

**Skim Pit Closure Report  
for the  
Lipplemann “P” Lease  
Washington County, Colorado  
COGCC Remediation # 9058**

**Prepared for:**

Mr. Terry Pape  
HRM Resources, LLC  
410 17<sup>th</sup> Street, Suite 1100  
Denver, CO 80202



**Nicholson GeoSolutions, LLC**  
3433 East Lake Drive  
Centennial, CO 80121

**October 2015**

## 1.0 INTRODUCTION

Nicholson GeoSolutions LLC was retained by HRM Resources, LLC to conduct sampling during skim pit closure at the Lipplemann “P” Lease, an active oil well site located in the NW¼ NW¼ Section 31, T3S, R51W, Washington County, Colorado. Remediation activities were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Rules.

A Form 27 Remediation Work Plan was submitted to the COGCC prior to the start of remediation activities. The Form 27 and Conditions of Approval are included in Appendix A of this report.

The site consists of three wellheads, one unlined skim pit, two evaporation pits, a heater-treater, and a tank battery with three 400-bbl storage tanks. The skim pit was excavated and associated impacted soil was sent to the Denver Arapahoe Disposal landfill in Aurora, Colorado for disposal or placed in a series of landfarm cells on site for treatment. Closure of the skim pit was performed by Jayhawk Grading, Inc.

This report provides the results of documentation and sampling activities conducted by Nicholson GeoSolutions on August 25<sup>th</sup> and October 12<sup>th</sup>, 2015.

## 2.0 DOCUMENTATION AND SAMPLING ACTIVITIES

The following sections discuss the documentation and sampling activities conducted by Nicholson GeoSolutions. Photographs that document the skim pit conditions at the time of sampling and the landfarm cells are included in Appendix B.

### 2.1 Sampling Activities

Excavation of the unlined skim pit was conducted by Jayhawk. Impacted soils were excavated and trucked to the Denver Arapahoe Disposal Landfill for disposal or placed in a series of on-site landfarm cells for treatment. The most impacted soil (about 187 yards) was sent to the landfill. An additional 774 yards was placed in three landfarm cells on site. Appendix C contains a summary of the landfill gatehouse tickets.

Petroleum-contaminated soil was excavated to an approximate depth of 38 feet. Confirmation samples were then collected to assess whether compliance with the COGCC Table 910-1 standards had been achieved. Figure 1 provides the approximate limits of the excavation and the locations of the confirmation samples for the skim pit. The laboratory report is included in Appendix D.

Five confirmation samples were collected from the sidewalls and base of the skim pit excavation on August 25<sup>th</sup>, 2015 and analyzed for sodium adsorption ratio (SAR), pH, conductivity, Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil ranges), and BTEX compounds (benzene, toluene, ethylbenzene, and xylenes). Table 1 provides the confirmation sample results.

**Table 1 Skim Pit Excavation Confirmation Sample Results**

Sample ID, Location, and depth	pH	SAR	SC	BTEX	TVPH – Gasoline (mg/kg)	TEPH – Diesel (mg/kg)	TEPH – Motor Oil (mg/kg)
Lipplemann-C-1 (bottom – 38')	<b>9.27</b>	5.67	0.688	All ND	<0.5	28.8	11.4
Lipplemann-C-2 (south – 19')	<b>9.44</b>	2.80	0.631	All ok	2.3	242	101
Lipplemann-C-3 (east – 19')	8.99	4.97	1.190	All ok	<b>130</b>	<b>18,500</b>	<b>5,330</b>
Lipplemann-C-4 (west – 19')	<b>9.49</b>	2.59	0.522	All ND	<0.5	6.42	<4.0
Lipplemann-C-5 (north – 19')	8.62	1.61	0.285	All ND	<0.5	4.64	<4.0
Table 910-1 Standard	6-9	<12	<4.0	Various	500 <sup>1</sup>	500 <sup>1</sup>	500 <sup>1</sup>

<sup>1</sup>The standard is 500 mg/kg for the combined TEPH/TVPH results

Bold values exceed standards ND = Not detected

The combined total petroleum hydrocarbon (TPH) results exceeded the COGCC standard of 500 mg/kg for the sample from the east wall of the excavation (Lipplemann-C-1), which is shared with the adjacent evaporation pit. All other confirmation sample results were below the COGCC standards except for pH for samples Lipplemann-C-1, Lipplemann-C-2, and Lipplemann-C-4.

