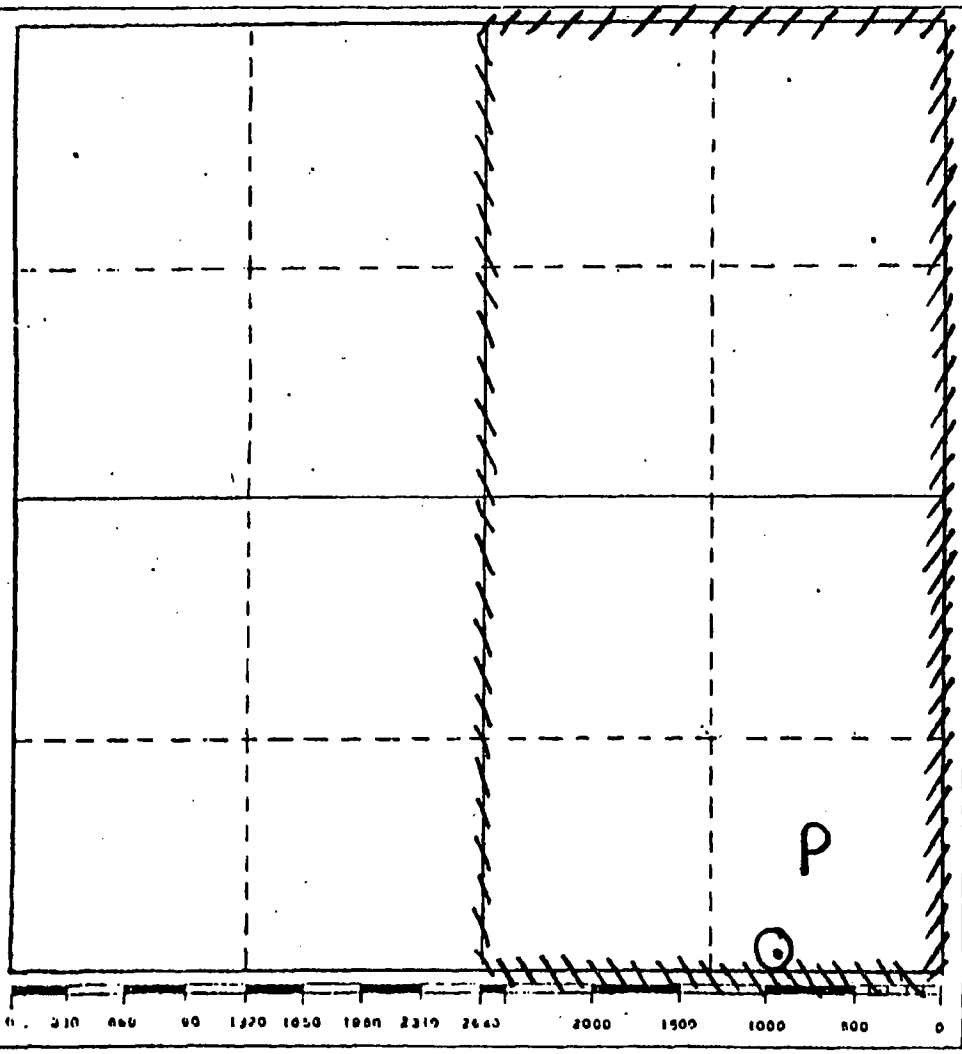
☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name Dale Burgett

Position CEO

Company Rosette Inc.

Date Nov 22/1983

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, February 24, 2012 12:06 PM
To: Chavez, Carl J, EMNRD
Subject: Note to Correspondence File Regarding Aquifer Characteristics/ Water Diversion Tracer Test at Lightning Dock Geothermal Project (GTHT-001)

Re: Water Quality Complaint of 2/21/2012

OCD investigated the complaint and provided an update to the Complainant on 2/24/2012 with the fact that it had confirmed that a tracer test was performed and the chemical type used for test based on the discoloration of his water and urgency of the complaint. Based on the investigation of the water quality complaint and information learned from other agencies during the OCD investigation, the OCD received confirmation that a tracer test was recently completed; however, the state agency that the OCD perceived to have jurisdiction over the tracer test appeared to be unaware of any tracer test.

This correspondence below is provided to document my understanding on the matter pursuant to details learned from the investigation of the complaint related to the injection of the tracer chemical (Rhodamine WT) that apparently discolored the complainants aquaculture water pink..

OCD Log:

OCD became aware of the tracer test in a meeting in Santa Fe with Cyrq on 10/28/2011 and was contemplating a G-103 Sundry Notice to the OCD for approval.

Around December of 2011 the EMNRD Cabinet Secretary and OCD Director attended a meeting with the OSE and Cyrq in Santa Fe regarding the Lightning Dock Geothermal Project. I was not invited to the meeting. After the meeting, the OCD Director briefed Environmental Bureau Staff during a weekly meeting that the OSE would handle all aspects of the tracer test (issue identified in OC 10/28/2011 Meeting Minutes) and that OCD does not have jurisdiction over water diversion issues and shall focus on OCD jurisdictional matters.

OCD requested a telephone conference call meeting with Cyrq on 1/19/2012 to discuss: 1) Proper operator name to use on future correspondence, well bonds, well forms, etc. (i.e., Los Lobos Renewable Power LLC) unless the company hierarchy changes, transfer of operator, etc.; and 2) The recent tracer test proposal submitted by Cyrq via e-mail to the OCD Artesia District Office with copy to OCD Santa Fe on 1/18/2012. Cyrq was directed by the OCD to deal directly with the Office of State Engineer (OSE) on any water diversion and aquifer characteristics testing, specifically the proposed tracer test, since OSE has jurisdiction over any diversion, aquifer characteristics issues at the facility.

OCD learned that OSE was not aware of the tracer test around 2/22-23/2012 based on OSE correspondence related to OCD's investigation of the water quality complaint.

OCD provided an update to the complainant on 2/24/2012 on the tracer chemical and referred the investigation correspondence and perceived regulatory issues to EMNRD Lead Counsel Bill Brancard for a "Path Forward" based on the issues.

I received a call from Laura Petronis (OSE Santa Fe- 505-827-6152) on 2/24/2012 inquiring about OCD's contact with Cyrq on the Tracer Test related to the complaint. I verbally showed her the OCD Online file system for meeting minutes from the 10/28/2011 meeting with Cyrq in Santa Fe when the tracer test was first proposed to the OCD to satisfy OSE testing. In addition, she was referred to the "General Correspondence" file page 14 – 31 for the original Cyrq tracer test proposal.

********** END**********

File: OCD Online "General Correspondence" File

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, February 24, 2012 7:00 AM
To: 'Damon Seawright'
Cc: Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD
Subject: RE: AmeriCulture Water

Sensitivity: *Personal*

Damon:

FYI, based on the OCD's investigation of your water quality complaint so far, the OCD would like to share the following information from the BLM.

