NM1 - 9

GENERAL CORRESPONDENCE

YEAR(S):

2010 - 2011

Jones, Brad A., EMNRD

From: VonGonten, Glenn, EMNRD
Sent: Wednesday, September 07, 2011 3:06 PM
To: wayne price; Jones, Brad A., EMNRD
Cc: Bailey, Jami, EMNRD; Sanchez, Daniel J., EMNRD
Subject: RE: Key Energy Farmington NM1-9 Landfarm

Wayne,

Key may certainly take samples at risk as proposed. As we discussed, OCD will have to determine that appropriateness of the background samples based on the results.

Key may submit the two quarterly reports with the results of the new background samples.

OCD legal is presently evaluating the Rule 711 permits and Part 36 closure requirements as they apply to facilities permitted by order under Rule 711.

Director Bailey will return tomorrow and I will ask about Key's response due date.

Part 36 specifies method 6010B or 6020 for inorganics/metals. I assume that that is the method Key will use.

Glenn

From: wayne price <wayneprice77@earthlink.net>
Date: September 1, 2011 1:16:57 PM MDT
To: Glenn.VonGonten@state.nm.us, brad.a.jones@state.nm.us, daniel.sanchez@state.nm.us
Cc: Dan Gibson <dgibson@keyenergy.com>, lmolleur@keyenergy.com
Subject: Key Energy Farmington NM1-9 Landfarm

Dear Glenn and Brad,

As you have been made aware of, Key has not added any additional material to the landfarm for quite sometime in order to assist us in remediating the existing materials. We have been aggressively remediating and tilling the soil as committed to in our October 28, 2010 response plan. The preliminary results show improvement in the treatment zone with minor issues in the vadose zone. We completed the required 2nd quarter sampling pursuant to our existing 711 permit and the requirements of Part 36. In order to improve our accuracy and precision we sent duplicate samples to another lab, and we had the TPH analyzed using the EPA 8015 ERO (extended range organics). We have recently received those results back and are in the process of evaluating those findings.

Within the next two weeks, we are planning on taking a minimum of three background samples (plot plan attached showing locations). At each location we plan to collect samples from approximately 3-6 feet deep. We are planning on analyzing the samples for the following constituents: TPH 418.1, and 8015 M for GRO, DRO and ERO; BTEX 8021B; Chlorides 300.1; and all WQCC Metals.
We want to make sure this meets the background testing requirements, if other parameters are required please notify us.

During the sampling event we will also collect samples for the 3 rd quarter requirements. We would like to combine the 2nd and 3 rd quarter reports so we may provide the OCD with additional data, including a tabulated compilation of analytical data from the last six quarters, with notifications of the vadose zone conditions, i.e. release response issues, conclusions, recommendations and hopefully a path forward for

landfarm closure.

We are hereby requesting that these two reports, including an official response to OCD's letter dated July 20, 2011 (Bailey-Gibson) be allowed to be submitted by October 31, 2011.

Sincerely,

Jones, Brad A., EMNRD

From: wayne price [wayneprice77@earthlink.net]
Sent: Thursday, September 01, 2011 1:17 PM
To: VonGonten, Glenn, EMNRD; Jones, Brad A., EMNRD; Sanchez, Daniel J., EMNRD
Cc: Dan Gibson; lmolleur@keyenergy.com
Subject: Key Energy Farmington NM1-9 Landfarm
Attachments: Key Farmington Background Locations.pdf; ATT00001.txt

Dear Glenn and Brad,

As you have been made aware of, Key has not added any additional material to the landfarm for quite sometime in order to assist us in remediating the existing materials. We have been aggressively remediating and tilling the soil as committed to in our October 28, 2010 response plan. The preliminary results show improvement in the treatment zone with minor issues in the vadose zone. We completed the required 2nd quarter sampling pursuant to our existing 711 permit and the requirements of Part 36. In order to improve our accuracy and precision we sent duplicate samples to another lab, and we had the TPH analyzed using the EPA 8015 ERO (extended range organics). We have recently received those results back and are in the process of evaluating those findings.

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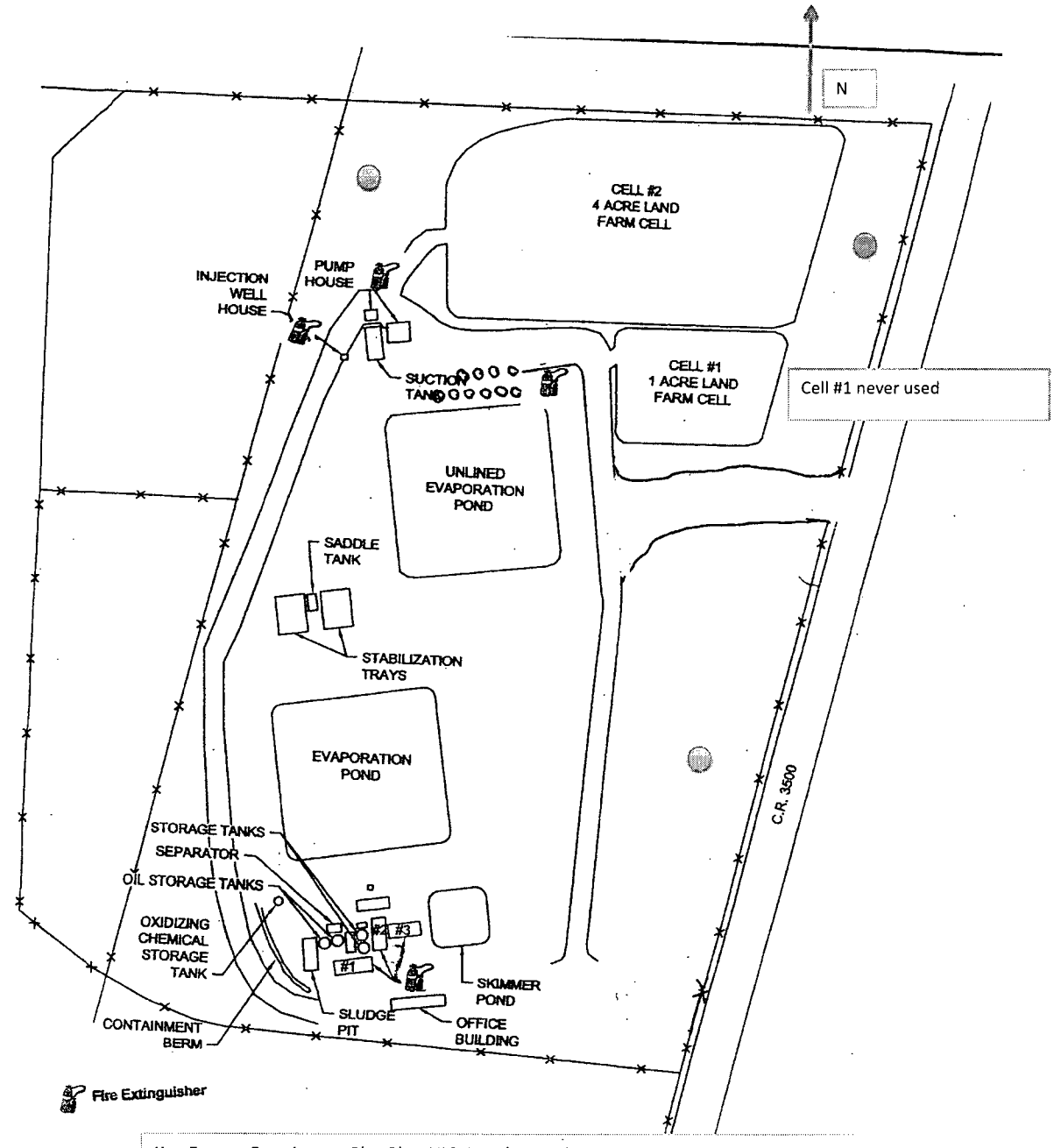
Sincerely,



Key Energy Farmington Plot Plan UIC-5 and NM1-9

Sample Background locations will be logged with GPS and Photos

New Mexico Energy, Minerals and Natural Resources Department

July 20, 2011

Mr. Daniel K. Gibson
Key Energy Services, Inc.
6 Desta Drive
Suite 4400
Midland, Texas 79705

RE: Response to July 14, 2011 Correspondence
Key Energy Services, Inc.
Surface Waste Management Facility Permit NM-1-009
Location: SW/4 NW/4 Section 2, Township 29 North, Range 12 West, NMPM
San Juan County, New Mexico

Dear Mr. Gibson:

The Oil Conservation Division (OCD) has reviewed a letter, dated July 14 2011, submitted by Mr. Wayne Price on behalf of Key Energy Services, Inc. (Key) regarding some outstanding issues with its facility. OCD wishes to respond in order to provide written clarification on certain matters regarding the surface waste management portion of Key's facility and to request that Key submit an official written notice to clarify the operational status of the facility.

The last correspondence OCD received from Key regarding the operational status of its surface waste management facility was dated April 15, 2011. Key informed OCD that Key had determined to cease operations as of April 15, 2011. OCD requests that Key submit an official written notice to OCD to clarify the operational status of its surface waste management facility in order that OCD may update its administrative records.

In response to the September 9, 2010 letter submitted by Key to Mr. Daniel Sanchez, OCD has the following comments and recommendations:

Landfarm Comments and Recommendations

OCD reviewed the results of Key's comprehensive sampling event for the 4th quarter of 2010 for its landfarm. The results revealed that additional remediation of the **treatment zone** (contaminated soils on the surface) is required. The TPH results, as determined by test method 418.1, were as follows: 10,800 mg/kg, 12,000 mg/kg, 14,000 mg/kg, and 4060 mg/kg. The treatment zone closure performance standard for TPH is 2,500 mg/kg. (See 19.15.36.15.F NMAC)

OCD is concerned about the elevated TPH concentrations, as determined by test method 418.1, in the **vadose zone** (the native soils beneath the soils being remediated). Two of the four samples were detected at concentrations of 480 mg/kg and 999 mg/kg, which indicate a possible release of contaminants, from the treatment zone to the vadose zone. Key submitted only the laboratory results and a map of the sampling to OCD, but did not provide a proposal to address this issue.

Pursuant to 19.15.36.15.E(2) NMAC, "The operator shall collect and analyze a minimum of four randomly selected, independent samples from the vadose zone at least semi-annually using the methods specified below for TPH, BTEX and chlorides and shall compare each result to the higher of the PQL or the background soil concentrations to determine whether a release has occurred." Key's 4th quarter submittal did not include the required comparison.

Ponds and Impoundments Comments and Recommendations

The *Pond Recommendation* section of Key's September 9, 2010 letter was not clear in its recommendations and the OCD wishes clarification on two of the bullets. The first bullet requests a one year delay of any closure activities associated with impoundments approved under Permit NM1-009 and stated that all systems will be maintained and fluids will be removed within one week of acceptance. OCD has three concerns with this first request. First, if OCD were to grant the one year delay from September 2010 until September 2011, the deadline date for the extension would expire approximately three (3) weeks prior to the requested deadline date (fourth bullet) of October 2011 for the submittal of Key's closure plan. Secondly, Key's recommendation that it be allowed to continue to receive and remove fluids does not comply with its permit conditions because the evaporation pond liner has been removed. Finally, the impoundments identified in the first bullet are not the only impoundments approved by OCD and installed at the facility. OCD has attached two (2) facility maps provided by Key which depicts two (2) evaporation ponds (one unlined and one lined), a lined skimmer pond, a sludge pit, two (2) stabilization units, and three (3) below-grade tanks/sumps. Any closure plan must address closure of all waste management units.

Key's fourth bullet requests that it be allowed to submit a closure plan for the impoundments by October 1, 2011. As noted above, this request conflicts with the delay requested in the first bullet.

OCD recommends that Key revise and resubmit its closure recommendations to address OCD's concerns. Key should specify the existing status of all waste management units as depicted on Figures 1 and 2 (see attachment) and covered by its permit and whether it anticipates closing any of the other waste management units as a result of any changes in its business practices at its facility.

OCD would like to apologize for any confusion that resulted from the conversation between Mr. Jones and Mr. Price on July 11, 2011. Mr. Jones was unaware that Key had resumed operations at its facility and that Key had been discussing this issue with OCD management. OCD hopes that this letter addresses any concerns and issues that Key may have. Please note that OCD will provide a written response to all submittals made by any operator. If OCD does not respond in a timely manner because of its workload, please remind us by email. In the future to avoid any misunderstandings, please submit any requests or recommendations for this facility in writing to OCD Acting Environmental Bureau Chief, Glenn Von Gonten. If you have any questions regarding this matter, please contact Mr. Von Gonten at (505) 476-3488 or Glenn.VonGonten@state.nm.us .

Sincerely,

Jami Bailey
Division Director
Oil Conservation Division

JB/baj

Attachment: Key Facility Maps (Figures 1 and 2)

