

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

September 25, 2013

HOBBS OCD

SEP 25 2013

RECEIVED

Mr. Geoffrey Leking  
NMOCD District 1  
1625 French Drive  
Hobbs, New Mexico 88240  
Via E-mail

*approved*  
*Geoffrey Leking*  
Environmental Specialist  
NMOCD-DIST 1  
9/30/13

RE: Caza Operating, Lennox "32" State 2H, API: 30-025-40451, Unit A Section 32 T22S  
R35E, In-place Burial Notice

Dear Geoffrey:

The "In-place Burial" closure plan for the above referenced pit was approved on January 7, 2013 by the NMOCD, prior to the establishment of the June 2013 pit rule. Construction and operation of the temporary pit has been conducted to satisfy the rule under which it was approved as well as the June 2013 rule. A modified closure plan, prepared using the June 2013 rule was submitted to the NMOCD on September 11, 2013 and approved on September 16, 2013.

On August 16, 2013, once the waste in the pit had dried enough to allow sampling, a five-point composite sample was recovered and stabilized with the available mixing soil at a 3:1 ratio. Laboratory analyses were performed to determine the concentrations of the parameters listed in Table II of 19.15.17.13 NMAC.

The attached laboratory report of the stabilized waste sample (drilling waste mixed with the clean soil at a 3:1 ratio<sup>1</sup>) and the table below shows that none of the constituents exceed the standards set forth in the Rule. The calculations suggest that the stabilized waste will meet the criteria for in-place burial at a stabilization ratio of approximately 1.63:1 with TPH by EPA method 418.1 being the limiting constituent.

## Summary Comparison of Laboratory Results to Pit Rule Burial Standards

	Sampling Date	Laboratory Results of Stabilized Waste Material (mg/kg)	19.15.17.13 NMAC	Estimated Maximum Mix Ratio Required To Achieve Pit Rule Burial Standard (must be <3:1)
			Table II Depth to GW below waste > 100 Feet (mg/kg)	
GRO + DRO + MIRO (EPA Method 8015M)	8/16/13	156	1,000	0.47 : 1
TPH (EPA Method 418.1)	8/16/13	1,360	2,500	1.63 : 1
Chloride (EPA Method 300.0)	8/16/13	15,400	80,000	0.58 : 1
Benzene (EPA Meth. 8021B or 8260B)	8/16/13	0.546	10	0.16 : 1
Total BTEX (EPA Meth. 8021B or 8260B)	8/16/13	19.3	50	1.16 : 1

<sup>1</sup> (5) The operator shall collect, at a minimum, a five point composite of the contents of the temporary pit or drying pad/tank associated with a closed-loop system to demonstrate that, after the waste is solidified or stabilized with soil or other non-waste material at a ratio of no more than 3:1 soil or other non-waste material to waste, the concentration of any contaminant in the stabilized waste is not higher than the parameters in Table II of 19.15.17.13 NMAC.

September 25, 2013  
Page 2

RT Hicks Consultants is concerned that TPH by 418.1 may not be an accurate representation of actual petroleum hydrocarbons present in the waste as several mud additives and/or lose circulation materials are also detectable by EPA method 418.1. In order to provide additional data for this and future evaluations, we have also analyzed the stabilized waste by EPA method 8015B extended to included carbon numbers up to C35 (GRO+DRO+MRO). This analysis should include a complete range of purge-able and extractable hydrocarbons without also including the non-petroleum hydrocarbons that are measured by method 418.1.

Sincerely,  
R.T. Hicks Consultants

A handwritten signature in cursive script that reads "Dale T. Littlejohn".

Dale Littlejohn

Copy: Caza Operating, LLC

New Mexico State Land Office  
PO Box 1148  
Santa Fe, NM 87504-1148  
CERTIFIED MAIL – RETURN RECIEPT REQUEST

August 27, 2013

DALE LITTLEJOHN

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: LENNOX #2H PIT

Enclosed are the results of analyses for samples received by the laboratory on 08/16/13 14:37.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager



**Analytical Results For:**

R T HICKS CONSULTANTS  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104

Project: LENNOX #2H PIT  
Project Number: NONE GIVEN  
Project Manager: DALE LITTLEJOHN  
Fax To: NONE

Reported:  
27-Aug-13 14:25

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
STABILIZED CUTTINGS	H301960-01	Soil	16-Aug-13 10:15	16-Aug-13 14:37