BLM:

- Cyrq did perform tracer tests
- The dye used was Rhodamine WT
- The injection point was a well in the SE part of section 6, T25S R19W, which is NM State trust surface & mineral estate
- The water used to push the tracer came from one of the Burgett property freshwater well.

Because the tracer was not injected into a Federal well, and the test probably did not result in waste or unauthorized use of Federal geothermal resources, I cannot identify a possible violation of Federal regulations at this moment. I informed Mr. Janney that I would be sharing this information with OCD and OSW, and that he would need to contact BLM for any future tracer tests involving Federal wells so BLM can determine if a sundry notice is necessary.

Based on the above, and based on the tracer chemical information that you recently sent to the OCD, I recommend that you review the "Dyes as Tracers for Vadose Zone Hydrology" Markus Flury and Nu Nu Wai Dept. of Crop and Soil Sciences Center, which contains some water quality limit information on Rhodamine WT. According to this article, the EPA apparently removed it from the Drinking Water Contaminant Candidate List because it anticipates no adverse health effects when the dye is used as a tracer [Federal Register, 1998]. The National Sanitation Foundation (Standards and Publications, available at http://www.nsf.org, 2001) apparently does have standards in water media for Rhodamine WT.

The OCD Artesia District Office had received a proposal for the tracer test; however, in a telephone conference call with Cyrq to discuss the tracer test proposal on 1/19/2012, the OCD Director informed Cyrq that they must deal with the OSE. The agencies are now in communication on this matter based on the water quality complaint.

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Wednesday, February 22, 2012 9:26 AM
To: Chavez, Carl J, EMNRD
Subject: RE: AmeriCulture Water
Sensitivity: Personal

Dear Carl,

The "Sensitivity: Personal" designation must have occurred automatically, as that was not my intent. Treat the information that I sent as if that designation were absent.

Damon

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, February 22, 2012 7:11 AM
To: Damon Seawright
Subject: RE: AmeriCulture Water
Sensitivity: Personal

Damon:

The Oil Conservation Division is in receipt of your e-mail; however, I notice in your message the section entitled, "Sensitivity: Personal" and do not understand the nature of this addition to your message. Could you please clarify your intent based on the above? What do you expect the OCD to do base on this?

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Tuesday, February 21, 2012 11:43 PM
To: Chavez, Carl J, EMNRD
Subject: FW: AmeriCulture Water
Sensitivity: Personal

Dear Carl,

My original message bounced back because of the size of the attachments. You will be receiving two messages, this one and another with two additional pictures corresponding to my original message.

Regards,

Damon Seawright
AmeriCulture, Inc.

From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Tuesday, February 21, 2012 9:07 PM
To: 'Chavez, Carl J, EMNRD'
Subject: AmeriCulture Water
Sensitivity: Personal

Dear Carl,

Per our discussion earlier, I am attaching photographic documentation of the suspect chemical contamination that we discussed. A dramatic change in coloration was discovered in our water on the morning of February 16th. Upon examination, it is clear that the geothermal water, and not the fresh water (well located 1.6 miles to the West) is the source of colored water. Our broodstock, eggs, fry and fingerlings have been exposed to the suspect chemical contaminant. We are not certain of the nature of chemical contaminant and thus we cannot at this time speculate on its impact on our fish. *Suffice to say that it is of grave concern.*

- "Water Sample 022012" – Photograph of geothermal water sample (left) collected on 2/20/12 at 7:15pm and fresh water sample similarly collected for color comparison. The geothermal sample has a strong pink coloration.
- "Fry Tank 012112" – Shows strong pink coloration in one of our early rearing tanks. This tank is part of a recirculating system with modest inflow of fresh water. Similar water coloration is found in all tanks in our facility.
- "Underwater Picture of Fish 022112" – Shows the coloration of the water that our broodstock are in at the moment.
- "Normal Colored Fish taken 111811" – Shows normal coloration of fish.

Regards,

Damon Seawright
AmeriCulture, Inc.

DYES AS TRACERS FOR VADOSE ZONE HYDROLOGY

Markus Flury and Nu Nu Wai
Department of Crop and Soil Sciences
Center for Multiphase Environmental Research
Washington State University
Pullman, Washington, USA

Received 24 January 2002; revised 14 October 2002; accepted 23 January 2003; published 1 April 2003.

[1] Dyes are important tracers to investigate subsurface water movement. For more than a century, dye tracers have provided clues about the hydrological cycle as well as flow and transport processes in the subsurface. Groundwater contamination often originates in the vadose zone. Agrochemicals applied to the soil surface, toxic compounds accidentally spilled by human activities, and contaminants released from waste repositories leach through the vadose zone and can ultimately pollute groundwater resources. Dyes are an important tool to assess flow pathways of such contaminants. This review compiles information on dyes used as hydrological tracers, with particular emphasis on vadose zone hydrology. We summarize briefly different human-applied tracers, including nondye tracers. We then provide a historical sketch of the use of dyes as tracers and describe newer developments in visualization and quantification of tracer experiments. Relevant chemical properties of dyes used as tracers are discussed and illustrated with dye intermediates and selected dye tracers. The types of dyes used as tracers in subsurface hydrology are summarized, and recommendations are made regarding the use of dye tracers. The review concludes with a toxicological assessment of dyes used as hydrological tracers. Many different dyes have been proposed as tracers for water movement in the subsurface. All of these compounds, however, are to some degree retarded by the subsurface medium. Nevertheless, dyes are useful tracers to visualize flow pathways.
INDEX TERMS: 1875 Unsaturated zone; 1829 Groundwater hydrology; 1832 Groundwater transport; *KEYWORDS:* dyes, tracers, vadose zone, visualization, unsaturated zone
Citation: Flury, M., and N. N. Wai, Dyes as tracers for vadose zone hydrology, *Rev. Geophys.*, *41*(1), 1002, doi:10.1029/2001RG000109, 2003.

CONTENTS

1. INTRODUCTION

[2] Tracers play an essential role in the experimental investigation of chemical, physical, and biological systems. In general, a tracer is a substance or entity

8755-1209/03/2001RG000109$15.00 doi:10.1029/2001RG000109

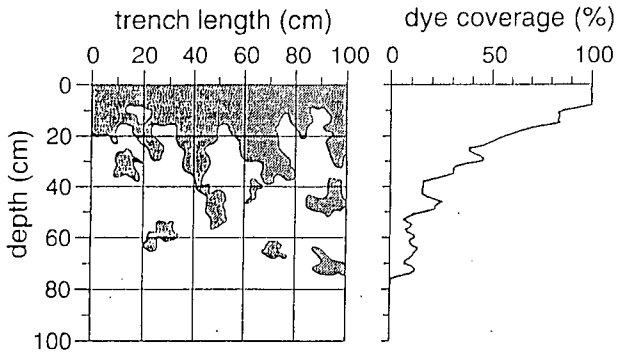


Figure 18. Flow pattern, and associated relative dye coverage, observed in a loamy soil after infiltration of 40 mm of Brilliant Blue FCF solution at the soil surface (adapted from *Flury et al.* [1994]).

and negative charge, that is, small sorption affinity to soil minerals.