cc: OCD District III Office, Aztec
Wayne Price, Price LLC

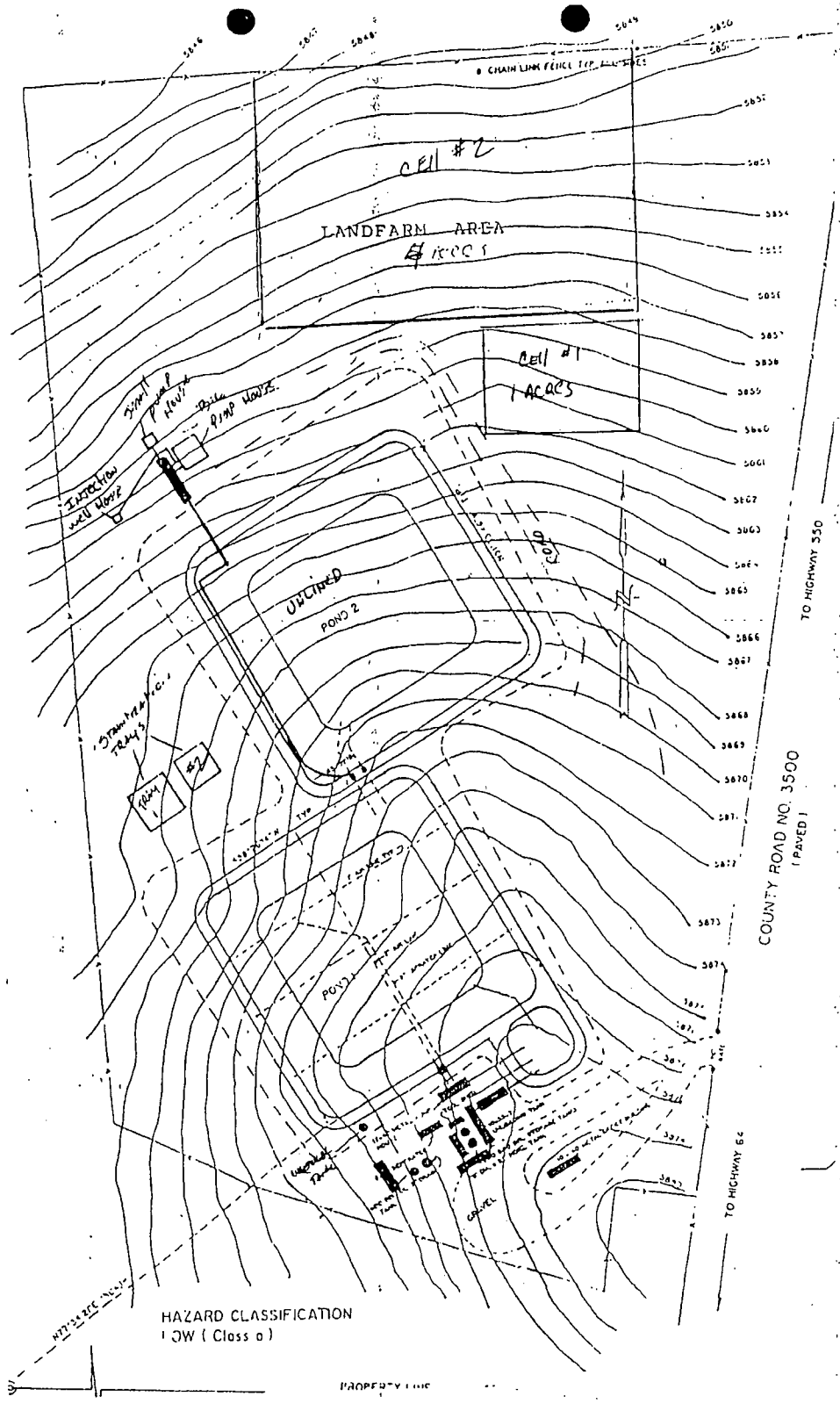


Figure 1

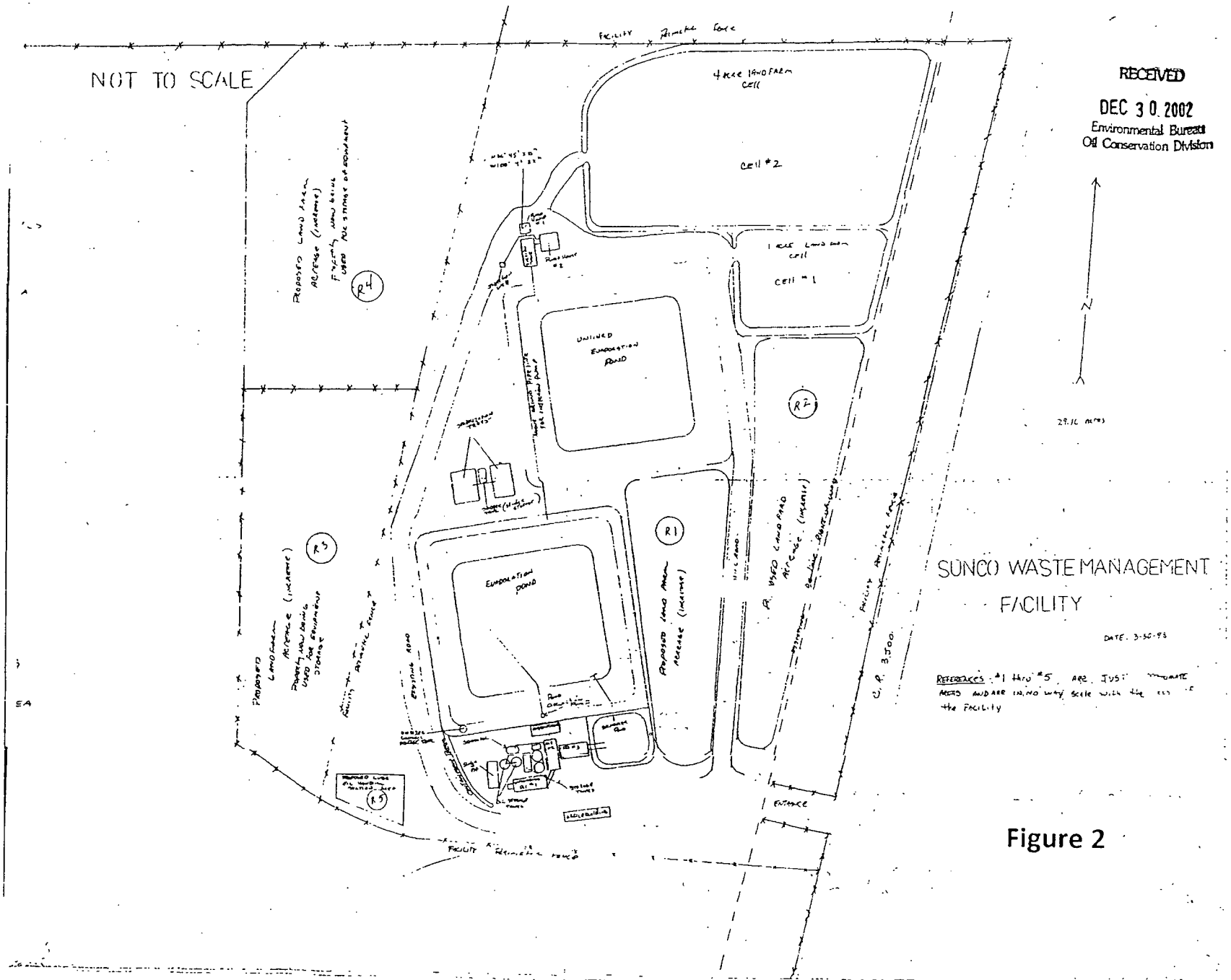

NOT TO SCALE
RECEIVED
DEC 30 2002
Environmental Bureau
Oil Conservation Division
SUNCO WASTE MANAGEMENT
FACILITY
Cell #2
Cell #1
Evaporation Pond
Evaporation Pond
ENTRANCE

Figure 2

Jones, Brad A., EMNRD

From: wayne price [wayneprice77@earthlink.net]
Sent: Thursday, July 14, 2011 8:02 AM
To: Jones, Brad A., EMNRD; VonGonten, Glenn, EMNRD; Sanchez, Daniel J., EMNRD; Bailey, Jami, EMNRD; Bemis, John, EMNRD
Cc: lmolleur@keyenergy.com; Dan Gibson; Dennis Douglas
Subject: Key Energy Farmington Facility
Attachments: Key NM1-9 7-13-11 Dear Brad.pdf; ATT00001.txt; SKMBT_C35310091008321.pdf; ATT00002.txt

Dear Brad,

Please find enclosed a letter summarizing our telephone conversation in which you indicated Key Energy is in Violation of Part 36. Also enclosed is the September 10, 2010 letter concerning this issue which Key Energy was under the assumption that a deadline date of October 01, 2011 was agreed upon. Key Energy sincerely hopes after reading the letter, reviewing the file, and discussing this with your management, you will reevaluate your verbal decision that we are in violation.

Key Energy Services
6 Desta Drive
Suite 4400
Midland, Texas 79705

Telephone: 432.620.0300
Facsimile: 432.571.7173
www.keyenergy.com

September 9, 2010

Mr. Daniel Sanchez
UIC Director
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

VIA EMAIL AND US MAIL

Subject: Key Farmington-NM-01-0009 Pond and Landfarm

Dear Mr. Sanchez:

Key Energy Services, Inc. (Key) appreciates meeting with you and Oil Conservation Division (OCD) staff on August 24, 2010 in Santa Fe to discuss the operation and future activities at this facility.

Key does not believe the current status of the landfarm cells or formerly used pit pose any significant threat to human health or the environment. While Key fully intends to perform future work in accordance with the facility permits and OCD regulations, at this time Key would prefer to delay the onset of such activities until the economic and business conditions in the area improve. As we discussed in our meeting, under current market conditions this operation is not profitable. At this time, closure of this operation and plugging the well or permitting this well as a Class 2 injection well are considerations under review. While Key recognizes the need for a Class 1 injection well in the area, the volume of Class 1 materials is very low and additional expenditures at this facility exacerbate the financial position of this operation. Key previously provided OCD with graphs depicting the volumes and revenue stream from the facility operation from 1998 through 2009. A copy of these charts is attached.

Key would like to continue to work cooperatively with OCD to address the permit and regulatory requirements as well as OCD concerns. To that effect, we propose the following plan.

Landfarm Recommendation:

- Perform the 3rd quarter sampling event as scheduled.
- Perform a comprehensive sampling event in the 4th quarter. Key will continue to aggressively till and remediate the soils in the landfarm during this time.
- Key will not add any more soils for treatment at this time.

The 4th quarter sampling would consist of the following:

Treatment Zone Sampling: (Cell #2 only at this time)

Cell #2 will be quartered into quads A, B, C & D with one composite sample collected from each quad consisting of (4 discrete samples for each composite) and analyzed for TPH (Methods 418.1 & 8015 (GRO and DRO)), Chlorides, BTEX and WQCC metals.

Vadose Zone Sampling: (Cell #2 only at this time)

Cell #2 will be quartered into quads A, B, C & D, with each quad further sub-divided into 4 separate quads A1-4, B1-4, C1-4 and D1-4. A random sample will be collected from each major quad at approximately 4-5 feet below the original ground surface. Each sample will be analyzed for TPH (Methods 418.1 & 8015 (GRO and DRO)), Chlorides, BTEX and WQCC metals.

- After the 4th quarter sampling Key will meet with OCD to determine a path forward.

Pond Recommendation:

Due to the severe economic conditions in Farmington and the slowdown in business, Key would like to propose the following:

- Delay for one year, any closure activity of the pond, sumps, and previous treatment system, including the skimmer pond and concrete treatment containments. All systems will be maintained and fluids will be removed within one week of acceptance.

- Maintain the current pond rainwater removal system and remove rain or snow melt within one week of acceptance where practical. Any water that cannot be practically removed will be removed by using the automatic leak detection system pump. Key will notify OCD district office if rain or snowfall exceeds the one week.

- Semi-annual samples will be collected of the leak detection sump and will be analyzed for Chlorides and BTEX. Results will be reported to OCD.

- Key will work with OCD over the next year so that by October 1, 2011 a closure plan will be prepared and ready to implement.

Key appreciates OCD time and efforts to meet with us. Please contact me at 432-571-7536 if you have questions or concerns regarding this information or Key's requests.

Sincerely,

Daniel K. Gibson, P.G.
Corporate Environmental Director

cc:

Mr. Brad Jones
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

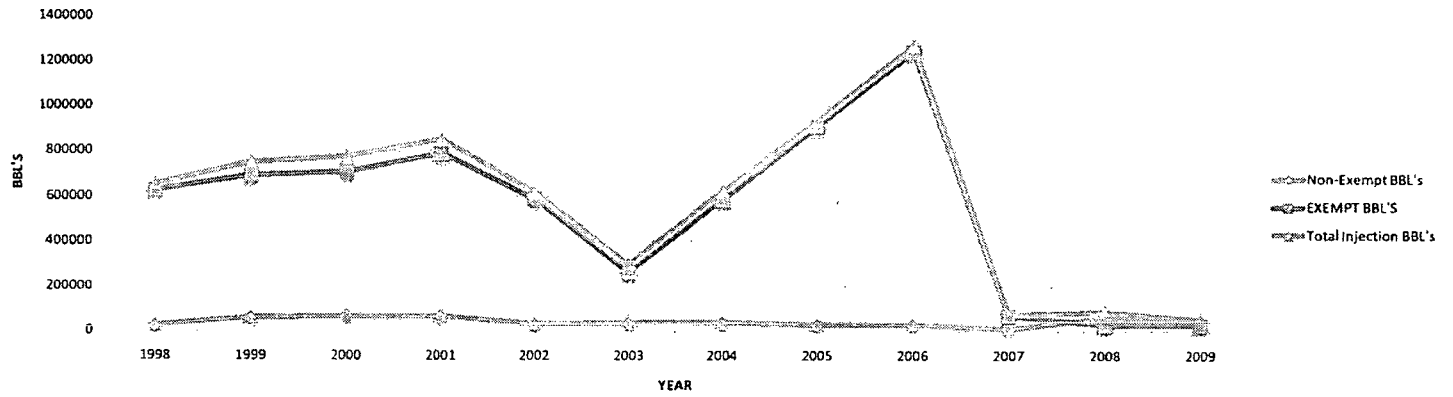
Mr. Glenn VonGonten
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Mr. Wayne Price
Price LLC
312 Encantado Ridge CT NE
Rio Rancho, New Mexico 87124

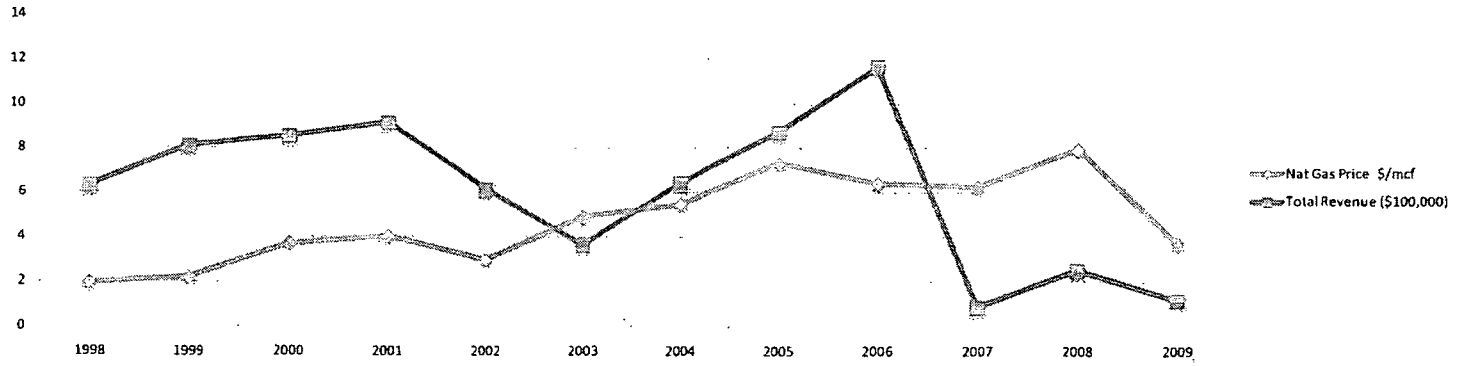
Mr. Loren Molleur

Attachments

KEY FARMINGTON CLASS I INJECTION WELL UIC-5
VOLUMES CHART BBL'S
1998-2009



NAT GAS PRICE VS TOTAL $ REVENUE
1998-2009



July 14, 2011

Mr. Brad Jones-Environmental Engineer
New Mexico Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, NM 87505

Subject: Key Energy NM1-09 Facility

Reference: July 11, 2011 Phone Conversation

Dear Brad,

Thank you for the extended telephone conversation concerning the Key Farmington Facility. The telephone call was one of many that we have had concerning this facility.

Pursuant to our conversation, you indicated you have been buried in work and may not have had an opportunity to be totally aware of some recent events. This correspondence will attempt to bring you up to speed on the Farmington site and hopefully to refute any misconceptions you may have concerning Key's actions and certain site conditions.

Key Energy has been working feverishly with State officials to keep the facility operating, since this is the only type of permitted facility in the area where non-exempt, non-hazardous oilfield waste can be disposed of. The closure of this facility will be an extreme burden on the already depressed area.

Key has been requesting temporary regulatory relief from the state in the form of reasonable permit concessions. It is our understanding the concessions requested have been investigated by state attorneys and certain staff managers. As of to date, the general consensus appears that such actions are allowed under state law, contingent upon approval from the agency, and the caveat that the intent of the law and rules are maintained and upheld.

During our conversation, you indicated Key Energy is in violation of Part 36, pertaining to the pond closures. You also implied that we are in violation for not reporting directly to you that we had temporarily shut down the facility, and now in violation for having started back up without your approval. You should be aware that the agency was notified concerning the shutdown and the start-up.

Your comments were very unsettling to me, and Key's upper management, especially since we have taken special steps to work with EMNRD and OCD's upper management to ensure that the facility stay in compliance and the associated jobs were re-established at the site, albeit not to full capacity.

As for the pond closure issue, on August 24, 2010, Key Energy met with EMNRD/OCD and Environmental Staff concerning the entire site, including the Class I Injection Well, the ponds, and the landfarm. At the EMNRD meeting, verbal concessions were agreed upon in concept to assist Key Energy in keeping this facility open in order that the industry would have a place to take Class I type waste.

In the second meeting of the same day, Key Energy met with OCD staff, you included, concerning the landfarm and pond issues. At that meeting, Key supplied a handout with draft plans as requested. During the meeting you pointed out that OCD wanted a landfarm release action plan and a plan to address the pond closures.

There was an in-depth discussion about the pond closure and associated cost, including an intense discussion about using common sense regarding the landfarm release and closure standards. OCD agreed they would consider a recommended plan of action to be submitted by Sept 10, 2010.

That plan was submitted in a timely fashion and is attached herein for reference. Key Energy submitted another letter on October 25, 2010 changing the landfarm recommendations to commitments at your request.

To date, ***OCD has not responded*** to the plan addressing the delay for pond closure, and Key has operated under the assumption that the plan has been accepted and a deadline date of October 1, 2011 is still in effect to submit a pond closure plan.

If the agency has determined that Key Energy is in violation, we want to address this issue immediately. Key is committed to conducting safe operations in compliance with applicable regulatory requirements.

Unfortunately, as maybe in this case, there appears to be some misunderstanding or different interpretations of the agreements reached between EMNRD/OCD's upper management, OCD staff members and Key in general.

As mentioned above, Key has reopened the facility to accommodate the industry's waste disposal needs and continues to generate revenue for the state. Key is currently operating the facility at a loss, but with the reduced permit conditions forthcoming, we hope the operation will become profitable.

It's Key's understanding that Glenn vonGonten (acting Environmental Bureau Chief) and Director Bailey have been in discussions concerning the proper approach on how we accomplish these changes. Key Energy is hereby requesting that you discuss this issue with your supervisor so the agency's position will include your responsible part of the permit and thus will be all encompassing and consistent with all of our goals.

If so, directed by you in writing, Key Energy will conform in order to avoid any potential Notice(s) of Violation (NOV). An NOV, whether written or verbal, could destroy some very important upcoming activities in New Mexico, which would negate the considerable efforts and costs Key has invested in New Mexico. Cancellation of these projects would cost Key Energy millions in lost revenue, and would cost the state both jobs and tax revenue.

I hope this helps you understand Key's position in regard to the current situation. ***Key Energy is hereby requesting written guidance in this matter so we may proceed and expedite the permit changes discussed above.***

Sincerely,

Wayne Price-Agent for Key Energy

cc: John Bemis- EMNRD Cabinet Secretary
Jami Bailey-Director OCD
Daniel Sanchez- OCD UIC Director
Glenn vonGonten-Acting Environmental Bureau Chief

New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John H. Bemis
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

June 30, 2011

Dan Gibson
Key Energy Services, Inc.
6 Desta Drive
Midland, Texas 79705

RE: Compliance with the Transitional Provisions of the Surface Waste Management Facilities rule (Rule 36) and Treatment and Vadose Monitoring Requirements at Existing Landfarms
Key Energy Services, Inc.
Permit NM-1-009
Location: Unit E of Section 2, Township 29 North, Range 12 West, NMPM
San Juan County, New Mexico

Dear Owner/Operator:

The Oil Conservation Division (OCD) has received several landfarm monitoring reports which indicate Owner/Operators are not conducting the required sampling and assessment of the monitoring data required by existing permit conditions and the applicable requirements of the Surface Waste Management Facilities rule 19.15.36 NMAC (Rule 36). OCD wishes to remind such Owner/Operators that the requirements of Rule 36 have been in effect since February 14, 2007 and compliance is required. This letter is provided to help Owner/Operators understand the most common deficiencies regarding compliance in general operations, sampling of landfarms at existing surface waste management facilities, and the reporting of such results.