Confirmation samples were not collected from the foundation soil beneath the skim pit berms. These berms were completely removed and the final skim pit excavation extends beyond the original footprint of the berms in all directions except towards the evaporation pit where the shared wall remains.

## **2.2 Data Quality Review**

A data quality review was conducted using the quality assurance report supplied by the laboratory and standard EPA data validation guidance. All analyses were conducted within the recommended holding times. All method blank results were reported as not detected. All laboratory control sample (LCS), surrogate, laboratory duplicate, and matrix spike/matrix spike duplicate (MS/MSD) recoveries were within the laboratory control limits. No qualification of data was necessary.

All results are usable for the intended purposes of this remediation.





**Appendix A**  
**COGCC Form 27 and COAs**



FORM  
**27**  
Rev 6/99

State of Colorado  
**Oil and Gas Conservation Commission**



1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Skim Pit Closure

FOR OGCC USE ONLY  
MAR 30 2015  
OGCC Employee  
☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV  
Tracking No:

OGCC Operator Number: 10548

Name of Operator: HRM Resources II, LLC

Address: 410 17th Street, Suite 1100

City: Denver State: CO Zip: 80202

Contact Name and Telephone:

Terry Pape

No: (970) 768-5700

Fax: (303) 893-6892

API Number: 05-121-05323

County: Washington

Facility Name: Lippemmann

Facility Number: 107549 117565

Well Name: Lippemmann #1

Well Number: 1

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NWNW Sec. 31, T3S, R51W, 6PM Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): crude oil and produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): agricultural - grazing and cultivated

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: upland soils derived from glacial till

Potential receptors (water wells within 1/4 mi, surface waters, etc.): none

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):



Soils

Extent of Impact:

1,100 yards

How Determined:

visual inspection



Vegetation



Groundwater



Surface Water

**REMEDIALTION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

A site inspection was conducted to assess the quantities of impacted soil and plan for the removal of the skim pit.

Describe how source is to be removed:

Excess oil will be removed from the skim pit. The metal cage will be removed and recycled. Impacted soils beneath the skim pit will be excavated. Oily soils will be transported to Waste Management Denver-Aurora Disposal Site (DADS) for disposal. Other impacted soils will be placed in one or more bermed areas on the lease and landfarmed.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Impacted soil will be disposed of at the DADS landfill or landfarmed on site. The skim pit will be replaced with one or more enclosed tanks. Confirmation samples will be collected from the base and sidewalls of the skim pit excavation to confirm that all soils that exceed the Table 910-1 standards for TPH have been removed. Materials placed in the landfarm will be periodically tilled and sampled to evaluate when the Table 910-1 standards have been achieved. The skim pit excavation will be backfilled with the landfarmed soil and clean fill and the evaporation pit berms rebuilt as necessary.



Tracking Number: 2086932  
Name of Operator: HRM Resources II, LLC  
OGCC Operator No: 10548  
Received Date: 3/30/2015  
Well Name & No: Lippelmann 1  
Facility Name & No: 117565

Page 2  
**REMEDATION WORKPLAN (Cont.)**

OGCC Employee: Robert Young

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Impacts to groundwater have not been identified at the site.

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

It is anticipated that no reclamation will be required. The landfarm will be constructed on areas currently used for production activities. After Table 910-1 standards have been achieved, the landfarmed soil and berms will be used to backfill the excavation. Weeds will be controlled by spraying and mechanical removal as necessary.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

The landfarm materials will be periodically sampled to evaluate progress in achieving the Table 910-1 standards.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Oily soils will be disposed of at Denver Arapahoe Disposal (DADS) landfill. Other impacted soils and clean fill will be backfilled into the skim pit excavation once the Table 910-1 standards have been achieved with approval from COGCC.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: \_\_\_\_\_ Date Site Investigation Completed: \_\_\_\_\_ Date Remediation Plan Submitted: April 1, 2015  
Remediation Start Date: \_\_\_\_\_ Anticipated Completion Date: November 1, 2015 Actual Completion Date: \_\_\_\_\_

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: L. Roger Hutson

Signed: \_\_\_\_\_

Title: President

Date: 3/25/15

OGCC Approved: Robert S. Young Title: NE EPS II Date: 5/7/2015

\* See Conditions of Approval Correspondence.