[83] Dyes decompose by chemical degradation, photodegradation, and biochemical degradation. Biodegradation of colorants takes place slowly, since most synthetic dyes are xenobiotic [*Clarke and Anliker*, 1980; *Zollinger*, 1991]. Dyes are often designed to resist biodegradation, since we usually want the colors on fabrics, wood, or metal to resist fading. The natural system of microorganisms in rivers and lakes is missing the enzymes needed to degrade synthetic dyes under aerobic conditions [*Zollinger*, 1991]. Dyes degrade slightly faster under anaerobic compared to aerobic conditions [*Zollinger*, 1991].

[84] Human-applied tracers may react with naturally occurring compounds, contaminants, or water treatment agents to form toxic byproducts. An extreme example is the formation of highly toxic tribromomethans via chlorination of drinking water that contains Br^- and organic carbon [*Flury and Papritz*, 1993]. Similar reactions can take place with dyes. Chlorophenol compounds are suspected to form during chlorination of water containing dye tracers [*Smart*, 1984]. Rhodamine dyes, such as Rhodamine B and Rhodamine WT, can react with nitrite to form the carcinogenic compound diethylnitrosamine [*Abidi*, 1982; *Steinheimer and Johnson*, 1986]. Test results, however, indicate that under customary dye use practices, Rhodamine WT should not pose an environmental hazard [*Johnson and Steinheimer*, 1984].

[85] Halogenated xanthene dyes can be used as light-activated pesticides, particularly as insecticides [*Heitz*, 1995; *Wood*, 1996]. Upon absorption of light, halogen atoms cause oxygen to raise to the first singlet state. Singlet oxygen is a strong oxidizing agent and can attack cellular membranes and biomolecules [*Valenzo and Farr*, 1995]. Insects that digest such dyes, usually die upon exposure to sunlight [*Heitz*, 1997]. The most effective dye insecticides are the xanthenes Rose Bengal (C.I. Acid Red 94, C.I. 45440), Erythrosine (C.I. Acid Red 51, C.I. 45430), and Phloxine B (C.I. Acid Red 92, C.I. 45410) [*Heitz*, 1995]. These dyes have much lower toxicities to humans and mammals compared to synthetic insecticides and therefore can be valuable pest control agents [*Heitz*, 1997].

[86] Regulations for the use of dyes as subsurface tracers are scarce. In the United States we are unaware of general, federal regulations issued by the U.S. Environmental Protection Agency (EPA) (M. S. Field, personal communication, Center for Environmental Assessment, EPA Office of Research and Development, Washington, D. C., 17 December 2001). State agencies may have regulations in place, but these will vary from state to state. The Washington State Department of Ecology, for example, will decide on a case by case basis whether a certain chemical is allowed in a tracer test. No specific regulations regarding dye tracers are in place (M. Shaleen-Hansen, personal communication, Surface and Groundwater Quality Management Unit, Water Quality Program, Washington State Department of

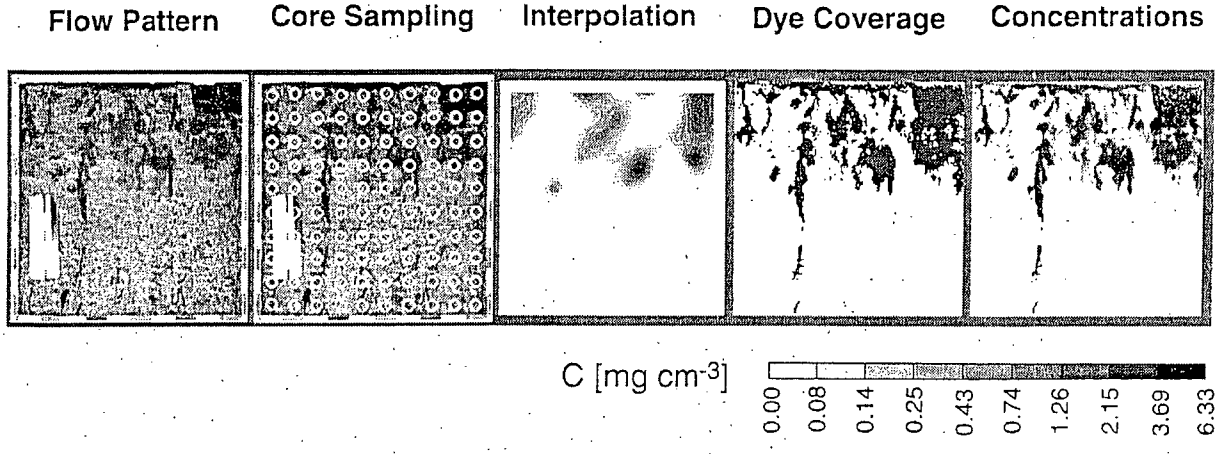


Figure 19. Spatial distribution of dye concentrations measured with different degrees of resolution. Adapted from *Forrer* [1997], modified by permission of I. Forrer.

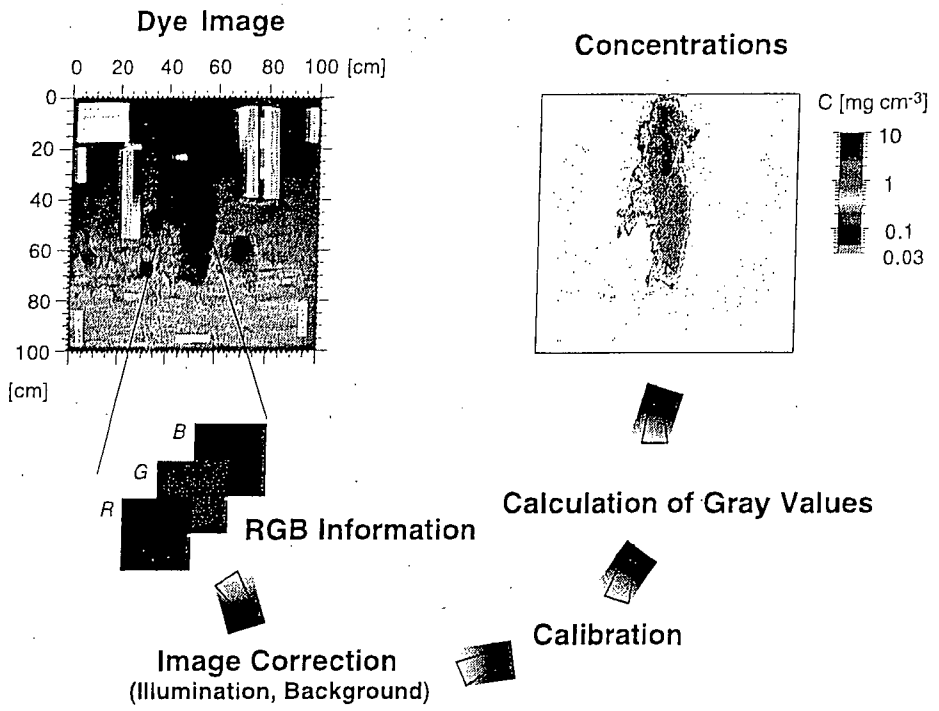


Figure 20. Image analysis procedure to determine tracer concentrations from color images. Adapted from *Forrer* [1997], modified by permission of I. Forrer.