I. Transitional Provisions, Existing Surface Waste Management Facilities:
The transitional provision of Rule 36.20.A states that existing surface waste management facilities *shall comply with the operational, waste acceptance, and closure requirements* provided in the new rule, unless specifically addressed in the current permit, order, waiver, exception, or agreement granted in writing from OCD. Where the language in the existing permit is silent (i.e., where a specified requirement of Rule 36 is not addressed within the existing permit or in writing from OCD), the operational, waste acceptance, and closure provisions of Rule 36 apply and

supplement the conditions of the existing permit. Examples of how this transitional provision would be applied to Owner/Operators of existing landfarms are as follows:

A. Treatment Zone Monitoring (contaminated soils being remediated):
Most Owner/Operators of existing landfarms have common language or conditions specified within their permits. For this example, two of the following common permit conditions demonstrate how an Owner/Operator would request the necessary modification of their existing permit.

In an existing landfarm permit:

1. Soils will be spread on the surface in six-inch lifts or less.

2. Successive lifts of contaminated soils may not be spread until a laboratory measurement of:
   a. total petroleum hydrocarbons (TPH) in the previous lift is less than 100 parts per million (ppm);
   b. the sum of all aromatic hydrocarbons (BTEX) is less than 50 ppm; and
   c. benzene is less than 10 ppm.
   d. Comprehensive records of the laboratory analyses and the sampling locations must be maintained at the facility. Authorization from the OCD must be obtained prior to application of successive lifts and/or removal of the remediated soils.

In addition to the above permit conditions, an Owner/Operator also has to implement the following additional requirements of Rule 36:

- Chloride testing and limits (See 19.15.36.15.D NMAC)

If ground water is between 50' and 100' below the bottom of the oil field waste:	**If ground water is more than 100' below the bottom of the oil field waste:**
Chloride concentration cannot exceed **500** mg/kg	Chloride concentration cannot exceed **1000** mg/kg

- The following test methods would have to be utilized: TPH concentration of each lift determined by EPA SW-846 method 8015M or EPA method 418.1 or other EPA method approved by the division, and chloride concentration, determined by EPA method 300.1. (See 19.15.36.15.D NMAC)

- The sampling protocol and frequency: "*The operator shall collect and analyze at least one composite soil sample, consisting of four discrete samples, from the treatment zone at least semi-annually using the methods specified below for TPH and chlorides.*" (See 19.15.36.15.D NMAC)

- The maximum thickness of remediated soils for closure: "*The maximum thickness of treated soils in a landfarm cell shall not exceed two feet or approximately 3000 cubic yards per acre. When that thickness is reached, the operator shall not place additional oil field waste in the landfarm cell until it has demonstrated by monitoring the treatment zone at least semi-*

annually that the contaminated soil has been treated to the standards specified in Subsection F of 19.15.36.15 NMAC or the contaminated soils have been removed to a division-approved surface waste management facility." (See 19.15.36.15.D NMAC)

Therefore, in order to remain in compliance with existing permit conditions and Rule 36 the Owner/Operator shall ensure that:

1. Soils will be spread on the surface in **six**-inch lifts or less, and the addition of any remediated soils is not allowed until:
   a. TPH concentration of each lift, as determined by EPA SW-846 method 8015M or EPA method 418.1 or other EPA method approved by the division, does not exceed **100** mg/kg (ppm),
   b. the sum of all aromatic hydrocarbons (BTEX) is less than **50** ppm,
   c. benzene is less than **10** ppm, and
   d. the chloride concentration, as determined by EPA method 300.1, does not exceed **500** mg/kg or 1000 mg/kg. (See depth to ground water restrictions above.)
2. The Owner/Operator shall collect and analyze at least **one** composite soil sample, consisting of **four** discrete samples, from the treatment zone at least **semi-annually** using the methods specified above for TPH and chlorides.
3. The maximum thickness of treated soils in a landfarm cell shall not exceed **two feet** or approximately **3000 cubic yards per acre**. When that thickness is reached, the Owner/Operator shall not place additional oil field waste in the landfarm cell until it has demonstrated by monitoring the treatment zone at least semi-annually that the contaminated soil has been treated to the standards specified in Rule 36.15.F or the contaminated soils have been removed to a division-approved surface waste management facility. Owner/Operators **must** obtain authorization from the OCD prior to application of successive lifts and/or removal of the remediated soils.

The requirements of Rule 36 that would require an Owner/Operator to submit a modification request regarding treatment zone monitoring to an existing landfarm are as follows:

- "*The operator shall spread contaminated soils on the surface in **eight**-inch or less lifts or approximately 1000 cubic yards per acre per eight-inch lift.*" (See 19.15.36.15.D NMAC)

- "*TPH concentration of each lift, as determined by EPA SW-846 method 8015M or EPA method 418.1 or other EPA method approved by the division, does not exceed **2500** mg/kg.*" (See 19.15.36.15.D NMAC)

B. Vadose Zone Monitoring (native soils beneath the contaminated soils being remediated):

In regards to vadose zone monitoring (commonly referred to by the misnomer of "Treatment Zone Monitoring" within existing landfarm permits), most Owner/Operators of existing surface waste management facilities that operate landfarms have common language or conditions specified within their permits. For this example two of the most common permit conditions regarding the vadose zone will be used to demonstrate how an Owner/Operator would comply with the

transitional provision of Rule 36.20.A, and what requirements of the rule would require an Owner/Operator to submit a request to modify an existing permit.

Two of the most common conditions in an existing landfarm permit are as follows:

1. A treatment zone not to exceed **three (3) feet** beneath the landfarm native ground surface must be monitored. A minimum of one random soil sample must be taken from each individual cell, with no cell being larger than five (5) acres, **six (6) months** after the first contaminated soils are received in the cell and then **quarterly** thereafter. The sample must be taken at two (2) to three (3) feet below the native ground surface.

2. The soil samples must be analyzed using EPA-approved methods for total petroleum hydrocarbons (TPH) and volatile aromatic organics (BTEX) **quarterly** and for major cations/anions and Water Quality Control Commission (WQCC) metals **annually**.

Based upon the transitional provision of Rule 36.20.A, an Owner/Operator would have to implement and integrate the following **additional requirements** while complying with the conditions specified above.

- The testing for chlorides and the comparison of the results to background: "*The operator shall collect and analyze a minimum... using the methods specified below for TPH, BTEX and* ***chlorides*** *and shall compare each result to the higher of the PQL or the background soil concentrations to determine whether a release has occurred.*" (See 19.15.36.15.E(2) NMAC).

  i. *Note*: The "methods specified below for TPH, BTEX and chlorides" are those identified in Subsection F of 19.15.36.15 NMAC: "Total BTEX, as determined by *EPA SW-846 method 8021B or 8260B...*" (See 19.15.36.15.F(2) NMAC); "TPH, as determined by *EPA method 418.1* or other EPA method approved by the division..." (See 19.15.36.15.F(3) NMAC); and "Chlorides, as determined by *EPA method 300.1...*" (See 19.15.36.15.F(3) NMAC).

- The five year monitoring program: "*The operator shall collect and analyze a minimum of* ***four*** *randomly selected, independent samples from the vadose zone, using the methods specified below for the constituents listed in Subsections A and B of 20.6.2.****3103*** *NMAC at least* ***every five years*** *and shall compare each result to the higher of the PQL or the background soil concentrations to determine whether a release has occurred.*" (See 19.15.36.15.E(3) NMAC).

  ii. *Note:* The "*methods specified below for the constituents listed in Subsections A and B of 20.6.2.3103 NMAC*" are those identified in Subsection F of 19.15.36.15 NMAC: "The concentration of constituents listed in Subsections A and B of 20.6.2.3103 NMAC shall be determined by *EPA SW-846 methods 6010B or 6020* or other methods approved by the division." (See 19.15.36.15.F(5) NMAC)

- The release response: *"If vadose zone sampling results show that the concentrations of TPH, BTEX or chlorides exceed the higher of the PQL or the background soil concentrations, then the operator shall notify the division's environmental bureau of the exceedance, and shall **immediately collect and analyze** a minimum of **four** randomly selected, independent samples for TPH, BTEX, chlorides and the constituents listed in Subsections A and B of 20.6.2.3103 NMAC. The operator shall submit the results of the re-sampling event and a response action plan for the division's approval within 45 days of the initial notification. The response action plan shall address changes in the landfarm's operation to prevent further contamination and, if necessary, a plan for remediating existing contamination."* (See 19.15.36.15.E(5) NMAC

The requirements of Rule 36 that would require an Owner/Operator to submit a modification request regarding vadose zone monitoring to an existing landfarm are as follows:

- *"The operator shall take the vadose zone samples from soils between three and four feet below the cell's original ground surface."* (See 19.15.36.15.E(1) NMAC)

- *"The operator shall collect and analyze a minimum of four randomly selected, independent samples from the vadose zone at least **semi-annually**..."* (See 19.15.36.15.E(2) NMAC)

C. Transitional Provisions, New Landfarm Cells Constructed at an Existing Surface Waste Management Facility:

The transitional provision, Rule 36.20.B, states "Major modification of an existing surface waste management facility and new landfarm cells constructed at an existing surface waste management facility shall comply with the requirements provided in 19.15.36 NMAC." In this case, an Owner/Operator is required to consider the siting criteria and operational requirements regarding landfarms specified in Rule 36.13; the specific requirements applicable to landfarms specified in Rule 36.15; and the closure and post closure requirements regarding landfarms of Rule 36.18. The existing permit conditions would not be applicable to new landfarm cells at the existing facility, but would continue to apply to landfarm cells that were constructed prior to the February 14, 2007 effective date of Rule 36.

II. Compliance with Additional Operational Requirements:

Other regulatory requirements that Owner/Operators of existing surface waste management facilities that operate landfarms should be aware of and consider when operating its facility are as follows:

A. Reuse of remediated soils:

Most existing surface waste management facility permits regarding landfarming do not specify the constituents and concentrations that must be achieved for reuse of treated or remediated soils. Rule 36 has a provision that specifically addresses the conditions of approval for reuse of treated soils. Rule 36.15.G(1), disposition of treated soils, states *"If the operator achieves the closure performance standards specified in Subsection F of 19.15.36 NMAC, then the operator may either leave the treated soils in place, or, with prior division approval, dispose or reuse of the treated soils in an alternative manner."*

In accordance with the treatment zone closure performance standards of Rule 36.15.F, "*the operator shall continue treatment until the contaminated soil has been remediated to the higher of the background concentrations or the following closure performance standards. The operator shall demonstrate compliance with the closure performance standards by collecting and analyzing a minimum of one composite soil sample, consisting of four discrete samples.*

(1) Benzene, as determined by EPA SW-846 method 8021B or 8260B, shall not exceed ***0.2 mg/kg****.*

(2) Total BTEX, as determined by EPA SW-846 method 8021B or 8260B, shall not exceed ***50 mg/kg****.*

(3) The gasoline range organics (GRO) and diesel range organics (DRO) combined fractions, as determined by EPA SW-846 method 8015M, shall not exceed ***500 mg/kg****. TPH, as determined by EPA method 418.1 or other EPA method approved by the division, shall not exceed* ***2500 mg/kg****.*

(4) Chlorides, as determined by EPA method 300.1, shall not exceed ***500 mg/kg if*** *the landfarm is located where ground water is less than* ***100*** *feet but at least* ***50*** *feet below the lowest elevation at which the operator will place oil field waste or* ***1000 mg/kg if*** *the landfarm is located where ground water is* ***100*** *feet or more below the lowest elevation at which the operator will place oil field waste.*

(5) The concentration of constituents listed in Subsections A and B of 20.6.2.3103 NMAC shall be determined by EPA SW-846 methods 6010B or 6020 or other methods approved by the division. If the concentration of those constituents exceed the PQL or background concentration, the operator shall ***either*** *perform a site specific risk assessment using EPA approved methods and shall propose closure standards based upon individual site conditions that protect fresh water, public health; safety and the environment, which shall be subject to division approval* ***or*** *remove pursuant to Paragraph (2) of Subsection G of 19.15.36.15 NMAC."*

B. Waste Acceptance:

Based upon conversations with several landfarm Owner/Operators, it has come to OCD's attention that the proper waste acceptance protocol is not being implemented at all applicable facilities. In accordance with Rule 36.15.A, "*Only soils and drill cuttings predominantly contaminated by petroleum hydrocarbons shall be placed in a landfarm. The division may approve placement of tank bottoms in a landfarm if the operator demonstrates that the tank bottoms do not contain economically recoverable petroleum hydrocarbons. Soils and drill cuttings placed in a landfarm shall be sufficiently free of liquid content to pass the paint filter test, and shall not have a chloride concentration exceeding* ***500 mg/kg if*** *the landfarm is located where ground water is less than* ***100 feet but at least 50 feet*** *below the lowest elevation at which the operator will place oil field waste or exceeding* ***1000 mg/kg if*** *the landfarm is located where ground water is* ***100*** *feet or more below the lowest elevation at which the operator will place oil field waste. The person tendering oil field waste for treatment at a landfarm shall* ***certify,*** *on form C-138, that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content, and that the samples have been found to conform to these requirements. The landfarm's operator shall not accept oil field waste for landfarm treatment unless accompanied by this certification."*

All landfarm Owner/Operators should be implementing the above referenced requirements in order to ensure compliance to the transitional and waste acceptance provisions of Rule 36. Please note that pursuant to Rule 36.7.A(3), a landfarm "*means a discrete area of land designated and used for the remediation of petroleum hydrocarbon-contaminated soils and drill cuttings.*" Landfarm Owner/Operators should ensure that the waste material accepted for remediation at their facilities contains petroleum hydrocarbons. Acceptance of any other waste material could be considered disposal.

Please note that if you are currently implementing the protocols identified above, OCD appreciates your efforts to continually remain in compliance with the regulations. As for Owner/Operators that are not currently in compliance, the goal of OCD is to get you back on track and in compliance. OCD anticipates observing the changes identified above in the submittal of the results of the next sampling event. If there are any questions regarding this matter, please do not hesitate to contact Mr. Brad A. Jones of my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jami Bailey
Division Director
Oil Conservation Division

JB/baj

cc: OCD District III Office, Aztec
Wayne Price, Price LLC, Rio Rancho, NM 87214

VonGonten, Glenn, EMNRD

From: VonGonten, Glenn, EMNRD
Sent: Tuesday, December 20, 2011 5:00 PM
To: 'Gibson, Dan'; Sanchez, Daniel J., EMNRD; Gerholt, Gabrielle, EMNRD; Jones, Brad A., EMNRD
Cc: wayne price; Molleur, Loren
Subject: RE: Sunco Facility, Farmington, NM

Dan,

OCD's comments are in blue.

Glenn

From: Gibson, Dan [mailto:dgibson@keyenergy.com]
Sent: Monday, December 12, 2011 4:12 PM
To: VonGonten, Glenn, EMNRD
Cc: wayne price; Molleur, Loren
Subject: Sunco Facility, Farmington, NM

Glenn - Based on our call last week, below is a list of action items that are required to transfer the existing injection and discharge permits from Key to the new operator. If my understanding is incorrect, please advise me as soon as possible so we can complete these activities.

1) Key (current operator) and Aqua Moss, LLC (new owner) will submit a letter to OCD formally notifying OCD of the sale of the facility. The letter will state that Aqua Moss, LLC will operated the facility in compliance with the current discharge permit for the facility.
2) If Aqua Moss, LLC does not have an OGRID number, they will contact Dorothy Phillips at OCD to begin this process
3) Boding must be in place and approved by OCD prior to the transfer of the permits. The current bond amounts are $95,000 for the UIC well and $176,200 for the Commercial Surface Waste Management Facility.

The new operator must use the Surface Waste Management Facility bond language specified on the form.

4) A Change of Operator Form (Form C-145) must be prepared and signed by both Key and Aqua Moss, LLC.
5) A Transfer of Permit form must be submitted for the Surface Waste Management Facility.

The new operator must provide the information required by 19.15.36.12E NMAC.

As discussed on the conference call Key will also perform the following activities:

1) Key will prepare the 2011 annual report for the facility since the transfer will not be complete prior to December 31.
2) Key will inform Aqua Moss, LLC that the current discharge permit expires in June 2012 and the permit application is due to OCD 120 days before the permit expires.
3) If Aqua Moss. LLC intends to haul water, they need an approved Form C-133 prior to transporting fluids.

4) Key will inform Aqua Moss, LLC that the landfarm cells were permitted for deposal of wastes associated with the surface waste facility. Since this operation has been shut down, the landfarm cells should not be used unless approved by OCD. Furthermore, the lined pit cannot be utilized unless it is repaired and OCD is notified in advance.

The outstanding issue we need to resolve is the recent closure plan Key submitted for the landfarm. Key submitted a closure request for the landfarm, however, the new owner may wish to utilize these assets. Key would like to allow the new owner to discuss the landfarm with OCD to plan future activities. If the landfarm closure is postponed, I believe Key is required to perform the 4th quarter UIC and landfarm sampling events. Would it be possible to waive these events?

Key's permit requires Key to provide OCD with notice of closure and to submit a closure plan for approval for its landfarm permitted as NM1-9. The document dated November 30, 2011, is not a closure plan, but a report that includes data from work that Key conducted "at risk." OCD will neither review nor approve the report as a work plan. Key must submit the required notice and a closure plan in accordance with its permit. OCD will review the closure plan and either approve, approve with conditions, or disapprove the work plan. Please note that in accordance with the closure requirements of Key's 711 Permit (Closure section 2.f), key must close its landfarm to the "... requirements in effect at the time of closure...." That means that Key must close its landfarm to the Part 36 closure standards for landfarms (see 19.15.36.18 NMAC).

If the new owner wishes to operate the landfarm, then OCD will certainly meet with them to discuss that possibility.

If closure or property transfer is postponed, OCD will consider Key's request to "waive" sampling on the best information that we have at that time.

Note: Forms can be located on the OCD website: http://www.emnrd.state.nm.us/ocd/Forms.htm

Thanks.