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104

Project: LENNOX #2H PIT  
Project Number: NONE GIVEN  
Project Manager: DALE LITTLEJOHN  
Fax To: NONE

Reported:  
27-Aug-13 14:25

**STABILIZED CUTTINGS**

H301960-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**
**Inorganic Compounds**

Chloride	15400	16.0	mg/kg	4	3082011	AP	21-Aug-13	4500-Cl-B
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**Organic Compounds**

TPH 418.1	1360	100	mg/kg	10	3082404	CK	27-Aug-13	418.1
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**Volatile Organic Compounds by EPA Method 8260B**
**S-04**

Benzene*	0.546	0.050	mg/kg	50	3082304	MS	23-Aug-13	8260B
Toluene*	5.26	0.050	mg/kg	50	3082304	MS	23-Aug-13	8260B
Ethylbenzene*	2.53	0.050	mg/kg	50	3082304	MS	23-Aug-13	8260B
Total Xylenes*	11.0	0.150	mg/kg	50	3082304	MS	23-Aug-13	8260B
Total BTEX	19.3	0.300	mg/kg	50	3082304	MS	23-Aug-13	8260B

Surrogate: Dibromofluoromethane	91.5 %	61.3-142	3082304	MS	23-Aug-13	8260B
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Surrogate: Toluene-d8	134 %	71.3-129	3082304	MS	23-Aug-13	8260B
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Surrogate: 4-Bromofluorobenzene	267 %	65.7-141	3082304	MS	23-Aug-13	8260B
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10	25.3	10.0	mg/kg	1	3082008	DW	21-Aug-13	8015B
DRO >C10-C28	112	10.0	mg/kg	1	3082008	DW	21-Aug-13	8015B
EXT DRO >C28-C35	18.5	10.0	mg/kg	1	3082008	DW	21-Aug-13	8015B

Surrogate: 1-Chlorooctane	115 %	65.2-140	3082008	DW	21-Aug-13	8015B
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Surrogate: 1-Chlorooctadecane	149 %	63.6-154	3082008	DW	21-Aug-13	8015B
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 R T HICKS CONSULTANTS  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104

 Project: LENNOX #2H PIT  
 Project Number: NONE GIVEN  
 Project Manager: DALE LITTLEJOHN  
 Fax To: NONE

 Reported:  
 27-Aug-13 14:25


**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 3082011 - 1:4 DI Water</b>										
<b>Blank (3082011-BLK1)</b>				Prepared & Analyzed: 20-Aug-13						
Chloride	ND	16.0	mg/kg							
<b>LCS (3082011-BS1)</b>				Prepared & Analyzed: 20-Aug-13						
Chloride	400	16.0	mg/kg	400		100	80-120			
<b>LCS Dup (3082011-BSD1)</b>				Prepared & Analyzed: 20-Aug-13						
Chloride	400	16.0	mg/kg	400		100	80-120	0.00	20	

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**R T HICKS CONSULTANTS  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104Project: LENNOX #2H PIT  
Project Number: NONE GIVEN  
Project Manager: DALE LITTLEJOHN  
Fax To: NONEReported:  
27-Aug-13 14:25**Organic Compounds - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 3082404 - Solvent Extraction</b>										
<b>Blank (3082404-BLK1)</b>				Prepared & Analyzed: 27-Aug-13						
TPH 418.1	ND	100	mg/kg							
<b>LCS (3082404-BS1)</b>				Prepared & Analyzed: 27-Aug-13						
TPH 418.1	5390	100	mg/kg	5000		108	80-120			
<b>LCS Dup (3082404-BSD1)</b>				Prepared & Analyzed: 27-Aug-13						
TPH 418.1	5520	100	mg/kg	5000		110	80-120	2.46	20	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104

Project: LENNOX #2H PIT  
Project Number: NONE GIVEN  
Project Manager: DALE LITTLEJOHN  
Fax To: NONE

Reported:  
27-Aug-13 14:25

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 3082304 - Volatiles**
**Blank (3082304-BLK1)**

Prepared: 22-Aug-13 Analyzed: 23-Aug-13

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: Dibromofluoromethane	0.527		mg/kg	0.500		105	61.3-142			
Surrogate: Toluene-d8	0.514		mg/kg	0.500		103	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.516		mg/kg	0.500		103	65.7-141			