Ecology, Olympia, Washington, 21 December 2001). General regulations at the federal and state level do classify wells for different types of material injections, including the application of dye tracers [*Mull et al.*, 1988; *Quinlan*, 1989]. Previously on the Drinking Water Contaminant Candidate List, Rhodamine WT has recently been removed because the EPA anticipates no adverse health effects when the dye is used as a tracer [*Federal Register*, 1998]. Water quality criteria established by the National Sanitation Foundation (Standards and Publications, available at http://www.nsf.org, 2001) for Rhodamine WT are 0.1 $\mu g\ L^{-1}$ for drinking water, 10 $\mu g\ L^{-1}$ for water entering a drinking water plant, and 100 $\mu g\ L^{-1}$ for groundwater not associated with drinking water production (American National Standards Institute/National Sanitation Foundation Standard 60) [*Federal Register*, 1998].

[87] In comparison, the German Federal Environmental Agency (Umweltbundesamt) recently formed a committee to assess the toxicological and ecotoxicological impacts of water tracers [*Behren et al.*, 2001]. Eleven fluorescent dye tracers, primarily groundwater tracers, were tested for genotoxicology and ecotoxicology. Among the eleven, seven dyes were reported toxicologically safe (Fluorescein/Uranine, Eosine, Sulforhodamine G, Pyranine, Sodium Naphtionate, Tinopal CBS-X, and Tinopal ABP). The other four dyes (Sulforhodamine B, Rhodamine WT, Rhodamine B, and Rhodamine 6G) caused either genotoxicologically or ecotoxicologically adverse effects and were deemed unsafe as tracers [*Behrens et al.*, 2001].

[88] Overall, synthetic dyes should be considered toxic to the environment. A toxicologically sound alternative, particularly for field applications, may be certified food dyes. Food dyes are thoroughly tested to ensure nontoxicity to humans; however, colored foods contain only small amounts of dye, in most cases, 0.005–0.03% by weight [*Zollinger*, 1991]. These concentrations are far less than adequate for tracer studies; much larger concentrations would be required. Therefore, even with food dyes, toxic environmental effects are possible, and the use of food dyes should be carefully considered.

[89] On the basis of toxicological considerations a water concentration limit of ~1 mg L^{-1}, following the tracing experiment, has been proposed for Brilliant Blue FCF [*Flury and Flühler*, 1994] and 12 fluorescent tracers [*Field et al.*, 1995]. Given the results from these and other studies, dyes can be used safely and successfully to trace water movement in the subsurface if the dosage chosen results in water concentrations below a nontoxic value. The expected concentrations after a tracer experiment, however, particularly in the vadose zone, are often difficult to estimate. Therefore determining the appropriate amount of dye to ensure both unambiguous scientific results and environmental safety remains a difficult task [*Field et al.*, 1995].

9. CONCLUSIONS

[90] Dyes have been used for more than a hundred years to trace water flow and contaminant movement in the subsurface. The first dye used as a hydrological tracer was Fluorescein, shortly after its synthesis in 1871. Fluorescein has since become the most prominent dye for groundwater tracing. For tracing water in the vadose zone, various dyes have been proposed, the most prominent of which is Brilliant Blue FCF.

[91] Several thousands of different dyes are commercially available. These compounds have been designed for a specific purpose of dying. Hydrologists have screened some of the dyes for tracer properties. In general, the mobility of an organic molecule in a soil or aquifer medium is related to the molecule's solubility and charge. For instance, the greater the number of sulfonic acid groups in the dye molecule, the more soluble the dye is in water, and the more mobile the dye becomes in soil [*Corey*, 1968]. Many dyes, such as acid dyes, contain one or more sulfonic acid groups.

[92] An ideal dye tracer has yet to be found and might not exist. Several different compounds have been recommended as suitable water tracers, but all are more or less retarded in a soil medium. Sorption can be nonlinear and controlled by kinetic effects, so dye patterns must be interpreted with caution. Nevertheless, dyes are valuable tracers to visualize flow pathways and patterns in the vadose zone.

[93] Dyes are usually identified with their C.I. generic name or C.I. constitution number. This identification system ensures that colorants with the same C.I. name and number possess the same structure but does not guarantee the same purity for all preparations of a dyestuff. For use as a hydrological tracer the dye's degree of purity must be noted, since the ecotoxicological properties may depend on the purity of the dye.

[94] Toxicological as well as aesthetic aspects are important to consider in dye tracing studies. Most synthetic dyes are resistant to degradation in the environment. Food dyes pose the least environmental hazard and are recommended as hydrological tracers from the toxicological perspective.

[95] Recent developments in dye imaging and fiber optic spectroscopy have enabled the quantitative analysis of temporal and spatial dye concentrations patterns. Such techniques provide important new tools to improve our understanding of water flow and chemical movement in the vadose zone.

[96] ACKNOWLEDGMENTS. Financial support for this project has been provided by the Washington State Water Research Center.

[97] Daniel M. Tartakovsky was the Editor responsible for this paper. He thanks the technical reviewers Walter Illman and Binayak P. Mohanty and one anonymous cross-disciplinary reviewer.

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Chavez, Carl J, EMNRD

From: Sanchez, Daniel J., EMNRD
Sent: Thursday, February 23, 2012 3:46 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Lightning Dock Water Quality Compllaint

Let's make it next Wednesday. I will be in Roswell on Tuesaday.

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 23, 2012 3:35 PM
To: Sanchez, Daniel J., EMNRD
Cc: Brooks, David K., EMNRD
Subject: Lightning Dock Water Quality Compllaint

Daniel:

David is out tomorrow and I'm out on Monday. Please let us know if you want to meet today or next Tuesday.

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Jackson, Charles L., OSE
Sent: Thursday, February 23, 2012 2:00 PM
To: Smith, Michael A; Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Seum, Edward R; Durr, Corey W; Childress, William T
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Folks,

The use of any of fresh water from any wells for a tracer test is a permit violation and an illegal use. That is an issue that OSE will address. The use of any well not permitted as an injection well is also a violation of the OSE permit for the well that was used as the injection point, and we will address that as well.