Daniel K. Gibson, P.G. | **Key Energy Services, Inc.** | Corporate Environmental Director
6 Desta Drive, Suite 4300, Midland, TX 79705| **o:** 432.571.7536 | **c:** 432.638-6134 | **e: dgibson@keyenergy.com**

VonGonten, Glenn, EMNRD

From: VonGonten, Glenn, EMNRD
Sent: Friday, December 23, 2011 10:26 AM
To: 'wayne price'
Cc: Gibson, Dan; Sanchez, Daniel J., EMNRD; Gerholt, Gabrielle, EMNRD; Jones, Brad A., EMNRD; Molleur, Loren
Subject: RE: Sunco Facility, Farmington, NM

Wayne,

Key should continue to operate in accordance with its permits until the transaction is complete. OCD will scan the document into the file when Lawrence returns.

Glenn

From: wayne price [mailto:wayneprice77@earthlink.net]
Sent: Wednesday, December 21, 2011 12:22 PM
To: VonGonten, Glenn, EMNRD
Cc: Gibson, Dan; Sanchez, Daniel J., EMNRD; Gerholt, Gabrielle, EMNRD; Jones, Brad A., EMNRD; Molleur, Loren
Subject: Re: Sunco Facility, Farmington, NM

Dear Glenn,

Thanks for the quick response. Key Energy would like to obtain your permission to go ahead and perform the 4th quarter sampling for the UIC-5 well and the required landfarm sampling in early January of 2012 since we have to go up and obtain a copy of the records for the annual report. If Brad has any suggestions for this final sampling by Key we would appreciate his input.

We also have another request, we respectfully ask the OCD to consider scanning the landfarm closure document into Key's electronic file, as it includes the results of the required sampling for the past year. Key Energy expended several thousands of dollars to compile some very valuable information concerning the landfarm, that would be most valuable for the agency and the new owner in the future. When we delivered it, it was stamped in so it would meet any minimum requirement to be considered a public record document and to meet the deadline.

Sincerely,

Happy Holidays!

On Dec 20, 2011, at 5:00 PM, VonGonten, Glenn, EMNRD wrote:

Dan,

OCD's comments are in blue.

Glenn

From: Gibson, Dan [mailto:dgibson@keyenergy.com]
Sent: Monday, December 12, 2011 4:12 PM
To: VonGonten, Glenn, EMNRD
Cc: wayne price; Molleur, Loren
Subject: Sunco Facility, Farmington, NM

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If closure or property transfer is postponed, OCD will consider Key's request to "waive" sampling on the best information that we have at that time.

Note: Forms can be located on the OCD website: http://www.emnrd.state.nm.us/ocd/Forms.htm

Thanks.

Daniel K. Gibson, P.G. | **Key Energy Services, Inc.** | Corporate Environmental Director
6 Desta Drive, Suite 4300, Midland, TX 79705| **o:** 432.571.7536 | **c:** 432.638-6134 | **e: dgibson@keyenergy.com**

Key Energy Services
1301 McKinney
Suite 1800
Houston, Texas 77010

Telephone: 713.651.4300
Facsimile: 713.652.4005
www.keyenergy.com

November 30, 2011

Mr. Daniel Sanchez-Enforcement & Compliance Manager
Mr. Glenn vonGonten-Acting Bureau Chief

New Mexico Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, NM 87505

Subject: NM1-9 Landfarm Closure Request

Dear Mr. Sanchez and Mr. vonGonten:

Please find enclosed a closure request for the NM1-9 landfarm located east of Farmington, NM on Crouch Mesa in Unit Letter E, Section 2, Ts29N, R 12W in San Juan County, NM.

The report contains six quarters of comprehensive sampling results taken from the landfarm and describes in detail the remediation and response actions taken to date. Provided are evaluations of the landfarm cells including recommendations and a final closure request.

Please note, this request is to close only the landfarm part of the NM1-9 facility, which also operates in conjunction with a Class I Injection Well under OCD permit UIC-5.

Key Energy feels it went well beyond the permit requirements in order to demonstrate the facility has no potential threat to public health or the environment. We would like for you to be cognizant of the fact on how small of area that is being considered for closure, the fact the site is located in an industrial setting, and groundwater under Crouch Mesa is noted to be in excess of 200 feet deep.

In addition, Key Energy feels this landfarm was "Grandfathered" under it's existing permit issued under the old 711 rule, and feels that the agency may have improperly imposed the new Part 36 rules on the existing facility. In a sprit of cooperation, Key has attempted to utilize both rules for closure to satisfy any concern OCD may have.

Key Energy specifically request that pursuant to 19.15.36.18.A.4 which reads *"The operator shall be entitled to a hearing concerning a modification or additional requirement the division seeks to impose if it files an application for a hearing within 10 days after receipt of written notice of the proposed modifications or additional requirements."*;

We request this requirement be flexible until Key Energy and OCD has an open dialog opportunity for closure. If OCD determines this requirement does apply, then we respectfully request it be put in writing so Key Energy has the opportunity to request a hearing on this subject matter.

If you have any concerns or questions concerning this closure request please contact Mr. Dan Gibson-Corporate Environmental Director at 432-620-0300 or E-mail dgibson@keyenergy.com. Key Energy looks forward in discussing this request.

Sincerely,

Loren R. Molleur

Loren Molleur
Sr. VP.-PBFMD-USA

Key Energy NM1-9 Landfarm Closure Request
November 30, 2011

I. Introduction and Brief History

Key Energy Services LLC owns and operates a Class I (Non-Hazardous) injection well in conjunction with a Surface Waste Management System permitted by the New Mexico Oil Conservation Division, permits UIC-5 and NM1-9 respectfully. The facility is a commercial waste disposal facility that accepts oilfield exempt and non-exempt waste from the oil and gas industry in the Farmington, NM area.

The facility is located on top of Crouch Mesa east of Farmington, NM, off county road 3500 and in Unit Letter E, Section 2, Ts29N, R 12W, San Juan County, New Mexico.

As part of the NM1-9 facility, permitted under Rule 711, is an onsite landfarm used to remediate oily tank bottom soils that are generated from the on-site storage and treating tanks and impoundments. The landfarm consists of two cells, Cell #1, a small one-acre area, and cell #2, an approximate four-acre area. Included in *Appendix I* is the site plot plan that shows the landfarm in retrospect to the other facility equipment, and a recent aerial photo.

The landfarm was used effectively for many years during the past operations, but due to the recent major recession, the advent of limiting certain salt-laden material, and the New Part 36 rule that pertains to Surface Waste Management Facilities, it become evident that operating such a small landfarm is counter productive due to the overly burdensome regulations, and is simply not cost effective at this point and time for this facility.

Therefore, Key Energy has decided to close this part of the facility. Cell #2 has always been the official part of the landfarm used, while cell #1 had been used sparingly. Both Cells #1 and Cell #2 combined, is the permitted on-site landfarm.

In the spring of 2010, Key Energy hired Wayne Price-Price LLC to assist in the Farmington Facility. As a direct result, Key began to investigate the current and past usage of the landfarm. During the 2010-second quarter sampling event, un-remediated soils were discovered, thus a decision was made to stop placing any new materials into the landfarm.

A comprehensive sampling strategy and remediation action plan was invoked to enhance the environmental status of the landfarm. The following sections of this document are the results of the past sampling events; remediation, response actions and releases; 418.1 vs. 8015D (ORO) test; findings and conclusions, evaluations with recommendations, and final closure request.

II. Sampling Events and Results

In order to meet the requirements of the older 711 rules permit requirements, and the new sampling and reporting requirements of the relative new Part 36 rule, a table was constructed to assist in defining the sampling periods, analysis requirements, and sampling methodology. This table is shown in *Appendix II.*

A compendium of the sampling events, including analytical summaries and reports, laboratory QA/QC information, chain-of-custodies, field notes, and selected photos are included in *Appendix VIII* for reference.

- 2010 Second Quarter dated 07/14/2010
- Dirt Pile Sampling dated 07/14/2010
- 2010 Third Quarter dated 10/07/2010
- 2010 Fourth Quarter dated 02/24/2011
- 2011 First Quarter dated 04/21/2011
- 2011 Second Quarter dated 06/30/2011 8015D ORO results included.
- 2011 Third Quarter dated 09/23/2011 8015D ORO/TX1005 ERO results included.
- 2011 Background Sampling dated 09/23/2011 8015D ORO/TX1005 ERO results included.
- 2011 Cell #1 Sampling dated 09/23/2011 8015D ORO/TX1005 ERO results included.

The analytical data has been compiled into two spreadsheets labeled "Sample Results Matrix Table for Key Energy NM1-9 Landfarm Cell #1, and one for Cell #2. These spreadsheets can be found in *Appendix III.*

Each spreadsheet displays the following in separate columns; Sample ID, rule requirement, reporting requirements, quarter the sample was taken, actual date of the sampling event, sample matrix, and a comprehensive list of chemical constituents of concern. Rows contain the Sample I.D. and the recorded results.

To increase variability, i.e. locate hot stops, and improve the representation of the area, cell #2 was divided into two major areas, south and north. Each of these areas were further subdivided into 4 grids, labeled A & B for the north-half, C & D for the south-half, and further subdivided into 4 additional grids for a total of 16 grids. Included in *Appendix IV* is a landfarm plot-plan showing the respectful grids.

Treatment Zone (TZ) samples was generally collected from the surface to six inches deep, taken from four discrete areas, and composited into one sample. For the most part, the collection methodology was non-random. In some quarters, double the amount of sampling was performed by collecting samples from grids A-B and C-D. These are displayed on the Sample Results Matrix Table as i.e., Cell 2S-C-TZ.

Vadose Zone (VZ) samples were generally collected from a depth of 3-5 feet deep and locations were determined by using a random "out of the hat" drawing for sample locations. During the first five quarters of sampling, every grid was sampled, except grid 2S-VZ-7. This grid was preferentially selected to be sampled in the 2011 3 rd quarter. In addition, grids 2N-VZ-5, 6 & 8 were reinvestigated since high TPH, Chlorides and BTEX were found in previous sample events.

According to on-site personnel, the small area labeled Cell #1 was never officially used during their tenure. Historic records did reveal this unit might have been used, but sparingly compared to the main part of the landfarm, i.e. Cell #2.

Cell #1 was sampled in the 2011 3rd quarter for confirmation. The methodology used was, a discrete five-point surface composite was taken in the area, and one vadoze zone sample was taken approximately 4-5 feet deep in the center of the area. The results are shown in the Sample Results Matrix Table for Cell #1 in *Appendix III.*

The 2011 3rd quarter sampling event included collecting site background samples. These samples were collected in three undisturbed areas around the landfarm site and approximate location for each

background sample with selected photos is shown in *Appendix IV*. The background sample results are also tabulated in the Cell # 1 & 2 "Sample Results Matrix Table" spreadsheets.

All samples were collected and analyzed using standard recommended EPA procedures, protocols and methods. Field notes generally included GPS locations, photos, etc. Tailgate safety meetings were held before each sampling event and NM 1-800-DiG was notified when collecting samples outside of the landfarm.

III. Remediation, Response Actions and Releases

During the 2010 2nd quarter sampling event for Cell #2, a dirt pile that had been generated from the far NE corner of the landfarm, which would be the area labeled as Cell #2 2N-B-4. The soil was removed apparently because it tested high in TPH (Total Petroleum Hydrocarbons and Chlorides). It was piled up in the far SW corner of the landfarm in grid 2S-C-8 for evaluation.

A composite sample was collected from the dirt pile and analyzed. The Chlorides were approximately 400 ppm, the BTEX and GRO/DRO was basically nil, but the 418.1 hydrocarbon test indicated a valve of about 27,800 ppm. The dirt pile did have a slight hydrocarbon odor. This dirt pile was eventually spread out over an area that had not been fully utilized in cell #2. The results of the dirt pile sampling are included in the 2010 Second Quarter Results found in *Appendix VIII.*

Inspection of the landfarm revealed that some areas still had un-remediated hydrocarbon stained soils. These soils were brought to the surface and spread out over the landfarm area to enhance the remediation. This practice continued for the last six quarters. Also, aggressive tilling was put in place to enhance the remediation of the soils.

As part of an on-going response action plan, anytime treatment or vadoze zone soils were found that showed any visual signs of oily or stained soil, they were removed and placed in the top of the treatment zone for active remediation.

Samples were collected and evaluated for the next quarter's sampling and response actions to be taken. Between the 2010 2nd quarter and 3rd quarter, a decision was made to stop any further material from being placed in the landfarm.

In order to further address the issue of a release, Key actually removed soils from three areas, that previous sampling had indicated high TPH and Chloride levels. These areas were in grids 2N-VZ-5, 6 & 8. Fifty-three (53) yards were excavated and hauled to the JFJ/IEI landfarm OCD permit # NM01-0010B.

Appendix V contains, waste manifest, waste run-ticket, photos and field test results of the material showing this activity.

An issue of contention concerning "releases" may have stemmed from the fact that the actual demarcation line between the original treatment zone and the beginning of the vadose zone is undetermined at this time. There were no records found that accurately measured or logged this elevation, and no permit requirement that required an elevation survey. Therefore, some vadoze zone materials are most likely deeper treatment zone materials placed there years ago.

The original rule 711 permit did not generally require chlorides, a highly mobile ion, to be monitored, and did not require very long chain aliphatic hydrocarbons to be measured with TPH 418.1. BTEX and TPH (GRO/DRO) were generally used to determine if another lift could be added. In addition, the same tests were used to monitor under the treatment zone. So, if the soils generally met the treatment requirements, they would by default met the vadose zone requirements. However, under the new Part 36 rule, both treatment and vadose zone requirements changed.

The depth prescribed for checking under the treatment zone in the original permit was 2-3 feet deep below the remediated soils. The depth for the new part 36 rules, stipulates a depth of 3-4 feet.

So materials, especially salts, and even some non-mobile hydrocarbons, over time just had to move a very short distance thru the disturb area that was being worked, i.e. plowed, etc., into the 3 foot area, which is now considered the clean vadose zone under Part 36. This scenario is most likely one of the causes of the "false positives" of contaminants found in the vadose zone sampling.

The best example of this occurrence can be demonstrated when Key's on-site personnel collected vadose zone samples for the first time and analyzed those samples using the 418.1 test pursuant to the Part 36 rule. In October 2009, Cell #2 was sampled in two locations at a depth of three feet. Both results showed elevated readings of TPH at 19,900 ppm and 22,500 ppm.

So the issue of what constitutes a "release" is certainly a very arbitrary decision on the agency's part, especially when the existing permit did not prevent the application of highly mobile salt laden materials or further application of materials on top of long chain hydrocarbons. In addition, the new release requirements are basically an absolute "No Migration Petition" with no set standards for the vadose zone, other than background, which probably cannot be met in existing landfarms permitted under rule 711.

Hypothetically, if the vadose zone is "one molecule" over the background, then by definition, a release has occurred and corrective actions are required. There are no guidelines, or policies issued by the agency to assist operators in this situation, other than to dig and haul this material to an off-site disposal location.

Part 36 as being interpreted by the agency, may be setting every existing landfarm operator up for total failure. The preferred option, as demonstrated by the agency to date, is to require operators to dig and haul the material off-site. The cost of such an event can be in the $millions of dollars, even for a small landfarm, i.e. less than 5 acres, as Key's permitted NM1-9 landfarm discussed herein.

IV. TPH 418.1 versus New Extended Range Organics Test (ORO)

After four quarters of aggressive remediation, it became obvious that using the method 418.1 for measuring the actual biogradeability of treated soils should be supplemented with additional tests.

The 418.1 tests have been used extensively in the past as a good screening tool to determine if an area has been impacted with miscellaneous hydrocarbons and for delineation purposes. Once an area has been measured with such a screening tool, then other test are generally used to determine the actual measured risk, such as using various test methods such as 8021 BTEX, 8015 M TPH (GRO and DRO) and others.

The 418.1 test attempts to measures all recoverable hydrocarbons, polar and non-polar, including past the C_{40} range. Such long chain hydrocarbons can be very recalcitrant to any further bioremediation and in general have been proven not to be a significant health or ecological risk to the environment.

A number of "false positives" can be generated using this method because certain natural occurring organics, especially polar components, that are a result of plant, animal, or certain bioactive degradation by-products may be measured in this test. This may lead to elevated numbers, especially if the test procedure does not effectively screen out these impurities. In the same token, "false negatives" are quite common, especially on samples with remaining volatile organics and PAH's.

So starting in the second quarter of 2011, duplicate samples were split and sent to Trace Analysis Laboratory in Lubbock, Texas, who has the capability to run the EPA SW-846 8015D ORO (Oil Range Organics) test and the TX1005 ERO (Extended Range Organics) test. The organic ranges for these tests are extended out to C_{40}. The results of this testing is included in Cell #1 and Cell #2 spreadsheets found in *Appendix III under the ORO column.* The ORO tests generally reads 3-10 times less than the 418.1 results, with the average of 7.0 times less being the mean.

Also, it may be possible that the elevated 418.1 numbers are from hydrocarbon-impregnated (i.e. super adsorbed) coal-fines that are commonly produced in this area. If this is the case, then it may explain why most of the soil results of BTEX, GRO, DRO and ORO are at extremely lower levels than the 418.1 TPH levels.

The formula for coal can be approximated at $C_{135}H_{96}O_9NS$. How hydrocarbons interact with coal was not investigated and no exact determination is validated at this time.

The 2500-ppm TPH closure standard is a very conservative standard and generally when used properly is a good-indicator for total environmental protection. However, depending on how the 2500-ppm standard is derived, i.e. measured, has been an on-going controversial issue among professionals and different federal and state agencies, and probably will continue for some time.