---


## Conditionally approved Form 27 - HRM Resources II LLC - Lippelmann 1 oil skim pit (Remediation #9058) API 05-121-05323

---

**From :** Young - DNR, Rob <rob.young@state.co.us>

Mon, May 18, 2015 12:55 PM

**Subject :** Conditionally approved Form 27 - HRM Resources II LLC - Lippelmann 1 oil skim pit (Remediation #9058) API 05-121-05323

 1 attachment

**To :** Roger Hutson <lrhutson@hrmres.com>, aprohaska@hrmres.com, OGCC EnviroScan - DNR <dnr\_ogcc.enviroscan@state.co.us>, John Axelson - DNR <john.axelson@state.co.us>

External images are not displayed. [Display images below](#)

---

Mr. Hutson,

Please find attached the conditionally approved Form 27 (Remediation #9058) for the Lippelmann 1 oil skim pit remediation. The following conditions of approval (COA) have been added to the Form 27:

Remove petroleum hydrocarbon and produced water impacted soils above Table 910-1 allowable concentrations per Rule 905. Document the disposition of soil impacted above Table 910-1 allowable concentrations. Collect a minimum of one (1) discrete confirmation soil sample from the base and a minimum of four (4) discrete soil samples from the sidewalls of the oil skim pit excavation to document that soils at the extent of the excavation meet the allowable concentrations listed in Table 910-1 for BTEX, TPH, EC, pH and SAR. Oil skim pit berm material can be used to backfill the oil skim pit excavation if it meets the Table 910-1 allowable concentrations for TPH. A minimum of three feet of cover material is required if the berm materials are above the Table 910-1 allowable concentrations for pH, EC and SAR. Collect a minimum of three (3) soil samples from the oil skim pit berm footprint to document that the pH, EC and SAR concentrations of the exposed surface soil comply with Table 910-1 allowable concentrations.

Following the removal of impacted materials, submit a report referencing remediation project #9058 to the COGCC northeast EPS, Rob Young, via email. The report should describe the oil skim pit excavation activities, include a soil sample analytical summary table comparing the soil sample analytical results to Table 910-1 allowable concentrations; analytical laboratory reports; excavation figures showing the original and final extents of the oil skim pit with soil sample locations and depths below ground surface; excavation photographs showing the final excavation extents and sample locations and of the land treatment area showing the placement of the impacted soils and stormwater BMPs. The report shall be due to COGCC no later than November 1, 2015.

The on site land treatment area is subject to the following requirements:

Land treatment of oily waste shall be performed in strict accordance with the requirements of COGCC Rule 907.e.(2). Store stockpiled oily waste in a manner to prevent contamination of surrounding soil, stormwater, surface water and groundwater; until such time that the waste is properly treated or disposed in accordance with COGCC Rule 907.e.

The land treatment of soils on the location will be strictly limited to a three year completion timetable. All soils in the land treatment area will be required to be removed by May 31, 2018. An aggressive and diligent effort will be expected with regard to tilling, application of fertilizer, other soil amendments and water to ensure that bioremediation of the impacted soil is fostered and enhanced in order to meet the deadline.

Prior to using treated material for backfill, submit soil sampling and analytical results verifying that the treated material complies with all contaminants of concern in soil listed on Table 910-1 for COGCC approval. If the backfill material will be covered with at least 3-feet clean cover, analysis of the inorganics (EC, pH, SAR) in soil is not required. For progress and confirmation sampling, collect a minimum of one (1) discrete soil sample from each 100 cubic yards of treated soil. At a minimum, collect soil samples from the treatment area twice per year to establish the rate of biodegradation. The soil samples shall be collected consistently from the same locations during each sampling event.

Prepare and submit a land treatment progress report twice per year consisting of one sampling event in the late spring (May) and one sampling event in the early fall (October). The reporting deadlines for the sampling events will be June 30 and November 30, respectively. Once the representative soil samples indicate that the soils meet the Table 910-1 allowable concentrations for BTEX, TPH, SAR, EC and pH, the soils can be used to backfill the oil skim pit excavation. If the soils will be under a minimum of three feet of clean cover material, pH, EC and SAR do not have to meet Table 910-1 concentrations. Following the removal of the treated soils, after 3 years or adequate remediation has been achieved, a minimum of four (4) discrete soil samples shall be collected from the footprint of the land treatment area to confirm that the remaining soils comply with the Table 910-1 allowable concentrations for pH, EC, SAR, BTEX and TPH.

Please reference Remediation #9058 on all correspondence regarding this project.