As far as any testing that might be done to determine "aquifer characteristics", the OSE does not permit testing that introduces an type of foreign contaminant of any kind into the water supply, unless the applicant has previously received a permit from OCD/ENV that states that the proposed testing agent would not cause contamination to the source. The introduction of any foreign agent into the water supply is not under the jurisdiction of the OSE. That part is entirely under the jurisdiction of the OCD or the Environment Department. Carl, if your agency is not going to exercise jurisdiction over the introduction of the tracer agent into the water supply then let me know and I will get the Environment Department involved.

We are in the process of contacting David Janney right now to get them in here and get to the bottom of this.

Mike – appreciate your efforts in this, and your synopsis of your jurisdictional limits.

Thanks,

<<<>>> <<<>>> <<<>>> <<<>>>
Charles "Tink" Jackson
District 3 Supervisor
New Mexico Gila Basin Watermaster
Office of the State Engineer - WRAP
P.O. Box 844
301 South Tin Street
Deming, New Mexico 88031
(575)546-2851 Office
(575)546-2290 Fax
charles.jackson@state.nm.us
<<<>>> <<<>>> <<<>>> <<<>>>
水マスター

Watch your thoughts; they become words.
Watch your words; they become actions.
Watch your actions; they become habits.
Watch your habits; they become character.
Watch your character; it becomes your destiny.

From: Smith, Michael A [mailto:michaelsmith@blm.gov]
Sent: Thursday, February 23, 2012 1:35 PM
To: Chavez, Carl J, EMNRD; Jackson, Charles L., OSE; Phillips, Haddy L., OSE

Cc: Brooks, David K., EMNRD; Seum, Edward R; Durr, Corey W; Childress, William T
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

I have had two telephone conversations with David Janney (ANEC Inc.), consultant for Cyrq Energy, about this issue. This is what he told me:

- Cyrq did perform tracer tests
- The dye used was Rhodamine WT
- The injection point was a well in the SE part of section 6, T25S R19W, which is NM State trust surface & mineral estate
- The water used to push the tracer came from one of the Burgett property freshwater well.

Because the tracer was not injected into a Federal well, and the test probably did not result in waste or unauthorized use of Federal geothermal resources, I cannot identify a possible violation of Federal regulations at this moment. I informed Mr. Janney that I would be sharing this information with OCD and OSW, and that he would need to contact BLM for any future tracer tests involving Federal wells so BLM can determine if a sundry notice is necessary.

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
michaelsmith@blm.gov

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, February 23, 2012 10:31 AM
To: Jackson, Charles L., OSE; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Phillips, Haddy L., OSE; Smith, Michael A
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Tink, et al.:

The OCD is in the process of investigating the water quality complaint.

The communications have been helpful in this matter. 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
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Jackson, Charles L., OSE
Sent: Thursday, February 23, 2012 10:02 AM
To: Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE

Cc: Brooks, David K., EMNRD; Phillips, Haddy L., OSE; michaelsmith@blm.gov
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Carl,

I am not sure what authority OSE will assume on this matter. Obviously we have not issued a permit for any well to be used for reinjection, so that is one issue. If water was diverted and used as a carrier for the tracer material, that would also be another issue. Without knowing the full details of what happened, we won't know exactly how many different permit conditions have been violated. We have also contacted BLM, and they have not approved any "tracer test" either I have copied Michael Smith from BLM on this email chain so he will be kept in the loop as well.

Thanks,

<<<>>> <<<>>> <<<>>> <<<>>>
Charles "Tink" Jackson
District 3 Supervisor
New Mexico Gila Basin Watermaster
Office of the State Engineer - WRAP
P.O. Box 844
301 South Tin Street
Deming, New Mexico 88031
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Watch your habits; they become character.
Watch your character; it becomes your destiny.

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 23, 2012 7:12 AM
To: Jackson, Charles L., OSE; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Tink:

Thank you for your prompt reply. OCD's next step may be to contact Los Lobos Renewable Power LLC or Cyrq Energy Inc to determine whether a test was performed and any details?

Before OCD do the above, OCD Staff will confer with our OCD Director on the matter on how we shall proceed.

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
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From: Jackson, Charles L., OSE
Sent: Wednesday, February 22, 2012 5:14 PM
To: Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Carl,

I have received similar complaints today as well. We were not aware of any injection tests of any kind, nor have we permitted any injection wells. The injection of any foreign material into the aquifer was not known, nor would it have been authorized by OSE.

Let me know if further discussion would be beneficial.

<<<>>> <<<>>> <<<>>> <<<>>>
Charles "Tink" Jackson
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From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 22, 2012 4:32 PM
To: Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Jackson, Charles L., OSE
Subject: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Haddy:

Good afternoon. The OCD is following up on a water quality complaint thought to be associated with a well tracer test conducted at the facility by Los Lobos Renewable Energy LLC and/or Cyrq Energy Inc.

Could you please respond to the following OCD questions:

1) Was the Office of State Engineer (OSE) aware of a Tracer Test (test) being conducted at the facility to address aquifer characteristics information needed to address OSE Regulatory Issues, etc.? Was the test authorized by the OSE?

2) If so, could you please confirm when the tracer test was initiated, which well injection occurred into, over what test duration or time frame, chemical tracer type, and % by volume tracer, and rate of injection for the test?

Please contact me if you have questions or wish to communicate further on this matter.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
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Chavez, Carl J, EMNRD

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Cc: Brooks, David K., EMNRD; Seum, Edward R; Durr, Corey W; Childress, William T
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Geologist - BLM
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Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Carl,

I am not sure what authority OSE will assume on this matter. Obviously we have not issued a permit for any well to be used for reinjection, so that is one issue. If water was diverted and used as a carrier for the tracer material, that would also be another issue. Without knowing the full details of what happened, we won't know exactly how many different permit conditions have been violated. We have also contacted BLM, and they have not approved any "tracer test" either I have copied Michael Smith from BLM on this email chain so he will be kept in the loop as well.

Thanks,

<<<>>> <<<>>> <<<>>> <<<>>>
Charles "Tink" Jackson
District 3 Supervisor
New Mexico Gila Basin Watermaster
Office of the State Engineer - WRAP
P.O. Box 844
301 South Tin Street
Deming, New Mexico 88031
(575)546-2851 Office
(575)546-2290 Fax
charles.jackson@state.nm.us
<<<>>> <<<>>>.<<<>>> <<<>>>
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From: Chavez, Carl J, EMNRD
Sent: Thursday, February 23, 2012 7:12 AM
To: Jackson, Charles L., OSE; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Tink:

Thank you for your prompt reply. OCD's next step may be to contact Los Lobos Renewable Power LLC or Cyrq Energy Inc to determine whether a test was performed and any details?

Before OCD do the above, OCD Staff will confer with our OCD Director on the matter on how we shall proceed.

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/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Jackson, Charles L., OSE
Sent: Wednesday, February 22, 2012 5:14 PM
To: Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Carl,

I have received similar complaints today as well. We were not aware of any injection tests of any kind, nor have we permitted any injection wells. The injection of any foreign material into the aquifer was not known, nor would it have been authorized by OSE.