There is one general consensus, the standard as determined by a 418.1 test was not meant to apply firming to every site due to various site-specific conditions. The OCD specifically allows different test methods to be utilized upon approval.

Case in point, observations of plant growth, (i.e. seed germination), has occurred in both Cell #1 and Cell #2 landfarm at the current TPH levels. Cell #1 presently has 50% nature plant coverage to date. Cell #2 has been observed to have sprouts just after a rainfall event. Due to the tilling, these plants are generally not allowed to grow in Cell #2. Included in *Appendix VI* shows photos of plant growth in both Cells 1 and 2.

Therefore in this case, Key Energy is hereby requesting the use of the new 8015D (ORO) or TX1005 extended range test to be used in conjunction with the 418.1 test procedure for this site. If approved, Key Energy would consider collecting a comprehensive composite sample from the landfarm treatment zone cells to demonstrate that "No Toxicity" exist by running a full suite of test agreed upon with the agency, if necessary.

V. Report Findings and Conclusions

In order to evaluate the findings of the last six quarters of sampling events, a comprehensive spreadsheet was used to log all data and compare this data to the listed closure standards, background information, and acceptable soil screening levels. These spreadsheets are found in *Appendix III.*

OCD's sampling requirements of using random and discrete sampling techniques coincides with most EPA type protocols. The rule requires the landfarm to be sampled using a stratified method of checking different zones of interest, i.e. treatment zone and vadose zone.

Both zones of interest may have contaminates, or "Constituents Of Concern" (COC's). Therefore, the entire three-dimensional unit of the landfarm must be considered as one stratified unit for evaluation. Averaging the COC's and comparing them to the listed closure standards, background information, or some acceptable soil screening level employed a simplified form of statistical analysis.

The approach was to divide the landfarm up into grids and collect both stratified random and non-random discrete samples pursuant to the rule requirements. The data was logged in a comprehensive spreadsheet discussed above.

There were four stratified zones for the main landfarm (Cell #2) that is listed in the Sample I.D. column of the spreadsheet. They are as follows:

Treatment Zone (TZ) South-Half
Treatment Zone (TZ) North-Half
Vadose Zone (VZ) South-Half
Vadose Zone (VZ) North-Half

Each chemical COC was entered in the spreadsheet for each corresponding quarter sampling event. An example is provided below demonstrating how each COC was evaluated. The example is for chlorides, but the methodology would be similar for any COC.

Starting with the Treatment Zone (TZ) South-Half, Cell 2S-TZ was sampled during the 2nd quarter 2010, dated 07/14/2010, with a chloride value of 265 mg/kg. The next reading for chlorides in this zone was the Cell 2S-C-TZ during the 4th quarter 2010, dated 02/24/2010, had a chloride value of 350 mg/kg. The rest of the values for this zone were, 22.2, 460, 964, 750 and 740, for an average of 507 mg/kg for the seven samples collected.

The next zone was the Treatment Zone (TZ) North-Half, with a chloride average of 438 mg/kg for seven samples collected. The Next zone was the Vadose Zone South-Half, with a chloride average of 418 mg/kg and thirteen samples were collected. The last zone was the Vadose Zone North-Half, with a chloride average of 289 mg/kg for eleven samples.

The spreadsheet shows where some samples are strikeout, as are the chloride samples shown in the Vadose Zone North-Half, 2N-VZ-5 (~~1580~~), 2N-VZ-5-Duplicate (~~2380~~), and so on. These locations are where corrective actions have been taken as described in Section III above, and re-sampled after the contaminated material was removed.

The next row down labeled "*Landfarm Stratified Average of Constituents*" averages the four zones mentioned above. The average for chlorides for the four zones is 413 mg/kg.

The next block of rows are the three background samples for chlorides, 80 mg/kg, 430 mg/kg, 20 mg/kg, and their average of 176.67 mg/kg.

The next row down is the Landfarm Stratified Average of the four zones mentioned above, minus the background average. This value for Chlorides is 236.7 mg/kg.

The next row down is labeled "Treatment Zone Closure Standards" and shows the closure standard of 1000 mg/kg under the Chloride column. Each COC that actually has a rule closure standard is listed in this row under the appropriate chemical. If there is no closure standard, then the symbol "na" is listed, and in some cases the word "background" is listed.

There are COC's that are marked as "na" i.e. GRO and DRO. The reason being is these values are actually included in the total 8015 test, which is included as a numerical standard in the rule.

Several general chemistry parameters, i.e. ph, conductivity, TDS, etc, are not generally COC's and are shown as "na". For some of the metals i.e. like barium, there is no set numerical standard in the rule, so the metal must be compared to the background sample.

The next row down is labeled "*Vadose Zone Closure Standards*", and under each COC there is a comment that Part 29 or Part 30 rule may apply.

Following that row is "*NMED's Soil Screening Levels (SSL's) taken from Table A-1 (December 2009) and is included in Appendix VII* for reference. Under each COC is shown the SSL for a DAF of 20 (mg/kg).

A DAF of 20 scenarios was selected because it closely represents site-specific conditions. Where a DAF of 20 was not available for a COC listed in Table A-1, then another scenario was selected. The three noted exceptions were Cobalt, Lead and Sulfate. Cobalt and Sulfate were referenced to the NM WQCC groundwater standards, and Lead was referenced to the residential soil SSL.

The next three rows labeled, "Criteria 1-*Exceedence of Closure Standard or Background*", "Criteria 2-*Exceedence of Closure Standard or NMED Soil Screening Levels*", *and* "COC's that report a "Yes" for both Criteria 1&2 above" form a "truth table" to determine if any COC warrants special attention.

Any COC that had a final "YES" warrants special attention and was addressed in the next section.

A similar spreadsheet and "truth table" for Cell # 1 was established and is included in Appendix III for review. Cell #1 had limited sampling and only two zones were averaged. But field observations noted that this area had very superficial surface contamination.

Cell #2 had three COC's, they were TPH 418.1 at 12,518.67 mg/kg, Cobalt at .26 mg/kg, and Manganese at 90.73 mg/kg. Cell #1 had three COC's, they were TPH 418.1 at 14,318.17 mg/kg, TPH 8015D (ORO) at 3700 mg/kg, and Manganese at 13.32 mg/kg.

The final evaluation and recommendations will be addressed in the next section below.

VI. Evaluations and Recommendations

Cell #2 Evaluations of COC's:

1. Cobalt: The stratified average value for Cobalt was 2.82 mg/kg. This appears to be statistically the same as the background level that ranged from 1.77 mg/kg to 3.25 mg/kg. Therefore, it is recommended that Cobalt be eliminated as a COC.

2. Manganese: The stratified average value minus background for Manganese was 90.73 mg/kg. The residential soil SSL for Manganese is 10,700 mg/kg (NMED SSL Table A-1). Applying a DAF of 20 to the average number of 90.73, which is computed by dividing by 20 (90.73/20), this would equal 4.54 mg/kg, which is less than the maximum of 5.4 mg/kg shown in the SSL table. Therefore, it is recommended that Manganese be eliminated as a COC.

3. TPH: The stratified average minus background for TPH by 418.1 is currently at approximately 12,000-ppm. However, the stratified ORO average is approximately 1777-ppm, which is below the Part 36 rule standard of 2500-ppm. All other parameters are either nil or deemed as not being a COC.

The reason GRO/DRO/ORO/TX1005 extended range are being used is because they contain the risk and toxic hydrocarbons (BTEX, benzenes, toluenes, and PAHs), where heavier hydrocarbons of these ranges (tar, paraffin, wax) are not considered toxic or a risk to groundwater because they are insoluble in water and to plant bioavailability.

From an ecological standpoint, the landfarm cell has a stratified average SAR of 11. SAR (Sodium Absorption Ratio) is a parameter that generally defines a ratio of sodium (detrimental element) to the

combination of calcium and magnesium (beneficial elements) in relation to known effects on soil dispersibility and thus plant growth. A SAR of 13 has been demonstrated to adequately protect most high desert plants in New Mexico and was adopted by the OCD as part of the landfarm closure rules. Cell #2 meets this standard.

In addition, the stratified average value for SAR was 11 as discussed above. This appears to be statistically within the background levels of SAR that ranged from approximately 6.1 to 14.8.

Therefore it is recommended that Cell #2 be considered for closure.

Cell #1 Evaluations of COC's:

1. Manganese: The stratified average value minus background for Manganese was 13.32 mg/kg. The residential soil SSL for Manganese is 10,700 mg/kg (NMED SSL Table A-1). Applying a DAF of 20 to the average number of 13.32, which is computed by dividing by 20 (13.31/20), this would equal .67 mg/kg, which is less than the maximum of 5.4 mg/kg shown in the SSL table. Therefore, it is recommended that Manganese be eliminated as a COC.

2. TPH: The stratified average minus background for TPH by 418.1 is currently at approximately 14,318-ppm and the stratified ORO average is approximately 3800-ppm, which is above the Part 36 rule standard of 2500-ppm. All other parameters are either nil or deemed as not being a COC.

Cell #1 is only one-fifth of the overall landfarm. The surface inspection revealed a very good vegetation growth on the east half of the cell. Other parts of the cell had approximately 50% coverage. The area with least vegetation was in the northwest side near the access road to Cell #2, being about 30 ft x 30 ft. Appendix VI, show photos of plant growth in Cell #1 and 2.

During the sampling event, the only area that had a darker color was this northwest area. The other areas looked clean, and generally had an "earthy" like olfactory odor. The vadose zone sample was a composite of surface soils, 0-6" (inches) deep, middle soils 28-32" (inches) deep, and bottom-hole sidewall soil samples at about 4-5' feet deep. There were no visual stains or hydrocarbon odors in the excavation and plant roots were observed.

It appears that the small area has very superficial TPH and very low chlorides. There was a slight hit on TPH (GRO/DRO) of 26.68 mg/kg, which is less than the standard of 500 mg/kg. BTEX showed a very slight hit of .32 mg/kg, which is less than the standard of 50 mg/kg.

The SAR in this landfarm cell is very low, ranging from .4 averages on the surface to approximately 7.0 at 4-5 feet deep. This appears to be statistically within the background levels of SAR's that ranged from approximately 6.1 to 14.8 on site.

Key Energy does not recommend disturbing this area since an adequate plant growth has started naturally, ironically under very dry conditions. Therefore it is recommended that no further action be warranted concerning cell #1.

VII. Final Closure Request

Key Energy Services LLC hereby requests that the Oil Conservation Division (OCD) issues a closure approval for the landfarm part of the NM1-9 permit. Key warrants this request because of the following demonstrations:

- The depth to groundwater on top of Crouch Mesa is generally considered to be in excess of 200 feet below the surface. Average depths to groundwater in the surrounding one-mile sections are greater than 120 feet. Ref. NMSEO.
- Corrective actions have been taken to remove the most impacted soils.
- There are no mobile COC's remaining in sufficient quantity that would impact groundwater or be a significant threat to public health or the environment.
- The surface soils do not exceed any COC for either residential or a commercial scenario.
- The stratified zones have the capability of growing native vegetation.
- The site meets the closure standards using simplified statistical analysis.
- The site is currently classified as an active industrial area.

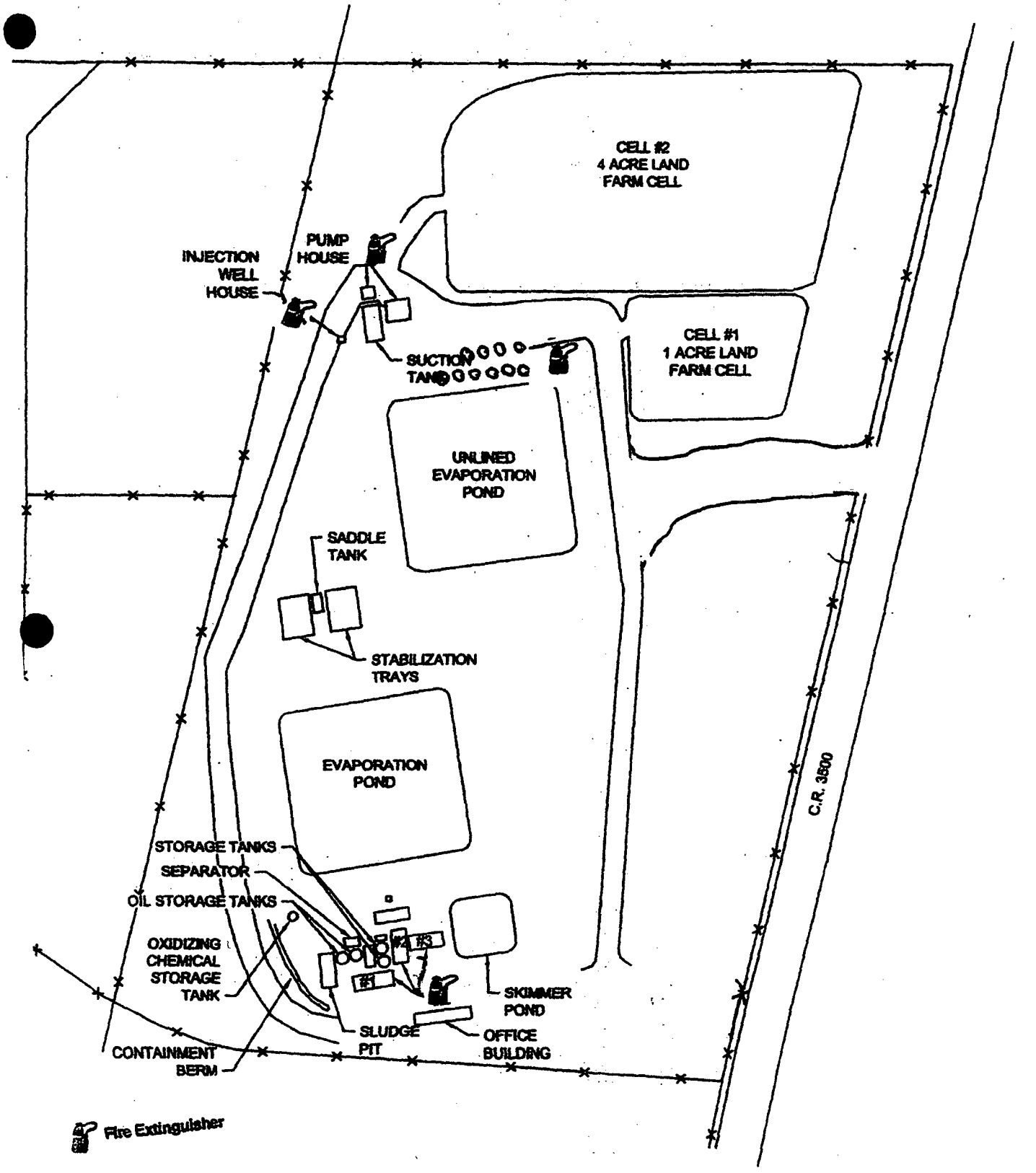
As part of the closure request, Key Energy will not remove the landfarm berms at this time. These bermed areas can be used as staging areas for trucks, tanks, and other various pieces of equipment. They have intrinsic value, as they may become a future process area where secondary containment and berming is required.

Most importantly, the berms currently act as stormwater devices and prevent erosion run-on and runoff from the site. In addition, the present berming is a clean source of soils that may be used for foundation, roadwork repair, emergency source of soil, or other uses unanticipated at this time.

Key Energy will terminate all usage of the landfarm as a remediation unit, will not add any further waste for remediation, and terminate all operational, sampling, monitoring and general reporting requirements. Key Energy also certifies herein, that all landfarm remediated soils, unless it currently meets the treatment zone closure standards of Part 36 of today, will remain on site unless approved by OCD.

Appendix I

- Facility Plot Plan
- Aerial View of Landfarm-2011


CELL #2
4 ACRE LAND
FARM CELL
PUMP
HOUSE
INJECTION
WELL
HOUSE
SUCTION
TANK
CELL #1
1 ACRE LAND
FARM CELL
UNLINED
EVAPORATION
POND
SADDLE
TANK
STABILIZATION
TRAYS
EVAPORATION
POND
C.R. 3500
STORAGE TANKS
SEPARATOR
OIL STORAGE TANKS
OXIDIZING
CHEMICAL
STORAGE
TANK
#1
#2
#3
SKIMMER
POND
SLUDGE
PIT
OFFICE
BUILDING
CONTAINMENT
BERM
Fire Extinguisher


cell #2
cell #1
Key NM1-9
North

Appendix II

Table-Rule 711/Part 36 Required Sampling Periods & Analysis

Table-Rule 711/Part 36 Required Sampling Periods & Analysis

Sample Frequency	1st Qtr	2nd Qtr	3 rd Qtr	4th Qtr	5-years
	Analysis	*Analysis*	*Analysis*	*Analysis*	*Analysis*
Permit 711 requirements					
Treatment Zone	NA	NA	NA	NA	NA
Vadose Zone- 1 random sample /cell 2-3 ft below bottom of treatment zone	TPH/BTEX	TPH/BTEX	TPH/BTEX	TPH/BTEX/Gen Chem/WQCC metals	NA
Part 36 requirements					
Treatment Zone-one composite from 4 discrete sample		TPH/Cl		TPH/Cl	
Vadose Zone- 4 random samples per cell 3-4 ft below bottom of treatment zone		TPH/BTEX/Cl		TPH/BTEX/Cl	WQCC 3103 A&B
Notes: TPH has been 8015M GRO/DRO) for 711 facilities: TPH for Part 36 facilities is generally both 8015M & 418.1	BTEX is 8021	Cl (Chloride) is 300.1		Gen Chem is Major Cations/Anions, Ph, TDS,	WQCC 3101 A&B-Metals

Appendix III- Spreadsheets

Included in this Appendix are "Sample Results Matrix Tables for Key Energy NM1-9 Landfarm" Cells. It also includes the "truth tables" for COC's.