**LCS (3082304-BS1)**

Prepared: 22-Aug-13 Analyzed: 23-Aug-13

Benzene	2.14	0.050	mg/kg	2.00		107	76.8-122			
Toluene	2.12	0.050	mg/kg	2.00		106	73.1-129			
Ethylbenzene	2.07	0.050	mg/kg	2.00		103	72.8-128			
m+p - Xylene	4.16	0.100	mg/kg				69.4-129			
Total Xylenes	6.21	0.150	mg/kg	6.00		103	72-127			
o-Xylene	2.05	0.050	mg/kg	2.00		102	70.3-126			
Surrogate: Dibromofluoromethane	0.518		mg/kg	0.500		104	61.3-142			
Surrogate: Toluene-d8	0.504		mg/kg	0.500		101	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.504		mg/kg	0.500		101	65.7-141			

**LCS Dup (3082304-BSD1)**

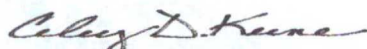
Prepared: 22-Aug-13 Analyzed: 23-Aug-13

Benzene	2.06	0.050	mg/kg	2.00		103	76.8-122	3.91	18.7	
Toluene	2.06	0.050	mg/kg	2.00		103	73.1-129	2.93	19.4	
Ethylbenzene	1.99	0.050	mg/kg	2.00		99.7	72.8-128	3.59	21.8	
m+p - Xylene	4.03	0.100	mg/kg				69.4-129	3.08	25.3	
o-Xylene	1.99	0.050	mg/kg	2.00		99.3	70.3-126	3.11	23.6	
Total Xylenes	6.02	0.150	mg/kg	6.00		100	72-127	3.09	23.2	
Surrogate: Dibromofluoromethane	0.504		mg/kg	0.500		101	61.3-142			
Surrogate: Toluene-d8	0.508		mg/kg	0.500		102	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.512		mg/kg	0.500		102	65.7-141			

**Cardinal Laboratories**

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

R T HICKS CONSULTANTS  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104

Project: LENNOX #2H PIT  
Project Number: NONE GIVEN  
Project Manager: DALE LITTLEJOHN  
Fax To: NONE

Reported:  
27-Aug-13 14:25

**Petroleum Hydrocarbons by GC FID - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
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**Batch 3082008 - General Prep - Organics**
**Blank (3082008-BLK1)**

Prepared &amp; Analyzed: 20-Aug-13

GRO C6-C10	ND	10.0	mg/kg					
DRO >C10-C28	ND	10.0	mg/kg					
EXT DRO >C28-C35	ND	10.0	mg/kg					
Total TPH C6-C28	ND	10.0	mg/kg					
Surrogate: 1-Chlorooctane	47.2		mg/kg	50.0		94.3	65.2-140	
Surrogate: 1-Chlorooctadecane	55.1		mg/kg	50.0		110	63.6-154	

**LCS (3082008-BS1)**

Prepared &amp; Analyzed: 20-Aug-13

GRO C6-C10	171	10.0	mg/kg	200		85.7	66.4-124	
DRO >C10-C28	182	10.0	mg/kg	200		90.9	61.6-132	
Total TPH C6-C28	353	10.0	mg/kg	400		88.3	69.7-122	
Surrogate: 1-Chlorooctane	50.4		mg/kg	50.0		101	65.2-140	
Surrogate: 1-Chlorooctadecane	60.0		mg/kg	50.0		120	63.6-154	

**LCS Dup (3082008-BSD1)**

Prepared &amp; Analyzed: 20-Aug-13

GRO C6-C10	180	10.0	mg/kg	200		90.2	66.4-124	5.17	23.4
DRO >C10-C28	191	10.0	mg/kg	200		95.6	61.6-132	5.05	23.1
Total TPH C6-C28	372	10.0	mg/kg	400		92.9	69.7-122	5.11	20.6
Surrogate: 1-Chlorooctane	52.8		mg/kg	50.0		106	65.2-140		
Surrogate: 1-Chlorooctadecane	60.4		mg/kg	50.0		121	63.6-154		

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

- S-04            The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- ND             Analyte NOT DETECTED at or above the reporting limit
- RPD            Relative Percent Difference
- \*\*              Samples not received at proper temperature of 6°C or below.
- \*\*\*             Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
- Samples reported on an as received basis (wet) unless otherwise noted on report

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

**101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476**

[illegible]