Let me know if further discussion would be beneficial.

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From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 22, 2012 4:32 PM
To: Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Jackson, Charles L., OSE
Subject: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Haddy:

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1) Was the Office of State Engineer (OSE) aware of a Tracer Test (test) being conducted at the facility to address aquifer characteristics information needed to address OSE Regulatory Issues, etc.? Was the test authorized by the OSE?

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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 23, 2012 10:31 AM
To: Jackson, Charles L., OSE; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Phillips, Haddy L., OSE; michaelsmith@blm.gov
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

Tink, et al.:

The OCD is in the process of investigating the water quality complaint.

The communications have been helpful in this matter. 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
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From: Jackson, Charles L., OSE
Sent: Thursday, February 23, 2012 10:02 AM
To: Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Phillips, Haddy L., OSE; michaelsmith@blm.gov
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To: Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; Jackson, Charles L., OSE
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Chavez, Carl J, EMNRD

From: Smith, Michael A [michaelsmith@blm.gov]
Sent: Thursday, February 23, 2012 9:59 AM
To: Phillips, Haddy L., OSE
Cc: Jackson, Charles L., OSE; Seum, Edward R; Chavez, Carl J, EMNRD; Durr, Corey W
Subject: RE: Tracer test for LDG

Hello Haddy:

The Las Cruces BLM has not permitted any ground-water tracer tests at the LDG geothermal site, nor have any such test ever been proposed by the operator. I spoke with the Las Cruces BLM District Hydrologist (Corey Durr) and he has assured me that no other BLM permitee has proposed or is authorized to conduct tracer tests.

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
michaelsmith@blm.gov

From: Phillips, Haddy L., OSE [mailto:haddy.phillips@state.nm.us]
Sent: Thursday, February 23, 2012 8:27 AM
To: Smith, Michael A
Cc: Jackson, Charles L., OSE
Subject: Tracer test for LDG

Mike,

We received a phone call from Seawright that his fish are swimming in pink water and the wells are pumping pink water. Shortly after that we got an email from OCDs Carl Chavez asking if we had permitted any tracer test and if so to let them know the specifics. Our agency is not aware of any test nor permitted any test of this type(as it would require injection). Are you aware of a tracer test being conducted?

Email from OCD
Haddy:

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Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau

Thanks

Haddy Phillips

Water Resource Specialist
Office of State Engineer
District 3 Office
P.O. Box 844
Deming, NM 88031
phone :575-546-2851 Fax: 575-546-2290
haddy.phillips@state.nm.us

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 23, 2012 7:12 AM
To: Jackson, Charles L., OSE; Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD
Subject: RE: Lightning Dock Geothermal Project (GTHT-001) Hidalgo County

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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Damon Seawright [dseawright@gmail.com]
Sent: Tuesday, February 21, 2012 11:43 PM
To: Chavez, Carl J, EMNRD
Subject: FW: AmeriCulture Water
Attachments: Fry Tank 022112.JPG; Water Sample 022012 19.15 Geothermal (L) Fresh (R).JPG

Sensitivity: Personal

Dear Carl,

My original message bounced back because of the size of the attachments. You will be receiving two messages, this one and another with two additional pictures corresponding to my original message.

Regards,

Damon Seawright
AmeriCulture, Inc.

From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Tuesday, February 21, 2012 9:07 PM
To: 'Chavez, Carl J, EMNRD'
Subject: AmeriCulture Water
Sensitivity: Personal