- Landfarm Cell #2
- Landfarm Cell #1

Appendix IV

- Landfarm plot plan grids and typical sampling sheet
- Background sample plot plan
- GPS location with selected photos

DATE: OCT 7, 2010

BY: WAYNE & MARY ANN PRICE

KEY CELL 2N + 25

RANDOM FIELD SELECTION: 2N = (7)
25 = (4)

TEMP 75°

WIND 15-20 MPH SSW ↑ V

SAMPLES COC # 09948

CELL 2N-VZ-1-7

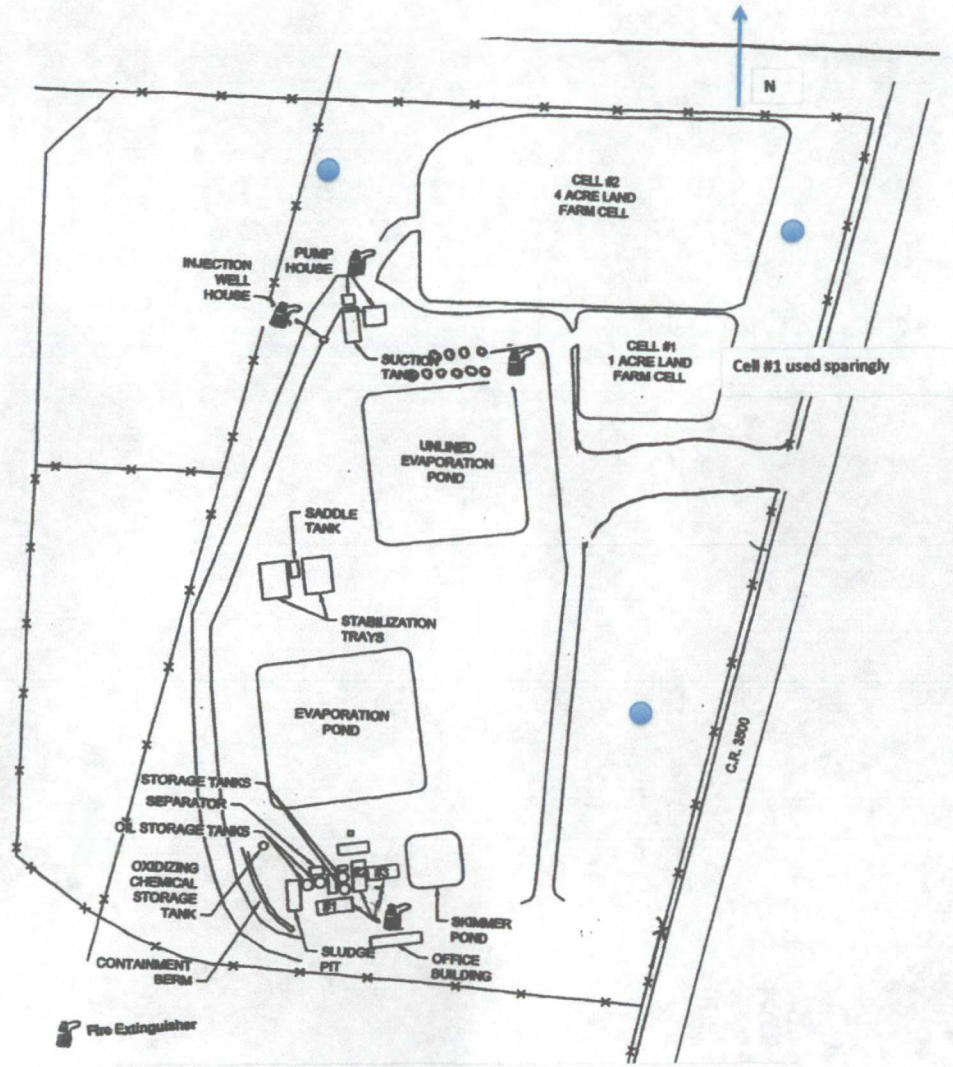
CELL 25-VZ-1-4

KEY LANDFARM 3RD QTR
PER # NM1-9 SAMPLING PLAN

	DEPTH	SAMPLE LOCATIONS LAT-N	Long-W
7	4-5'	36° 45.539'	108° 04.326'
4	4-5'	36° 45.534'	108° 04.279'

LANDFARM PERIMETER LAT/LONG LOCATIONS (ACTIVE PART - INSIDE BERMS)

CENTER	N 36° 45.535'	W 108° 4.321'
SOUTH WEST (SW)	N 36 - 45.507	W 108° - 4.386'
SOUTH MIDDLE (SM)	N 36 - 45.514	W 108° - 4.318'
SOUTH EAST (SE)	N 36 - 45.517	W 108 - 4.273'
EAST (E)	N 36 - 45.539	W 108 - 4.267'
NORTH EAST (NE)	N 36 - 45.559	W 108 - 4.266'
NORTH MIDDLE (NM)	N 36 - 45.557	W 108 - 4.323'
NORTH WEST (NW)	N 36 - 45.554	W 108 - 4.370'
WEST (W)	N 36 - 45.532	W 108 - 4.393'
PUMP HOUSE (PH)	N 36 - 45.491	W 108 - 4.392'



Key Energy Farmington Plot Plan UIC-5 and NM1-9

Sample Background locations will be logged with GPS and Photos

South Background Location: GPS N 36 45.409 W 108 04.269 Background samples were taken 3-5 feet deep and composited from just below the Root zone, Mid-way down, and Bottom.

Northeast background location: GPS N 36 45.537 W 108 04.258

Northwest Background Location: N 36 45.510 W 108 4.386

Appendix V

- Waste manifest
- Waste run-ticket
- Photos and field test results

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-138
Revised 08/01/11

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. Generator Name and Address:
Key Energy Services LLC – 6 Desta Drive Suite 4300, Midland, TX 79705

2. Originating Site:
Key Farmington Disposal Facility-OCD Permit NM1-9

3. Location of Material (Street Address, City, State or ULSTR):
San Juan County RD 350-Crouch Mesa UL E-Section 2, T-29N, R-12W

4. Source and Description of Waste:
Soil from on-site landfarm unit # (205)

Estimated Volume 53 yds yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) 53 yds yd^3 / bbls

5. GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS

I, _____, representative or authorized agent for Wayne Price-Key Energy Services LLC do hereby
Generator Signature
certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☒ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. ***Operator Use Only: Waste Acceptance Frequency*** ☐ ***Monthly*** ☐ ***Weekly*** ☐ ***Per Load***

☐ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☐ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, _____, representative for Key Energy Services, LLC authorize JFJ/IEI to complete
Generator Signature
the required testing/sign the Generator Waste Testing Certification.

I, See C-138 dated 9/23/11 (non-exempt for testing) didn't test for, representative for _____ do hereby certify that
Representative/Agent Signature
representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

5. Transporter: IEI

OCD Permitted Surface Waste Management Facility

w/ this load — thought waste chlorides was associated w/another C-138 for Key yard.

Name and Facility Permit #: **JFJ Landfarm/Industrial Ecosystems, Inc. * Permit #: NM 01-0010B**

Address of Facility: **# 49 CR 3150 Aztec, NM 87410**

Method of Treatment and/or Disposal:

☐ Evaporation ☐ Injection ☐ Treating Plant ☒ Landfarm ☐ Landfill ☐ Other

Waste Acceptance Status:

☒ **APPROVED** ☐ **DENIED** (Must Be Maintained As Permanent Record)

PRINT NAME: M. Marquez TITLE: HSE DATE: 9/23/11 (11/21/11)

SIGNATURE: M. Marquez TELEPHONE NO.: 505-632-1782

Surface Waste Management Facility Authorized Agent

See attached note

Industrial Ecosystems Inc.

Invoice Number: 17840
Invoice Date: Sep 28, 2011
Page: 1

Industrial Ecosystems Inc.
P.O. Box 1202
Flora Vista, NM 87415
PH: (505) 632-1782 Fax: (505) 632-1876
TAX I.D. #94-3200034

PLEASE REMIT PAYMENT TO:
Industrial Ecosystems, Inc.
PO Box 1202
Flora Vista, NM 87415

Sold To: KEY ENERGY
DEPT. 78613
PO BOX 78000
DETROIT, MI 48278-0613

Location: STEVE R.
KEY LIF

Contact	Payment Terms	Due Date	Customer PO
STEVE R.	Net 30 Days	10/28/11	PO #455

Quantity	Description	Unit Price	Extension
	DATE OF SERVICE: 9/23/11		
	IEI WO #17129		
	MATERIAL TRANSPORTED BY IEI, 205		
	DISPOSED OF SOIL		
3.00	12 YARD DUMP TRUCK	220.00	660.00
53.00	DISPOSAL PER YARD	20.00	1,060.00

FOR BILLING INQUIRIES PLEASE CALL
(505) 632-1782

ACCOUNTS ARE DUE NET 30 DAYS. PURCHASER AGREES TO PAY FINANCE CHARGES OF 1.5% PER MONTH (ANNUAL PERCENTAGE RATE OF 18%) OR A MINIMUM CHARGE OF .50 PER MONTH. ACCOUNTS THAT HAVE BEEN PLACED FOR COLLECTION WILL BE CHARGED A $100.00 COLLECTION FEE IN ADDITION TO REASONABLE ATTORNEY FEES AND COLLECTION CHARGES.

Subtotal	1,720.00
Sales Tax	108.58
Total Invoice Amount	1,828.58
TOTAL	**1,828.58**

Soil removed from the Cell #2N-VZ-5&6 zone.

Field TPH results for above soil pile: TPH> Instrument range>6000 ppm
Re-ran 10:1 dilution TPH = 25,720 ppm Chlorides = 544 ppm & 884 ppm.

Soil being loaded in IEI truck.

From: wayne price <wayneprice77@earthlink.net>
Subject: **Re:**
Date: November 21, 2011 1:37:56 PM MST
To: Truck Log In <trucklogin@industrialecosystems.com>

Thanks Marcella,

I went back and checked our field reports, actually the first load sampled between 500-600 ppm Cl's. A later sample collected of some of the last dirt put in the truck was between 800-900 of the area.

Thanks!

On Nov 21, 2011, at 1:30 PM, Truck Log In wrote:

> Wayne:
>
> Here's is the signed C-138 as requested. Please note the one you sent would not print out correctly so I had to cut and paste the information and your signature into another C-138 form. The information should be the same.
>
> If you have any questions or if additional information is needed, please let me know.
>
> Thanks,
> Marcella
> Industrial Ecosystems, Inc.
> (505) 632-1782
> <2696_0001.pdf>

Appendix VI

- Photos of Cells #1 and 2.

Photo of Cell #1 looking East- Dirt pile is where vadose zone sample was collected. Good grass growth on east side of cell, picture shows rag and tumbleweed growth.

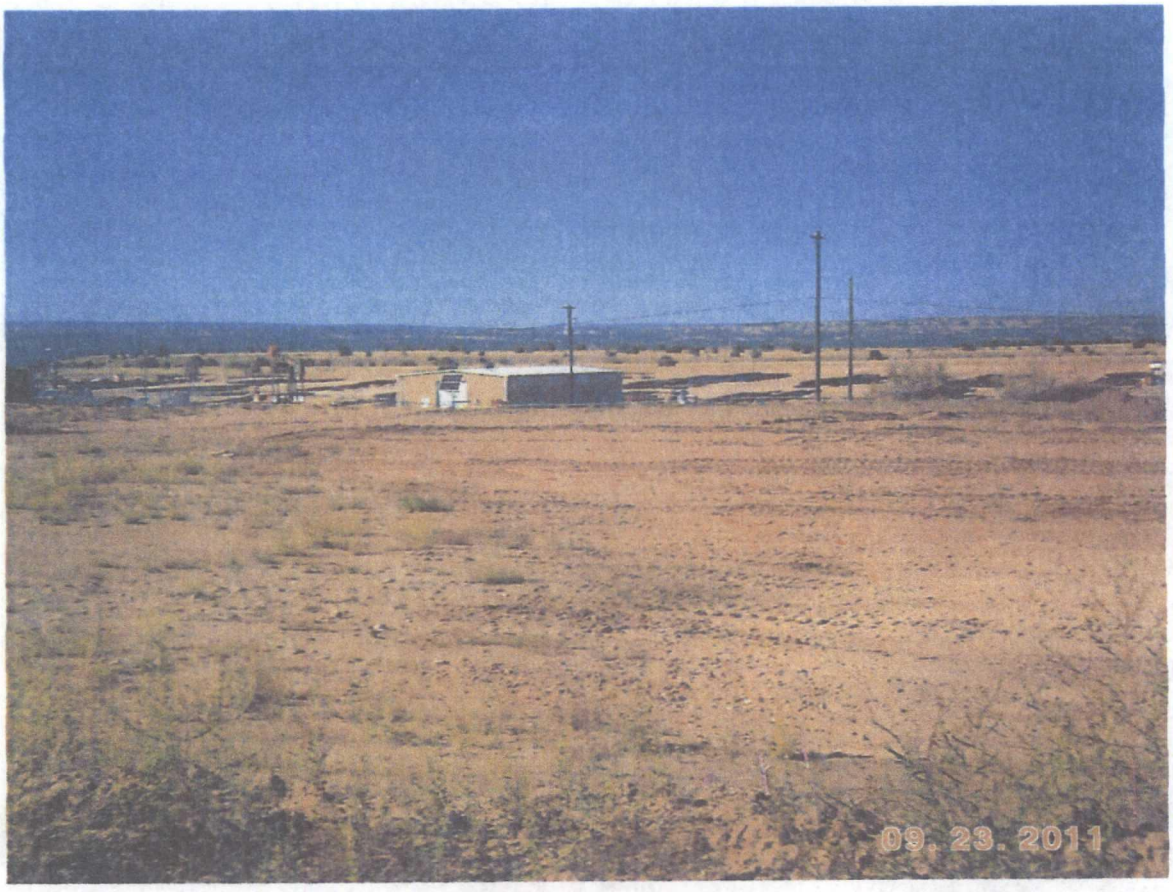


Photo of Cell #2 looking Northwest- Sparse weed growth in area not activity plowed.

Appendix VII

Table A-1

NMED's Soil Screening Levels (SSL's) -December 2009

Table A-1: NMED Soil Screening Levels (December 2009)

(Newly added chemicals are highlighted in green)

Chemical	Residential Soil (mg/kg)	End-point	Industrial/ Occupational Soil (mg/kg)	End-point	Construction Worker Soil (mg/kg)	End-point	Tap Water (ug/L)	End-point	Risk-based SSL for a DAF of 1 (mg/kg)	Risk-based SSL for a DAF of 20 (mg/kg)
Acenaphthene	3.44E+03	ns	3.67E+04	ns	1.86E+04	n	2.19E+03	n	2.05E+01	4.10E+02
Acetaldehyde	2.80E+02	c	1.12E+03	n	1.01E+03	n	1.88E+01	n	3.30E-03	6.60E-02
Acetone	6.75E+04	n	8.51E+05	nls	2.63E+05	nls	2.18E+04	n	3.84E+00	7.69E+01
Acrylonitrile	5.97E+00	c	3.14E+01	c	2.90E+02	n	4.54E-01	c	8.19E-05	1.64E-03
Acetophenone	7.82E+03	ns	1.14E+05	nls	3.10E+04	ns	3.65E+03	n	8.86E-01	1.77E+01
Acrolein	6.46E-01	n	2.06E+00	n	1.83E+00	n	4.16E-02	n	7.41E-06	1.48E-04
Aldrin	2.84E-01	c	1.12E+00	c	7.15E+00	n	3.92E-02	c	6.21E-03	1.24E-01
Aluminum	7.81E+04	n	1.13E+06	nl	4.07E+04	n	3.65E+04	n	5.48E+04	1.10E+06
Anthracene	1.72E+04	ns	1.83E+05	nl	6.68E+04	ns	1.10E+04	n	3.37E+02	6.74E+03
Antimony	3.13E+01	n	4.54E+02	n	1.24E+02	n	1.46E+01	n	6.61E-01	1.32E+01
Arsenic	3.90E+00	c	1.77E+01	c	6.54E+01	n	4.48E-01	c	1.31E-02	2.62E-01
Barium	1.56E+04	n	2.24E+05	nl	4.35E+03	n	7.30E+03	n	3.01E+02	6.03E+03
Benzene	1.55E+01	c	8.54E+01	c	4.71E+02	n	4.13E+00	c	1.85E-03	3.70E-02
Benzidine	2.11E-02	c	8.33E-02	c	7.20E-01	c	2.92E-03	c	1.25E-05	2.50E-04
Benzo(a)anthracene	6.21E+00	c	2.34E+01	c	2.13E+02	c	9.21E-01	c	3.20E-01	6.39E+00
Benzo(a)pyrene	6.21E-01	c	2.34E+00	c	2.13E+01	c	9.21E-02	c	1.09E-01	2.17E+00
Benzo(b)fluoranthene	6.21E+00	c	2.34E+01	c	2.13E+02	c	9.21E-01	c	1.11E+00	2.22E+01
Benzo(k)fluoranthene	6.21E+01	c	2.34E+02	c	2.06E+03	c	9.21E+00	c	1.09E+01	2.17E+02
Beryllium	1.56E+02	n	2.26E+03	n	1.44E+02	n	7.30E+01	n	5.77E+01	1.15E+03
a-BHC (a-Hexachlorocyclohexane, a-HCH)	7.72E-01	c	3.04E+00	c	2.63E+01	c	1.07E-01	c	5.59E-04	1.12E-02
b-BHC (b-Hexachlorocyclohexane, b-HCH)	2.70E+00	c	1.06E+01	c	9.19E+01	c	3.73E-01	c	1.96E-03	3.92E-02
g-BHC (Lindane)	5.17E+00	c	2.29E+01	c	8.30E+01	n	6.11E-01	c	3.20E-03	6.41E-02
1,1-Biphenyl	3.91E+03	ns	5.68E+04	ns	1.55E+04	ns	1.83E+03	n	1.74E+01	3.49E+02
Bis(2-chloroethyl) ether	2.56E+00	c	1.36E+01	c	1.47E+02	c	1.19E-01	c	2.33E-05	4.65E-04
Bis(2-chloroisopropyl) ether	9.15E+01	c	4.54E+02	c	3.10E+03	cs	9.60E+00	c	2.56E-03	5.11E-02
Bis(2-ethylhexyl) phthalate	3.47E+02	c	1.37E+03	c	4.76E+03	n	4.80E+01	c	1.19E+01	2.38E+02
Bis(chloromethyl) ether	6.20E-03	c	3.38E-02	c	4.95E-01	c	6.24E-04	c	1.13E-07	2.26E-06
Boron	1.56E+04	n	2.27E+05	nl	4.65E+04	n	7.30E+03	n	2.40E+01	4.80E+02
Bromodichloromethane	5.25E+00	c	2.92E+01	c	3.50E+03	cs	1.17E+00	c	2.76E-04	5.53E-03