Thank you,

Robert J. Young  
Environmental Protection Specialist

P 303.252.0126 | C 720.471.1304 | F 303.252.0472

1120 Lincoln Street, Suite 801, Denver, CO 80203 [rob.young@state.co.us](mailto:rob.young@state.co.us) | [www.colorado.gov/cogcc](http://www.colorado.gov/cogcc)

Cc: Rem #9058 - Conditions of Approval Correspondence



**9058\_Lippelmann.pdf**

1 MB

---

## **APPENDIX B**

### **Photographs**





**Skim pit prior to cleanup**



**Final excavation looking south**



**East (shared) wall after excavation**



**Final excavation looking north**





**South landfarm cell**



**South and west landfarm cells**



**Landfarm cell berms**



**Landfarm cell berms**

**APPENDIX C**  
**Landfill Gatehouse Tickets**





DENVER ARAPAHOE DISPOSAL SITE  
PO BOX 43350  
PHOENIX, AZ 85080

Customer:  
**Online WM ezPay**  
Invoice Date:  
Invoice Number:  
Account Number:  
Due Date:

**Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424**

Date	Ticket	Description	Quantity	U/M
08/19/15	2437972	Vehicle#: 1		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194157		
		<b>Ticket Total</b>		
08/19/15	2437977	Vehicle#: 1		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194158		
		<b>Ticket Total</b>		
08/19/15	2438115	Vehicle#: 1		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194160		
		<b>Ticket Total</b>		
08/19/15	2438172	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194165		
		<b>Ticket Total</b>		
08/19/15	2438174	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194164		
		<b>Ticket Total</b>		
08/19/15	2438185	Vehicle#: 2		
		Po#:194163		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS

*From everyday collection to environmental protection,  
Think Green. Think Waste Management.*

FOR CHANGE OF ADDRESS OR ANY SERVICE ISSUES CONTACT NUMBER ON PAGE 1

00007198-00000002-0001865

Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424				
Date	Ticket	Description	Quantity	U/M
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194163 <b>Ticket Total</b>		
08/19/15	2438284	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194161 <b>Ticket Total</b>	17.00 17.00 17.00 17.00	YDS YDS YDS YDS
08/19/15	2438286	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194162 <b>Ticket Total</b>	17.00 17.00 17.00	YDS YDS YDS
08/19/15	2438290	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194159 <b>Ticket Total</b>	17.00 17.00 17.00	YDS YDS YDS
08/19/15	2438323	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 197057 <b>Ticket Total</b>	17.00 17.00 17.00 17.00	YDS YDS YDS YDS
08/19/15	2438325	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194058 <b>Ticket Total</b>	17.00 17.00 17.00	YDS YDS YDS
08/19/15	2438335	Vehicle#: 1 Cont. Soil - petroleum	17.00	YDS

9-11-15 @ 10:05 called about typo - they sd they just bill off of their ticket # - so





DENVER ARAPAHOE DISPOSAL SITE  
PO BOX 43350  
PHOENIX, AZ 85080

Customer:  
Online WM ezPay ID:  
Invoice Date:  
Invoice Number:  
Account Number:  
Due Date:

Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424			
Date	Ticket	Description	Quantity U/M
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources ii, llc	
		Manifest# 194059	
		<b>Ticket Total</b>	
08/19/15	2438346	Vehicle#: 1	
		Cont. Soil - petroleum	17.00 YDS
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources ii, llc	
		Manifest# 194061	
		<b>Ticket Total</b>	
08/19/15	2438352	Vehicle#: 1	
		Cont. Soil - petroleum	17.00 YDS
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources ii, llc	
		Manifest# 194060	
		<b>Ticket Total</b>	
08/19/15	2438382	Vehicle#: 2	
		Cont. Soil - petroleum	17.00 YDS
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources ii, llc	
		Manifest# 194062	
		<b>Ticket Total</b>	
08/19/15	2438385	Vehicle#: 2	
		Cont. Soil - petroleum	17.00 YDS
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources II, llc	
		Manifest# 194166	
		<b>Ticket Total</b>	
08/19/15	2438386	Vehicle#: 2	
		Cont. Soil - petroleum	17.00 YDS
		Haz-substance response fee yards	YDS
		Environmental fee - yard	17.00 YDS
		Fuel surcharge per yard	17.00 YDS
		Profile # 120980co	
		Generator hrm resources ii, llc	
		Manifest# 194167	

From everyday collection to environmental protection,  
Think Green® Think Waste Management.