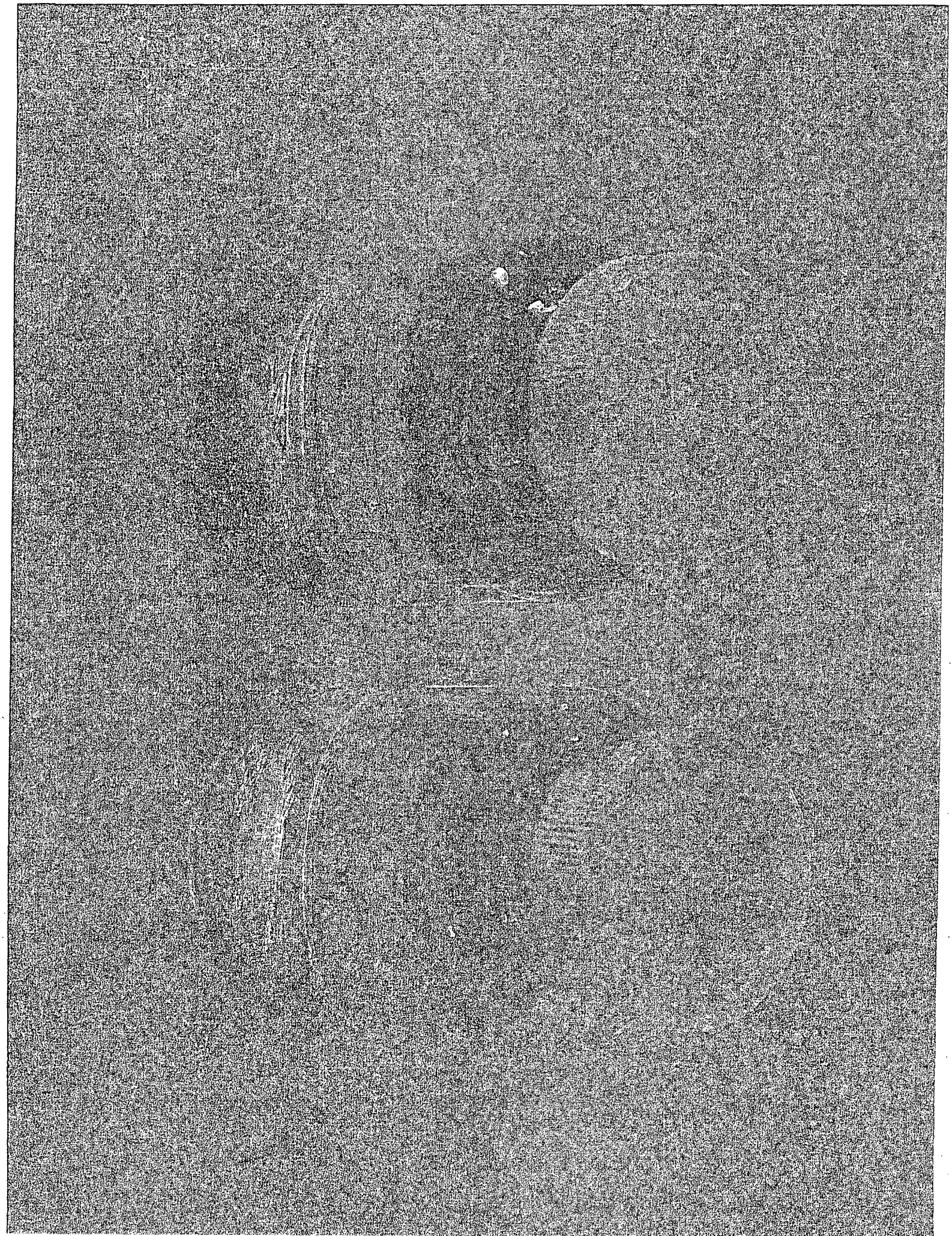
Dear Carl,

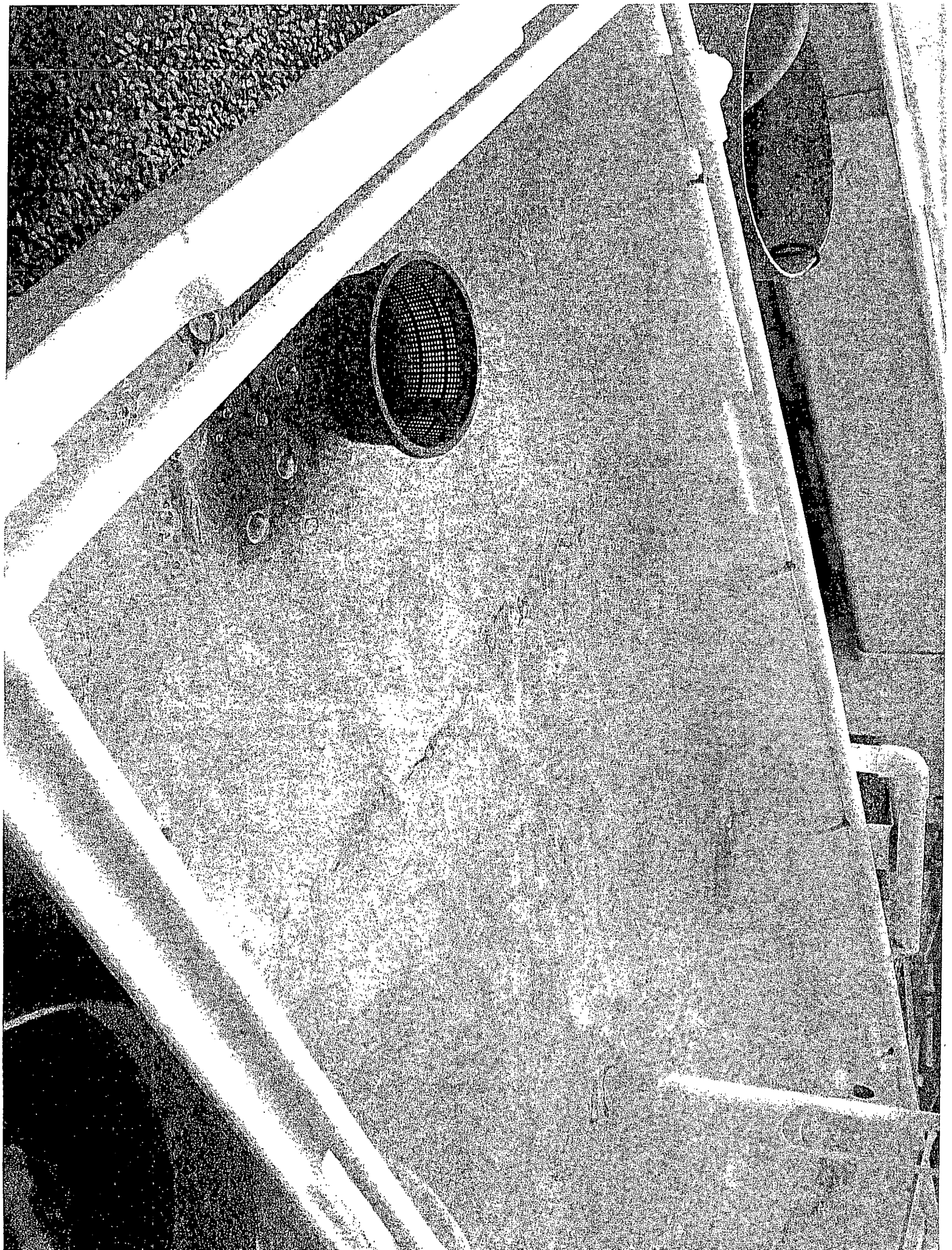
Per our discussion earlier, I am attaching photographic documentation of the suspect chemical contamination that we discussed. A dramatic change in coloration was discovered in our water on the morning of February 16th. Upon examination, it is clear that the geothermal water, and not the fresh water (well located 1.6 miles to the West) is the source of colored water. Our broodstock, eggs, fry and fingerlings have been exposed to the suspect chemical contaminant. We are not certain of the nature of chemical contaminant and thus we cannot at this time speculate on its impact on our fish. Suffice to say that it is of grave concern.

- "Water Sample 022012" – Photograph of geothermal water sample (left) collected on 2/20/12 at 7:15pm and fresh water sample similarly collected for color comparison. The geothermal sample has a strong pink coloration.
- "Fry Tank 012112" – Shows strong pink coloration in one of our early rearing tanks. This tank is part of a recirculating system with modest inflow of fresh water. Similar water coloration is found in all tanks in our facility.
- "Underwater Picture of Fish 022112" – Shows the coloration of the water that our broodstock are in at the moment.
- "Normal Colored Fish taken 111811" – Shows normal coloration of fish.

Regards,

Damon Seawright
AmeriCulture, Inc.





Chavez, Carl J, EMNRD

From: Damon Seawright [dseawright@gmail.com]
Sent: Tuesday, February 21, 2012 11:48 PM
To: Chavez, Carl J, EMNRD
Subject: Additional Pictures
Attachments: Underwater Picture of Fish 022112.JPG; Normal Colored Fish taken 111811.JPG