Chemical	Residential Soil (mg/kg)	End-point	Industrial/ Occupational Soil (mg/kg)	End-point	Construction Worker Soil (mg/kg)	End-point	Tap Water (ug/L)	End-point	Risk-based SSL for a DAF of 1 (mg/kg)	Risk-based SSL for a DAF of 20 (mg/kg)
Bromomethane	2.23E+01	n	8.36E+01	n	6.71E+01	n	8.66E+00	n	1.94E-03	3.88E-02
1,3-Butadiene	7.95E-01	c	4.23E+00	c	1.50E+01	n	1.76E-01	c	1.02E-04	2.04E-03
2-Butanone (Methyl ethyl ketone, MEK)	3.96E+04	n	3.69E+05	nl	1.48E+05	nls	7.06E+03	n	1.27E+00	2.53E+01
tert-Butyl methyl ether (MTBE)	8.62E+02	c	4.69E+03	c	6.55E+04	cs	1.25E+02	c	2.29E-02	4.59E-01
Cadmium	7.79E+01	n	1.12E+03	n	3.09E+02	n	1.83E+01	n	1.37E+00	2.75E+01
Carbon disulfide	1.94E+03	ns	7.54E+03	ns	5.89E+03	ns	1.04E+03	n	2.52E-01	5.04E+00
Carbon tetrachloride	4.38E+00	c	2.43E+01	c	1.99E+02	n	1.99E+00	c	7.39E-04	1.48E-02
Chlordane	1.62E+01	c	7.19E+01	c	1.35E+02	n	1.92E+00	c	2.50E-01	5.00E+00
2-Chloroacetophenone	3.10E+05	nl	9.75E+05	nl	2.81E+02	n				
2-Chloro-1,3-butadiene	2.19E+01	n	6.97E+01	n	6.23E+01	n	1.43E+01	n	7.67E-03	1.53E-01
1-Chloro-1,1-difluoroethane	1.57E+05	nls	4.93E+05	nl	4.44E+05	nls	1.04E+05	n	5.41E+01	1.08E+03
Chlorobenzene	5.08E+02	ns	2.14E+03	n	1.58E+03	ns	9.13E+01	n	5.38E-02	1.08E+00
1-Chlorobutane	3.13E+03	ns	4.54E+04	ns	1.24E+04	ns	1.46E+03	n	5.42E-01	1.08E+01
Chlorodifluoromethane	1.50E+05	nls	4.70E+05	nls	4.23E+05	nls	1.04E+05	n	4.36E+01	8.73E+02
Chloroform	5.72E+00	c	3.19E+01	c	6.71E+02	c	1.93E+00	c	4.68E-04	9.36E-03
Chloromethane	3.56E+01	c	1.98E+02	c	1.13E+03	n	1.78E+01	c	4.18E-03	8.36E-02
b-Chloronaphthalene	6.26E+03	ns	9.08E+04	ns	2.48E+04	ns	2.92E+03	n	1.35E+01	2.71E+02
o-Chloronitrobenzene	6.11E+01	n	1.13E+03	n	2.10E+02	n	3.65E+01	n	2.36E-02	4.72E-01
p-Chloronitrobenzene	6.11E+01	n	1.14E+03	n	2.94E+02	n	3.65E+01	n	2.32E-02	4.65E-01
2-Chlorophenol	3.91E+02	n	5.68E+03	n	1.55E+03	n	1.83E+02	n	1.53E-01	3.06E+00
2-Chloropropane	1.11E+03	n	3.50E+03	ns	3.15E+03	ns	2.09E+02	n	5.43E-02	1.09E+00
o-Chlorotoluene	1.56E+03	ns	2.27E+04	ns	6.19E+03	ns	7.30E+02	n	6.24E-01	1.25E+01
Chromium III	1.13E+05	nl	1.57E+06	nl	4.47E+05	nl	5.48E+04	n	9.86E+07	1.97E+09
Chromium VI	2.19E+02	n	2.92E+03	n	4.49E+02	n	1.10E+02	n	2.11E+00	4.22E+01
Chrysene	6.21E+02	c	2.34E+03	c	2.06E+04	c	9.21E+01	c	3.26E+01	6.52E+02
Copper	3.13E+03	n	4.54E+04	n	1.24E+04	n	1.46E+03	n	5.15E+01	1.03E+03
Crotonaldehyde	3.37E+00	c	1.67E+01	c	1.14E+02	c	3.54E-01	c	6.40E-05	1.28E-03
Cumene (isopropylbenzene)	3.21E+03	ns	1.49E+04	ns	1.03E+04	ns	6.79E+02	n	9.86E-01	1.97E+01
Cyanide	1.56E+03	n	2.27E+04	n	6.19E+03	n	7.30E+02	n	7.44E+00	1.49E+02
Cyanogen	3.13E+03	ns	4.54E+04	ns	1.24E+04	ns	1.46E+03	n	2.88E-01	5.76E+00
Cyanogen bromide	7.04E+03	n	1.02E+05	nl	2.79E+04	n	3.29E+03	n	9.42E-01	1.88E+01
Cyanogen chloride	3.91E+03	n	5.68E+04	ns	1.55E+04	ns	1.83E+03	n	3.33E-01	6.65E+00
DDD	2.03E+01	c	7.98E+01	c	6.95E+02	c	2.80E+00	c	6.41E-01	1.28E+01

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DDE	1.43E+01	c	5.63E+01	c	4.90E+02	c	1.98E+00	c	4.52E-01	9.05E+00
DDT	1.72E+01	c	7.81E+01	c	1.42E+02	n	1.98E+00	c	6.53E-01	1.31E+01
Dibenz(a,h)anthracene	6.21E-01	c	2.34E+00	c	2.13E+01	c	9.21E-02	c	3.62E-01	7.24E+00
1,2-Dibromo-3-chloropropane	1.94E-01	c	1.09E+00	c	2.30E+01	c	8.03E-03	c	2.97E-06	5.95E-05
Dibromochloromethane	1.19E+01	c	6.13E+01	c	1.99E+03	c	1.47E+00	c	3.38E-04	6.75E-03
1,2-Dibromoethane	5.74E-01	c	3.14E+00	c	4.86E+01	c	6.53E-02	c	1.58E-05	3.16E-04
1,4-Dichloro-2-butene	4.60E-02	c	2.58E-01	c	5.80E+00	c	1.87E-02	c	8.17E-06	1.63E-04
1,2-Dichlorobenzene	3.01E+03	ns	1.43E+04	ns	9.71E+03	ns	3.70E+02	n	3.13E-01	6.27E+00
1,4-Dichlorobenzene	3.22E+01	c	1.80E+02	c	3.78E+03	cs	4.27E+00	c	3.57E-03	7.14E-02
3,3-Dichlorobenzidine	1.08E+01	c	4.26E+01	c	3.71E+02	c	1.49E+00	c	1.70E-02	3.41E-01
Dichlorodifluoromethane	4.81E+02	n	1.55E+03	ns	1.37E+03	ns	3.95E+02	n	7.23E-01	1.45E+01
1,1-Dichloroethane	6.29E+01	c	3.50E+02	c	6.88E+03	cs	2.42E+01	c	6.09E-03	1.22E-01
1,2-Dichloroethane	7.74E+00	c	4.28E+01	c	7.51E+02	c	1.49E+00	c	3.65E-04	7.30E-03
cis-1,2-Dichloroethene	7.82E+02	n	1.14E+04	ns	3.10E+03	cs	3.65E+02	n	9.43E-02	1.89E+00
trans-1,2-Dichloroethene	2.73E+02	n	9.95E+02	n	8.14E+02	n	1.07E+02	n	3.01E-02	6.03E-01
1,1-Dichloroethene	6.18E+02	n	2.22E+03	ns	1.83E+03	ns	3.40E+02	n	1.19E-01	2.38E+00
2,4-Dichlorophenol	1.83E+02	n	2.05E+03	n	7.15E+02	n	1.10E+02	n	1.37E-01	2.74E+00
1,2-Dichloropropane	1.47E+01	c	8.17E+01	c	1.17E+02	n	3.86E+00	c	1.11E-03	2.23E-02
1,3-Dichloropropene	2.35E+01	c	1.26E+02	c	5.10E+02	n	4.33E+00	c	1.35E-03	2.70E-02
Dicyclopentadiene	5.00E+01	n	1.68E+02	n	1.45E+02	n	1.39E+01	n	4.41E-02	8.81E-01
Dieldrin	3.04E-01	c	1.20E+00	c	1.03E+01	c	4.20E-02	c	6.75E-04	1.35E-02
Diethyl phthalate	4.89E+04	n	5.47E+05	nl	1.91E+05	nl	2.92E+04	n	1.06E+01	2.12E+02
Dimethyl phthalate	6.11E+05	nl	6.84E+06	nl	2.38E+06	nl	3.65E+05	n	8.36E+01	1.67E+03
Di-n-butyl phthalate (Dibutyl phthalate)	6.11E+03	n	6.84E+04	n	2.38E+04	n	3.65E+03	n	8.63E+00	1.73E+02
2,4-Dimethylphenol	1.22E+03	n	1.37E+04	n	4.76E+03	n	7.30E+02	n	9.12E-01	1.82E+01
4,6-Dinitro-o-cresol	6.11E+00	n	6.84E+01	n	2.38E+01	n	3.65E+00	n	3.93E-03	7.85E-02
2,4-Dinitrophenol	1.22E+02	n	1.37E+03	n	4.76E+02	n	7.30E+01	n	5.25E-02	1.05E+00
2,4-Dinitrotoluene	1.57E+01	c	1.03E+02	c	4.76E+02	n	2.17E+00	c	1.56E-03	3.12E-02
2,6-Dintitrotoluene	6.12E+01	n	6.87E+02	n	2.39E+02	n	3.65E+01	n	2.67E-02	5.33E-01
2,4/2,6-Dintrotoluene Mixture	7.15E+00	c	2.82E+01	c	2.45E+02	c	9.88E-01	c	7.22E-04	1.44E-02
1,4-Dioxane	4.42E+02	c	1.74E+03	c	1.97E+04	c	6.11E+01	c	1.07E-02	2.14E-01
1,2-Diphenylhydrazine	6.08E+00	c	2.39E+01	c	2.07E+02	c	8.40E-01	c	4.53E-03	9.06E-02
Endosulfan	3.67E+02	n	4.10E+03	n	1.43E+03	n	2.19E+02	n	7.26E+00	1.45E+02

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Endrin	1.83E+01	n	2.05E+02	n	7.15E+01	n	1.10E+01	n	1.76E-01	3.52E+00
Epichlorohydrin	5.71E+01	n	1.99E+02	n	1.67E+02	n	2.07E+00	n	3.72E-04	7.45E-03
Ethyl acetate	7.04E+04	ns	1.02E+06	nl	2.79E+05	nls	3.29E+04	n	6.02E+00	1.20E+02
Ethyl acrylate	1.33E+02	c	6.62E+02	c	4.52E+03	cs	1.40E+01	c	2.70E-03	5.40E-02
Ethyl chloride	4.36E+04	ns	1.37E+05	nls	1.23E+05	nls	2.09E+04	n	5.42E+00	1.08E+02
Ethyl ether	1.56E+04	ns	2.27E+05	nls	6.19E+04	ns	7.30E+03	n	1.35E+00	2.71E+01
Ethyl methacrylate	7.04E+03	ns	1.02E+05	nls	2.79E+04	ns	3.29E+03	n	6.70E-01	1.34E+01
Ethylbenzene	6.97E+01	c	3.85E+02	c	6.63E+03	cs	1.48E+01	c	1.46E-02	2.91E-01
Ethylene oxide	3.92E+00	c	2.14E+01	c	3.26E+02	c	4.41E-01	c	7.76E-05	1.55E-03
Fluoranthene	2.29E+03	n	2.44E+04	n	8.91E+03	n	1.46E+03	n	1.55E+02	3.11E+03
Fluorene	2.29E+03	ns	2.44E+04	ns	8.91E+03	ns	1.46E+03	n	2.50E+01	5.00E+02
Fluoride	4.69E+03	n	6.81E+04	n	1.86E+04	n	2.19E+03	n		
Furan	7.82E+01	n	1.14E+03	n	3.10E+02	n	3.65E+01	n	1.21E-02	2.43E-01
Heptachlor	1.08E+00	c	4.26E+00	c	3.68E+01	c	1.49E-01	c	1.18E-02	2.35E-01
Hexachlorobenzene	3.04E+00	c	1.20E+01	c	1.03E+02	c	4.20E-01	c	2.21E-03	4.41E-02
Hexachloro-1,3-butadiene	6.11E+01	c	2.46E+02	c	2.38E+02	n	8.62E+00	c	1.47E-02	2.95E-01
Hexachlorocyclopentadiene	3.67E+02	n	4.10E+03	n	8.11E+02	n	2.19E+02	n	6.13E-01	1.23E+01
Hexachloroethane	6.11E+01	n	6.84E+02	n	2.38E+02	n	3.65E+01	n	1.93E-02	3.86E-01
n-Hexane	1.25E+03	ns	4.99E+03	ns	3.84E+03	ns	8.76E+02	n	7.69E+00	1.54E+02
HMX	3.06E+03	n	3.42E+04	n	1.19E+04	n	1.83E+03	n	5.39E+00	1.08E+02
Hydrazine anhydride	2.13E+00	c	1.06E+01	c	6.85E+01	c	2.24E-01	c	4.35E-05	8.71E-04
Hydrogen cyanide	1.56E+03	n	2.27E+04	n	5.08E+03	n	6.20E+00	n	1.08E-03	2.16E-02
Indeno(1,2,3-c,d)pyrene	6.21E+00	c	2.34E+01	c	2.13E+02	c	9.21E-01	c	3.70E+00	7.39E+01
Iron	5.48E+04	n	7.95E+05	nl	2.17E+05	nl	2.56E+04	n	6.46E+02	1.29E+04
Isobutanol (Isobutyl alcohol)	2.35E+04	ns	3.41E+05	nls	9.29E+04	ns	1.10E+04	n	1.93E+00	3.86E+01
Isophorone	5.12E+03	c	2.02E+04	c	4.75E+04	n	7.07E+02	c	1.85E-01	3.69E+00
Lead	4.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	IEUBK				
Lead (tetraethyl-)	6.11E-03	n	6.84E-02	n	2.38E-02	n	3.65E-03	n	1.43E-05	2.86E-04
Maleic hydrazide	3.06E+04	ns	3.42E+05	nl	1.19E+05	nl	1.83E+04	n	3.45E+00	6.89E+01
Manganese	1.07E+04	n	1.45E+05	nl	4.63E+02	n	8.76E+02	n	2.70E-01	5.40E+00
Mercury (elemental)	7.71E+00	ns	4.99E+01	n	6.36E+01	ns	5.62E-01	n	2.93E-02	5.87E-01
Mercury (methyl)	7.82E+00	n	1.14E+02	n	3.10E+01	n	3.65E+00	n		
Methacrylonitrile	6.76E+00	n	6.57E+01	n	2.54E+01	n	1.04E+00	n	2.01E-04	4.02E-03