FOR CHANGE OF ADDRESS OR ANY SERVICE ISSUES CONTACT NUMBER ON PAGE 1

0000198-00000003-0001865

## **Appendix D**

### **Lab Report**



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

## Report Summary

Thursday September 03, 2015

Report Number: L785205

Samples Received: 08/26/15

Client Project:

Description: Lipplemann

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859  
  
Tax I.D. 62-0814289  
  
Est. 1970

# REPORT OF ANALYSIS

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

September 03, 2015

Date Received : August 26, 2015  
Description : Lipplemann  
  
Sample ID : LIPPLEMAN-C-1  
  
Collected By : DK Nicholson  
Collection Date : 08/25/15 09:30

ESC Sample # : L785205-01  
  
Site ID :  
  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.27	0.100	su	9045D	08/28/15	1
Sodium Adsorption Ratio	5.67			Calc	08/28/15	1
Specific Conductance	688.		umhos/cm	9050AMod	08/28/15	1
Benzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Toluene	BDL	0.0250	mg/kg	8021	08/27/15	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Total Xylene	BDL	0.00750	mg/kg	8021	08/27/15	5
TPH (GC/FID) Low Fraction	BDL	0.500	mg/kg	8015	08/27/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.9		% Rec.	8015	08/27/15	1
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	08/27/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	28.8	4.00	mg/kg	8015	08/27/15	1
C28-C40 Oil Range	11.4	4.00	mg/kg	8015	08/27/15	1
Surrogate Recovery						
o-Terphenyl	103.		% Rec.	8015	08/27/15	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
The reported analytical results relate only to the sample submitted.  
This report shall not be reproduced, except in full, without the written approval from ESC.  
.  
Reported: 09/03/15 13:22 Printed: 09/03/15 14:34  
L785205-01 (PH) - 9.27 at 24.2c





12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

September 03, 2015

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

Date Received : August 26, 2015  
Description : Lipplemann  
Sample ID : LIPPLEMAN-C-2  
Collected By : DK Nicholson  
Collection Date : 08/25/15 09:35

ESC Sample # : L785205-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.44	0.100	su	9045D	08/28/15	1
Sodium Adsorption Ratio	2.80			Calc	08/28/15	1
Specific Conductance	631.		umhos/cm	9050AMod	08/28/15	1
Benzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Toluene	BDL	0.0250	mg/kg	8021	08/27/15	5
Ethylbenzene	0.00358	0.00250	mg/kg	8021	08/27/15	5
Total Xylene	0.0261	0.00750	mg/kg	8021	08/27/15	5
TPH (GC/FID) Low Fraction	2.30	0.500	mg/kg	8015	08/27/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.9		% Rec.	8015	08/27/15	1
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	08/27/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	242.	4.00	mg/kg	8015	08/27/15	1
C28-C40 Oil Range	101.	4.00	mg/kg	8015	08/27/15	1
Surrogate Recovery						
o-Terphenyl	88.5		% Rec.	8015	08/27/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 09/03/15 13:22 Printed: 09/03/15 14:34  
L785205-02 (PH) - 9.44 at 24.4c



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

September 03, 2015

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

Date Received : August 26, 2015  
Description : Lipplemann  
Sample ID : LIPPLEMAN-C-3  
Collected By : DK Nicholson  
Collection Date : 08/25/15 09:40

ESC Sample # : L785205-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.99	0.100	su	9045D	08/28/15	1
Sodium Adsorption Ratio	4.97			Calc	08/28/15	1
Specific Conductance	1190		umhos/cm	9050AMod	08/28/15	1
Benzene	0.0589	0.0125	mg/kg	8021	08/31/15	25
Toluene	0.207	0.125	mg/kg	8021	08/31/15	25
Ethylbenzene	1.45	0.0125	mg/kg	8021	08/31/15	25
Total Xylene	1.52	0.0375	mg/kg	8021	08/31/15	25
TPH (GC/FID) Low Fraction	130.	2.50	mg/kg	8015	08/31/15	25
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	89.6		% Rec.	8015	08/31/15	1
a,a,a-Trifluorotoluene(PID)	91.8		% Rec.	8021	08/31/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	18500	200.	mg/kg	8015	08/27/15	50
C28-C40 Oil Range	5330	200.	mg/kg	8015	08/27/15	50
Surrogate Recovery						
o-Terphenyl	0.00		% Rec.	8015	08/27/15	50

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 09/03/15 13:22 Printed: 09/03/15 14:34  
L785205-03 (PH) - 8.99 at 24.2c