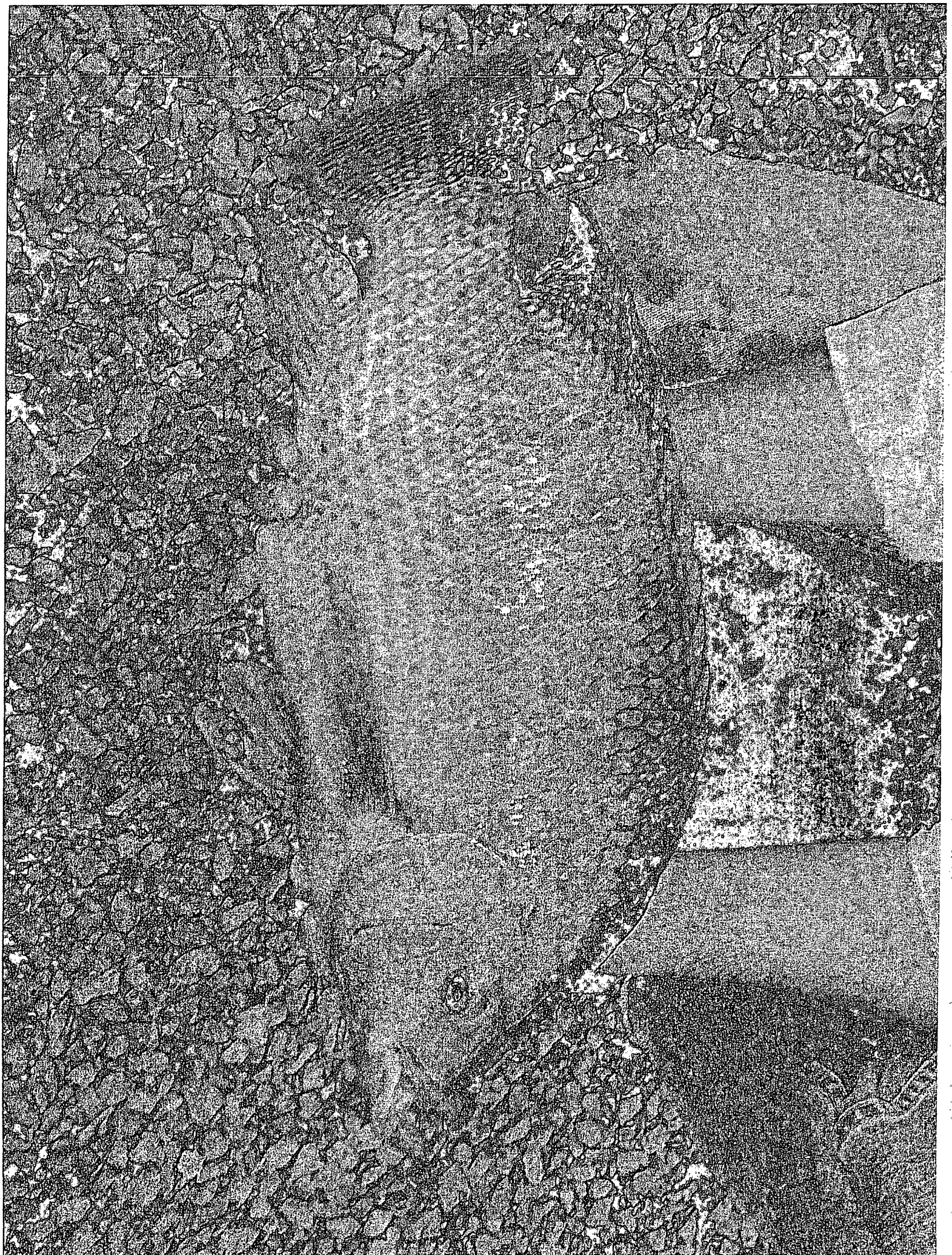
Sensitivity: Personal

Dear Carl,

Attached are two additional pictures corresponding to the message that I sent moments ago.

Regards,

Damon Seawright
AmeriCulture, Inc.



This rule was filed as Rule G-117.

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 14 GEOTHERMAL POWER
PART 36 NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS AND BLOWOUTS

19.14.36.1 ISSUING AGENCY: Energy and Minerals Department, Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico.
[Recompiled 12/31/01]

19.14.36.2 SCOPE: [RESERVED]
[Recompiled 12/31/01]

19.14.36.3 STATUTORY AUTHORITY: [RESERVED]
[Recompiled 12/31/01]

19.14.36.4 DURATION: [RESERVED]
[Recompiled 12/31/01]

19.14.36.5 EFFECTIVE DATE: [November 15, 1983]
[Recompiled 12/31/01]

19.14.36.6 OBJECTIVE: [RESERVED]
[Recompiled 12/31/01]

19.14.36.7 DEFINITIONS: [RESERVED]
[Recompiled 12/31/01]

19.14.36.8 NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS AND BLOWOUTS:

A. The division shall be notified of any fire, break, leak, spill or blowout occurring at any geothermal drilling, producing, transporting, treating, disposal or utilization facility in the state of New Mexico by the person operating or controlling such facility.

B. "Facility", for the purpose of this rule, shall include any geothermal drilling, producing, injection or disposal well; any pipeline through which geothermal resources or the waste products thereof are gathered or transported; any tank or other storage unit into which geothermal products, waters or wastes are produced, received or stored; any treating plant in which geothermal resources are treated or processed; any electrical generating plant in which geothermal resources are utilized; and any drilling pit, slush pit or storage pit or pond associated with geothermal drilling, producing, treating or utilization processes in which hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

C. Notification to the division of such fire, break, leak, spill or blowout shall be in accordance with the provisions set forth below:

(1) Well Blowouts. Notification of well blowouts and/or fires shall be "immediate notification" described below.

(2) "Major" breaks, spills or leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits or storage pits or ponds, the result of which 50 barrels or more of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids or other deleterious substances reach a water course or enter a stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" described below.

(3) "Minor" breaks, spills or leaks. Notification of breaks, spills or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits or storage pits or ponds, the result of which 25 barrels or more but less than 50 barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids or other deleterious substances are lost or in which noxious gases escape, but in which there is no danger of human health nor of substantial damage to property shall be "subsequent notice" described below.

(4) Fires. Notification of fires at geothermal installations in which there is reasonable probability of danger to human health or substantial damage to adjoining properties or substantial loss of geothermal resources shall be "immediate notice" described below. Notification of fires of lesser magnitude but of $500.00 or more of property damage or $500.00 or more geothermal resources loss shall be "subsequent notice" described below.
[Recompiled 12/31/01]

19.14.36.9 IMMEDIATE NOTIFICATION: "Immediate Notification" shall be as soon as possible after discovery and shall be in person or by telephone to the Santa Fe office of the nearest district office of the division if the incident occurs

during business hours. If the incident occurs after business hours, notification shall be in accordance with the latest division memorandum on the subject. A complete written report of the incident shall be submitted to the Santa Fe office of the division within ten days after discovery of the incident.
[Recompiled 12/31/01]

19.14.36.10 SUBSEQUENT NOTIFICATION: "Subsequent notification" shall be a complete written report of the incident and shall be submitted to the Santa Fe office of the division within ten days after discovery of the incident.
[Recompiled 12/31/01]

19.14.36.11 CONTENT OF NOTIFICATION: All reports of fires, breaks, spills, leaks or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general condition prevailing in the area, including precipitation, temperature and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.
[Recompiled 12/31/01]

19.14.36.12 WATERCOURSE: For the purpose of this Rule, is defined as any lake-bed or gully, draw, streambed, wash, arroyo or natural or man-made channel through which water flows or has flowed.
[Recompiled 12/31/01]

HISTORY OF 19.14.36 NMAC:
Pre-NMAC History: The material in this Part was derived from that previously filed with the State Records Center and Archives:
Rule G-117, Notification of Fire, Breaks, Leaks, Spills and Blowouts, 11/1/83.

History of Repealed Material: [RESERVED]