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859  
  
Tax I.D. 62-0814289  
  
Est. 1970

# REPORT OF ANALYSIS

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

September 03, 2015

Date Received : August 26, 2015  
Description : Lipplemann  
  
Sample ID : LIPPLEMAN-C-4  
  
Collected By : DK Nicholson  
Collection Date : 08/25/15 09:45

ESC Sample # : L785205-04  
  
Site ID :  
  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.49	0.100	su	9045D	08/28/15	1
Sodium Adsorption Ratio	2.59			Calc	08/28/15	1
Specific Conductance	522.		umhos/cm	9050AMod	08/28/15	1
Benzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Toluene	BDL	0.0250	mg/kg	8021	08/27/15	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Total Xylene	BDL	0.00750	mg/kg	8021	08/27/15	5
TPH (GC/FID) Low Fraction	BDL	0.500	mg/kg	8015	08/27/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.3		% Rec.	8015	08/27/15	1
a,a,a-Trifluorotoluene(PID)	99.5		% Rec.	8021	08/27/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	6.42	4.00	mg/kg	8015	08/27/15	1
C28-C40 Oil Range	BDL	4.00	mg/kg	8015	08/27/15	1
Surrogate Recovery						
o-Terphenyl	62.0		% Rec.	8015	08/27/15	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
The reported analytical results relate only to the sample submitted.  
This report shall not be reproduced, except in full, without the written approval from ESC.  
.  
Reported: 09/03/15 13:22 Printed: 09/03/15 14:34  
L785205-04 (PH) - 9.49 at 24.3c



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

September 03, 2015

Dave Nicholson  
HRM Resources, LLC - Denver, CO  
410 17th Street, Suite 1100  
Denver, CO 80202

Date Received : August 26, 2015  
Description : Lipplemann  
Sample ID : LIPPLEMAN-C-5  
Collected By : DK Nicholson  
Collection Date : 08/25/15 09:50

ESC Sample # : L785205-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.62	0.100	su	9045D	08/28/15	1
Sodium Adsorption Ratio	1.61			Calc	08/28/15	1
Specific Conductance	285.		umhos/cm	9050AMod	08/28/15	1
Benzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Toluene	BDL	0.0250	mg/kg	8021	08/27/15	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	08/27/15	5
Total Xylene	BDL	0.00750	mg/kg	8021	08/27/15	5
TPH (GC/FID) Low Fraction	BDL	0.500	mg/kg	8015	08/27/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.0		% Rec.	8015	08/27/15	1
a,a,a-Trifluorotoluene(PID)	99.5		% Rec.	8021	08/27/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	4.64	4.00	mg/kg	8015	08/27/15	1
C28-C40 Oil Range	BDL	4.00	mg/kg	8015	08/27/15	1
Surrogate Recovery						
o-Terphenyl	95.2		% Rec.	8015	08/27/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 09/03/15 13:22 Printed: 09/03/15 14:34  
L785205-05 (PH) - 8.62 at 23.9c



Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L785205-03	WG811681	SAMP	o-Terphenyl	R3068089	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



**YOUR LAB OF CHOICE**

HRM Resources, LLC - Denver, CO  
Dave Nicholson  
410 17th Street, Suite 1100

Denver, CO 80202

Quality Assurance Report  
Level II

L785205

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 03, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG811800	08/27/15 07:15
Ethylbenzene	< .0005	mg/kg			WG811800	08/27/15 07:15
Toluene	< .005	mg/kg			WG811800	08/27/15 07:15
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG811800	08/27/15 07:15
Total Xylene	< .0015	mg/kg			WG811800	08/27/15 07:15
a,a,a-Trifluorotoluene(FID)		% Rec.	98.70	59-128	WG811800	08/27/15 07:15
a,a,a-Trifluorotoluene(PID)		% Rec.	101.0	54-144	WG811800	08/27/15 07:15

C10-C28 Diesel Range	< 4	mg/kg			WG811681	08/27/15 11:58
C28-C40 Oil Range	< 4	mg/kg			WG811681	08/27/15 11:58
o-Terphenyl		% Rec.	118.0	50-150	WG811681	08/27/15 11:58

Specific Conductance	1.74	umhos/cm			WG811942	08/28/15 16:38
----------------------	------	----------	--	--	----------	----------------

Benzene	< .0005	mg/kg			WG812384	08/30/15 16:12
Ethylbenzene	< .0005	mg/kg			WG812384	08/30/15 16:12
Toluene	< .005	mg/kg			WG812384	08/30/15 16:12
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG812384	08/30/15 16:12
Total Xylene	< .0015	mg/kg			WG812384	08/30/15 16:12
a,a,a-Trifluorotoluene(FID)		% Rec.	99.10	59-128	WG812384	08/30/15 16:12
a,a,a-Trifluorotoluene(PID)		% Rec.	92.70	54-144	WG812384	08/30/15 16:12

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
pH	su	9.52	9.51	0.105	1	L785189-02	WG811982
pH	su	6.88	6.88	0.00	1	L785475-02	WG811982
Specific Conductance	umhos/cm	844.	842.	0.237	20	L785189-03	WG811942
Specific Conductance	umhos/cm	2240	2230	0.447	20	L785387-01	WG811942

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0419	83.8	70-130	WG811800
Ethylbenzene	mg/kg	.05	0.0464	92.9	70-130	WG811800
Toluene	mg/kg	.05	0.0466	93.1	70-130	WG811800
Total Xylene	mg/kg	.15	0.145	96.6	70-130	WG811800
a,a,a-Trifluorotoluene(FID)				98.50	59-128	WG811800
a,a,a-Trifluorotoluene(PID)				101.0	54-144	WG811800
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.05	110.	63.5-137	WG811800
a,a,a-Trifluorotoluene(FID)				99.10	59-128	WG811800
a,a,a-Trifluorotoluene(PID)				106.0	54-144	WG811800
C10-C28 Diesel Range	mg/kg	60	52.9	88.1	50-100	WG811681
o-Terphenyl				126.0	50-150	WG811681
pH	su	6.37	6.40	100.	98.2-101.8	WG811982
Specific Conductance	umhos/cm	873	876.	100.	90-110	WG811942

\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

HRM Resources, LLC - Denver, CO  
Dave Nicholson  
410 17th Street, Suite 1100

Denver, CO 80202

Quality Assurance Report  
Level II

L785205

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 03, 2015

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0496	99.3	70-130	WG812384
Ethylbenzene	mg/kg	.05	0.0502	100.	70-130	WG812384
Toluene	mg/kg	.05	0.0500	100.	70-130	WG812384
Total Xylene	mg/kg	.15	0.152	101.	70-130	WG812384
a,a,a-Trifluorotoluene(FID)				101.0	59-128	WG812384
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG812384
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.12	93.1	63.5-137	WG812384
a,a,a-Trifluorotoluene(FID)				100.0	59-128	WG812384
a,a,a-Trifluorotoluene(PID)				110.0	54-144	WG812384

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/kg	0.0412	0.0419	82.0	70-130	1.68	20	WG811800
Ethylbenzene	mg/kg	0.0454	0.0464	91.0	70-130	2.32	20	WG811800
Toluene	mg/kg	0.0454	0.0466	91.0	70-130	2.57	20	WG811800
Total Xylene	mg/kg	0.142	0.145	94.0	70-130	2.35	20	WG811800
a,a,a-Trifluorotoluene(FID)				98.30	59-128			WG811800
a,a,a-Trifluorotoluene(PID)				101.0	54-144			WG811800
TPH (GC/FID) Low Fraction	mg/kg	5.91	6.05	107.	63.5-137	2.46	20	WG811800
a,a,a-Trifluorotoluene(FID)				99.90	59-128			WG811800
a,a,a-Trifluorotoluene(PID)				105.0	54-144			WG811800
C10-C28 Diesel Range	mg/kg	54.2	52.9	90.0	50-100	2.53	20	WG811681
o-Terphenyl				121.0	50-150			WG811681
pH	su	6.40	6.40	100.	98.2-101.8	0.00	1	WG811982
Specific Conductance	umhos/	876.	876.	100.	90-110	0.00	20	WG811942
Benzene	mg/kg	0.0493	0.0496	99.0	70-130	0.610	20	WG812384
Ethylbenzene	mg/kg	0.0500	0.0502	100.	70-130	0.300	20	WG812384
Toluene	mg/kg	0.0495	0.0500	99.0	70-130	1.07	20	WG812384
Total Xylene	mg/kg	0.149	0.152	100.	70-130	1.76	20	WG812384
a,a,a-Trifluorotoluene(FID)				99.10	59-128			WG812384
a,a,a-Trifluorotoluene(PID)				102.0	54-144			WG812384
TPH (GC/FID) Low Fraction	mg/kg	5.64	5.12	102.	63.5-137	9.65	20	WG812384
a,a,a-Trifluorotoluene(FID)				103.0	59-128			WG812384
a,a,a-Trifluorotoluene(PID)				112.0	54-144			WG812384

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Benzene	mg/kg	0.182	0.000207	.05	72.8	49.7-127	L785121-01	WG811800
Ethylbenzene	mg/kg	0.187	0.000377	.05	74.5	40.8-141	L785121-01	WG811800
Toluene	mg/kg	0.195	0.00112	.05	77.6	49.8-132	L785121-01	WG811800
Total Xylene	mg/kg	0.576	0.00212	.15	76.5	41.2-140	L785121-01	WG811800
a,a,a-Trifluorotoluene(FID)					97.50	59-128		WG811800
a,a,a-Trifluorotoluene(PID)					100.0	54-144		WG811800
TPH (GC/FID) Low Fraction	mg/kg	24.5	0.00	5.5	89.0	28.5-138	L785121-01	WG811800
a,a,a-Trifluorotoluene(FID)					95.50	59-128		WG811800
a,a,a-Trifluorotoluene(PID)					104.0	54-144		WG811800
Benzene	mg/kg	0.253	0.00	.05	101.	49.7-127	L784590-01	WG812384

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'





YOUR LAB OF CHOICE

HRM Resources, LLC - Denver, CO  
Dave Nicholson  
410 17th Street, Suite 1100

Denver, CO 80202

Quality Assurance Report  
Level II

L785205

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 03, 2015

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Ethylbenzene	mg/kg	0.254	0.00	.05	102.	40.8-141	L784590-01	WG812384
Toluene	mg/kg	0.253	0.00115	.05	101.	49.8-132	L784590-01	WG812384
Total Xylene	mg/kg	0.768	0.00277	.15	102.	41.2-140	L784590-01	WG812384
a,a,a-Trifluorotoluene(FID)					98.80	59-128		WG812384
a,a,a-Trifluorotoluene(PID)					98.60	54-144		WG812384
TPH (GC/FID) Low Fraction	mg/kg	15.6	0.668	5.5	54.3	28.5-138	L784962-05	WG812384
a,a,a-Trifluorotoluene(FID)					97.60	59-128		WG812384
a,a,a-Trifluorotoluene(PID)					99.60	54-144		WG812384

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Benzene	mg/kg	0.191	0.182	76.2	49.7-127	4.53	23.5	L785121-01	WG811800
Ethylbenzene	mg/kg	0.196	0.187	78.1	40.8-141	4.76	23.8	L785121-01	WG811800
Toluene	mg/kg	0.204	0.195	81.3	49.8-132	4.56	23.5	L785121-01	WG811800
Total Xylene	mg/kg	0.604	0.576	80.2	41.2-140	4.74	23.7	L785121-01	WG811800
a,a,a-Trifluorotoluene(FID)				97.60	59-128				WG811800
a,a,a-Trifluorotoluene(PID)				100.0	54-144				WG811800
TPH (GC/FID) Low Fraction	mg/kg	23.5	24.5	85.4	28.5-138	4.02	23.6	L785121-01	WG811800
a,a,a-Trifluorotoluene(FID)				94.70	59-128				WG811800
a,a,a-Trifluorotoluene(PID)				104.0	54-144				WG811800
TPH (GC/FID) Low Fraction	mg/kg	20.8	15.6	73.1	28.5-138	28.4*	23.6	L784962-05	WG812384
a,a,a-Trifluorotoluene(FID)				101.0	59-128				WG812384
a,a,a-Trifluorotoluene(PID)				104.0	54-144				WG812384
Benzene	mg/kg	0.244	0.253	97.4	49.7-127	3.62	23.5	L784590-01	WG812384
Ethylbenzene	mg/kg	0.244	0.254	97.7	40.8-141	3.80	23.8	L784590-01	WG812384
Toluene	mg/kg	0.243	0.253	96.9	49.8-132	4.03	23.5	L784590-01	WG812384
Total Xylene	mg/kg	0.734	0.768	97.5	41.2-140	4.57	23.7	L784590-01	WG812384
a,a,a-Trifluorotoluene(FID)				100.0	59-128				WG812384
a,a,a-Trifluorotoluene(PID)				101.0	54-144				WG812384

Batch number /Run number / Sample number cross reference

WG811681: R3068089: L785205-01 02 03 04  
WG811800: R3068250: L785205-01 02 04  
WG811473: R3068449: L785205-01 02 03 04  
WG811982: R3068560: L785205-01 02 03 04  
WG811942: R3068965: L785205-01 02 03 04  
WG812384: R3068983: L785205-03

\* \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

HRM Resources, LLC - Denver, CO  
Dave Nicholson  
410 17th Street, Suite 1100

Denver, CO 80202

Quality Assurance Report  
Level II

L785205

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 03, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.