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Methomyl	1.53E+03	n	1.71E+04	n	5.96E+03	n	9.13E+02	n	1.75E-01	3.49E+00
Methyl acetate	7.82E+04	ns	1.14E+06	nls	3.10E+05	nls	3.65E+04	n	6.53E+00	1.31E+02
Methyl acrylate	2.35E+03	n	3.41E+04	ns	9.29E+03	ns	1.10E+03	n	2.01E-01	4.03E+00
Methyl isobutyl ketone	5.95E+03	ns	7.33E+04	ns	2.31E+04	ns	1.99E+03	n	3.79E-01	7.58E+00
Methyl methacrylate	1.52E+04	ns	5.34E+04	ns	4.46E+04	ns	1.42E+03	n	2.70E-01	5.40E+00
Methyl styrene (alpha)	5.48E+03	ns	7.95E+04	ns	2.17E+04	ns	2.56E+03	n	1.85E+00	3.70E+01
Methyl styrene (mixture)	2.58E+02	ns	1.42E+03	ns	8.65E+02	ns	6.04E+01	n	8.67E-02	1.73E+00
Methylcyclohexane	1.20E+04	ns	3.76E+04	ns	3.38E+04	ns	6.26E+03	n	3.45E+01	6.90E+02
Methylene bromide (Dibromomethane)	7.82E+02	n	1.14E+04	ns	3.10E+03	ns	3.65E+02	n	7.77E-02	1.55E+00
Methylene chloride	1.99E+02	c	1.09E+03	c	1.06E+04	ns	4.80E+01	c	1.07E-02	2.15E-01
Molybdenum	3.91E+02	n	5.68E+03	n	1.55E+03	n	1.83E+02	n	3.70E+00	7.40E+01
Naphthalene	4.50E+01	c	2.52E+02	cs	7.02E+02	ns	1.43E+00	c	4.19E-03	8.39E-02
Nickel	1.56E+03	n	2.27E+04	n	6.19E+03	n	7.30E+02	n	4.77E+01	9.53E+02
Nitrate	1.25E+05	nl	1.82E+06	nl	4.96E+05	nl	5.84E+04	n	1.67E+01	3.35E+02
Nitrite	7.82E+03	n	1.14E+05	nl	3.10E+04	n	3.65E+03	n	7.63E-01	1.53E+01
Nitrobenzene	4.94E+01	c	2.77E+02	c	5.20E+02	n	1.49E+01	n	6.86E-03	1.37E-01
Nitroglycerin	6.11E+00	n	6.84E+01	n	2.38E+01	n	3.65E+00	n	1.35E-03	2.70E-02
N-Nitrosodiethylamine	3.24E-02	c	1.28E-01	c	1.10E+00	c	4.48E-03	c	1.74E-06	3.47E-05
N-Nitrosodimethylamine	9.54E-02	c	3.76E-01	c	1.91E+00	n	1.32E-02	c	3.04E-06	6.08E-05
N-Nitrosodi-*n*-butylamine	7.26E-01	c	3.04E+00	c	2.90E+01	c	2.44E-02	c	6.48E-05	1.30E-03
N-Nitrosodiphenylamine	9.93E+02	c	3.91E+03	c	3.40E+04	c	1.37E+02	c	1.29E+00	2.58E+01
N-Nitrosopyrrolidine	2.32E+00	c	9.12E+00	c	7.88E+01	c	3.20E-01	c	1.32E-04	2.63E-03
m-Nitrotoluene	1.56E+03	n	2.27E+04	ns	6.19E+03	ns	7.30E+02	n	4.65E-01	9.30E+00
o-Nitrotoluene	2.91E+01	c	1.45E+02	c	2.79E+02	n	3.05E+00	c	1.98E-03	3.95E-02
p-Nitrotoluene	2.44E+02	n	1.20E+03	cs	9.53E+02	ns	4.20E+01	c	2.67E-02	5.35E-01
Pentachlorobenzene	4.89E+01	n	5.47E+02	n	1.91E+02	n	2.92E+01	n	9.37E-02	1.87E+00
Pentachlorophenol	2.98E+01	c	1.00E+02	c	1.03E+03	c	5.60E+00	c	2.94E-02	5.87E-01
Perchlorate	5.48E+01	n	7.95E+02	n	2.17E+02	n				
Phenanthrene	1.83E+03	ns	2.05E+04	ns	7.15E+03	ns	1.10E+03	n	8.34E+01	1.67E+03
Phenol	1.83E+04	n	2.05E+05	nl	6.88E+04	n	1.10E+04	n	6.30E+00	1.26E+02
Polychlorinatedbiphenyls	0.00E+00	c			0.00E+00	c				
Aroclor 1016	3.93E+00	n	4.13E+01	n	1.53E+01	n	2.56E+00	n	1.04E-01	2.09E+00
Aroclor 1221	1.76E+00	c	7.06E+00	c	7.13E+01	c	6.81E-02	c	1.07E-03	2.13E-02

Chemical	Residential Soil (mg/kg)	End-point	Industrial/ Occupational Soil (mg/kg)	End-point	Construction Worker Soil (mg/kg)	End-point	Tap Water (ug/L)	End-point	Risk-based SSL for a DAF of 1 (mg/kg)	Risk-based SSL for a DAF of 20 (mg/kg)
Aroclor 1232	1.76E+00	c	7.06E+00	c	7.13E+01	c	6.81E-02	c	1.07E-03	2.13E-02
Aroclor 1242	2.22E+00	c	8.26E+00	c	7.58E+01	c	3.36E-01	c	2.26E-02	4.53E-01
Aroclor 1248	2.22E+00	c	8.26E+00	c	7.58E+01	c	3.36E-01	c	2.22E-02	4.44E-01
Aroclor 1254	1.12E+00	n	8.26E+00	c	4.36E+00	n	3.36E-01	c	3.82E-02	7.64E-01
Aroclor 1260	2.22E+00	c	8.26E+00	c	7.58E+01	c	3.36E-01	c	1.04E-01	2.09E+00
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.41E-01	c	1.27E+00	c	1.17E+01	c	5.17E-02	c	1.64E-02	3.28E-01
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	3.41E+00	c	1.27E+01	c	1.17E+02	c	5.17E-01	c	1.60E-01	3.21E+00
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	5.35E-02	1.07E+00
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	3.17E-02	6.34E-01
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	3.24E-02	6.47E-01
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	3.24E-02	6.47E-01
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	1.14E-03	c	4.24E-03	c	3.89E-02	c	1.72E-04	c	3.17E-05	6.34E-04
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	1.96E-02	3.92E-01
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	1.92E-02	3.84E-01
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	1.96E-02	3.92E-01
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.14E+00	c	4.24E+00	c	3.89E+01	c	1.72E-01	c	1.96E-02	3.92E-01
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.41E-04	c	1.27E-03	c	1.17E-02	c	5.17E-05	c	5.75E-06	1.15E-04
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	3.41E-01	c	1.27E+00	c	1.17E+01	c	5.17E-02	c	3.48E-03	6.97E-02
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.14E-01	c	4.24E-01	c	3.89E+00	c	1.72E-02	c	1.16E-03	2.32E-02
Propylene oxide	2.29E+01	c	1.16E+02	c	8.65E+02	c	2.31E+00	c	4.09E-04	8.18E-03
Pyrene	1.72E+03	ns	1.83E+04	ns	6.68E+03	ns	1.10E+03	n	1.12E+02	2.24E+03
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine	4.42E+01	c	1.74E+02	c	7.15E+02	n	6.11E+00	c	2.85E-03	5.70E-02
Selenium	3.91E+02	n	5.68E+03	n	1.55E+03	n	1.83E+02	n	9.65E-01	1.93E+01
Silver	3.91E+02	n	5.68E+03	n	1.55E+03	n	1.83E+02	n	1.57E+00	3.13E+01
Strontium	4.69E+04	n	6.81E+05	nl	1.86E+05	nl	2.19E+04	n	7.73E+02	1.55E+04
Styrene	8.97E+03	ns	5.12E+04	ns	3.03E+04	ns	1.62E+03	n	1.56E+00	3.12E+01
2,3,7,8-TCDD	4.50E-05	c	2.04E-04	c	2.84E-04	n	5.17E-06	c	1.14E-06	2.27E-05
2,3,7,8-TCDF	3.74E-04	c	1.47E-03	c	1.27E-02	c	5.17E-05	c	6.29E-06	1.26E-04
1,2,4,5-Tetrachlorobenzene	1.83E+01	n	2.05E+02	n	7.15E+01	n	1.10E+01	n	2.14E-02	4.29E-01
1,1,1,2-Tetrachloroethane	2.92E+01	c	1.61E+02	c	2.78E+03	cs	5.24E+00	c	1.73E-03	3.45E-02

Chemical	Residential Soil (mg/kg)	End-point	Industrial/ Occupational Soil (mg/kg)	End-point	Construction Worker Soil (mg/kg)	End-point	Tap Water (ug/L)	End-point	Risk-based SSL for a DAF of 1 (mg/kg)	Risk-based SSL for a DAF of 20 (mg/kg)
1,1,2,2-Tetrachloroethane	7.98E+00	c	4.33E+01	c	5.99E+02	c	6.71E-01	c	2.25E-04	4.50E-03
Tetrachloroethene	6.99E+00	c	3.64E+01	c	3.38E+02	cs	1.08E+00	c	4.49E-04	8.98E-03
Tetryl (Trinitrophenylmethylnitramine)	2.44E+02	n	2.74E+03	n	9.53E+02	n	1.46E+02	n	4.94E-01	9.88E+00
Thallium	5.16E+00	n	7.49E+01	n	2.04E+01	n	2.41E+00	n	1.72E-01	3.43E+00
Toluene	5.57E+03	ns	5.79E+04	ns	2.11E+04	ns	2.28E+03	n	1.38E+00	2.77E+01
Toxaphene	4.42E+00	c	1.74E+01	c	1.50E+02	c	6.11E-01	c	9.11E-02	1.82E+00
Tribromomethane (Bromoform)	6.16E+02	c	2.42E+03	c	4.76E+03	n	8.51E+01	c	6.04E-01	1.21E+01
1,1,2-Trichloro-1,2,2-trifluoroethane	1.04E+05	nls	3.39E+05	nls	2.98E+05	nls	5.92E+04	n	1.78E+02	3.56E+03
1,2,4-Trichlorobenzene	1.43E+02	ns	5.25E+02	ns	4.27E+02	ns	8.16E+00	n	1.02E-02	2.05E-01
1,1,1-Trichloroethane	2.18E+04	ns	7.71E+04	ns	6.43E+04	ns	9.13E+03	n	2.98E+00	5.95E+01
1,1,2-Trichloroethane	1.72E+01	c	9.43E+01	c	1.24E+03	ns	2.42E+00	c	6.74E-04	1.35E-02
Trichloroethylene	4.57E+01	c	2.53E+02	c	4.60E+03	cs	1.65E+01	c	5.30E-03	1.06E-01
Trichlorofluoromethane	2.01E+03	ns	6.76E+03	ns	5.82E+03	ns	1.29E+03	n	9.01E-01	1.80E+01
2,4,5-Trichlorophenol	6.11E+03	n	6.84E+04	n	2.38E+04	n	3.65E+03	n	7.13E+00	1.43E+02
2,4,6-Trichlorophenol	6.11E+01	n	6.84E+02	n	2.38E+02	n	3.65E+01	n	7.13E-02	1.43E+00
1,1,2-Trichloropropane	3.91E+02	n	5.68E+03	ns	1.55E+03	ns	1.83E+02	n	6.11E-02	1.22E+00
1,2,3-Trichloropropane	9.15E-01	c	4.54E+00	c	3.10E+01	c	9.60E-02	c	3.56E-05	7.13E-04
Triethylamine	3.70E+02	n	1.16E+03	n	1.05E+03	n	1.46E+01	n	4.89E-03	9.78E-02
2,4,6-Trinitrotoluene	3.59E+01	n	4.69E+02	n	1.41E+02	n	1.83E+01	n	5.34E-02	1.07E+00
Uranium (soluble salts)	2.35E+02	n	3.41E+03	n	9.29E+02	n	1.10E+02	n		
Vanadium	3.91E+02	n	5.68E+03	n	1.55E+03	n	1.83E+02	n	1.83E+02	3.65E+03
Vinyl acetate	3.65E+03	n	1.19E+04	ns	1.05E+04	ns	4.12E+02	n	7.63E-02	1.53E+00
Vinyl bromide	1.42E+01	n	4.46E+01	n	4.01E+01	n	6.26E+00	n	1.66E-03	3.32E-02
Vinyl chloride	8.65E-01	c	2.59E+01	c	2.48E+02	c	8.61E-01	c	2.88E-04	5.76E-03
m-Xylene	8.29E+03	ns	2.72E+04	ns	2.38E+04	ns	1.43E+03	n	1.23E+00	2.45E+01
o-Xylene	9.55E+03	ns	3.15E+04	ns	2.75E+04	ns	1.43E+03	n	1.23E+00	2.47E+01
Xylenes	1.09E+03	ns	3.61E+03	ns	3.13E+03	ns	2.03E+02	n	1.76E-01	3.52E+00
Zinc	2.35E+04	n	3.41E+05	nl	9.29E+04	n	1.10E+04	n	6.82E+02	1.36E+04

c - carcinogen

n - noncarcinogenc

cs - carcinogenc, SSL may exceed saturation

ns - noncarcinongen, SSL may exceed saturation

nl - noncarcinogen, SSL may exceed ceiling limit

nls - noncarcinogen, SSL may exceed both saturation and ceiling limit

Appendix VIII

The following sampling events include analytical summaries and reports, laboratory QA/QC information, chain-of-custodies, field notes, and selected photos are included as follows:

- 2010 Second Quarter dated 07/14/2010
- 2010 Dirt Pile Sampling dated 07/14/2010
- 2010 Third Quarter dated 10/07/2010
- 2010 Fourth Quarter dated 02/24/2011
- 2011 First Quarter dated 04/21/2011
- 2011 Second Quarter dated 06/30/2011 **
- 2011 Third Quarter dated 09/23/2011 **
- 2011 Background Sampling dated 09/23/2011 **
- 2011 Cell #1 Sampling dated 09/23/2011 **

** Includes 8015D ORO/TX1005 ERO results included.

ORO is Oil Range Organics; ERO is Extended Range Organics

Appendix VIII- 2010 Second Quarter Sampling

- Sampling Results
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-TZ	Date Reported:	07-19-10
Laboratory Number:	55146	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**7.9**	**0.2**
Diesel Range (C10 - C28)	**11.2**	**0.1**
Total Petroleum Hydrocarbons	**19.1**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55148	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fx (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55149	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55150	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505)632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55151	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	
Preservative:	Cool	Date Analyzed:	
Condition:	Intact	Analysis Requested:	

fixed Sample ID Cell-2S- to Cell-2S-

Parameter	Concentration (mg/Kg)	
Gasoline Range (C5 - C10)	**2.1**	**0.2**
Diesel Range (C10 - C28)	**2.3**	**0.1**
Total Petroleum Hydrocarbons	**4.4**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55152	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (505)632-1865

envirotech
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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55153	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55154	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**8.3**	**0.2**
Diesel Range (C10 - C28)	**17.5**	**0.1**
Total Petroleum Hydrocarbons	**25.8**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505)632-1865 | lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55155	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-15-10 QA/QC	Date Reported:	07-19-10
Laboratory Number:	55148	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-15-10
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	05-07-07	9.9960E+002	1.0000E+003	0.04%	0 - 15%
Diesel Range C10 - C28	05-07-07	9.9960E+002	1.0000E+003	0.04%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	252	101%	75 - 125%
Diesel Range C10 - C28	ND	250	252	101%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 55146, 55148-55155**

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-TZ	Date Reported:	07-19-10
Laboratory Number:	55147	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-19-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**28.3**	**0.2**
Diesel Range (C10 - C28)	**99.7**	**0.1**
Total Petroleum Hydrocarbons	**128**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5706 US Highway 64, Farmington, NM 87401 | ph (505) 632-0615 fx (800) 362-1879 fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-19-10 QA/QC	Date Reported:	07-19-10
Laboratory Number:	55172	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-19-10
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	05-07-07	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	05-07-07	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**8.4**	**8.3**	**1.2%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**99.9%**	**75 - 125%**
Diesel Range C10 - C28	**8.4**	**250**	**273**	**106%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 55147; 55172-55173; 55179-55180; 55189**

Analyst

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55148	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55149	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**6.2**	**0.9**
Toluene	**7.9**	**1.0**
Ethylbenzene	**8.1**	**1.0**
p,m-Xylene	**14.9**	**1.2**
o-Xylene	**11.4**	**0.9**
Total BTEX	**48.5**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55150	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55151	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55152	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55153	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55154	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505)632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55155	Date Sampled:	07-14-10
Chain of Custody:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0715BBLK QA/QC	Date Reported:	07-19-10
Laboratory Number:	55148	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-15-10
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	8.2897E+006	8.3063E+006	0.2%	ND	0.1
Toluene	6.6921E+006	6.7056E+006	0.2%	ND	0.1
Ethylbenzene	4.8308E+006	4.8405E+006	0.2%	ND	0.1
p,m-Xylene	1.2135E+007	1.2159E+007	0.2%	ND	0.1
o-Xylene	4.2395E+006	4.2480E+006	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	50.3	101%	39 - 150
Toluene	ND	50.0	50.7	101%	46 - 148
Ethylbenzene	ND	50.0	50.6	101%	32 - 160
p,m-Xylene	ND	100	100	99.7%	46 - 148
o-Xylene	ND	50.0	49.4	98.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 55148-55155**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505)632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-TZ	Date Reported:	07-19-10
Laboratory Number:	55146	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**86,800**	**443**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-TZ	Date Reported:	07-19-10
Laboratory Number:	55147	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**49,500**	**177**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55148	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**117**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55149	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**23.6**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55150	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**2,730**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55151	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**6,650**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-1	Date Reported:	07-19-10
Laboratory Number:	55152	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**347**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-2	Date Reported:	07-19-10
Laboratory Number:	55153	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**51.7**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-3	Date Reported:	07-19-10
Laboratory Number:	55154	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**11,100**	**177**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-4	Date Reported:	07-19-10
Laboratory Number:	55155	Date Sampled:	07-14-10
Chain of Custody No:	9944	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**158**	**17.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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EPA METHOD 418.1
TOTAL PETROLEUM HYROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	07-19-10
Laboratory Number:	06-15-TPH.QA/QC 55149	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	07-15-10
Preservative:	N/A	Date Extracted:	07-15-10
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	07-15-10	07-15-10	1,846	1,770	4.1%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	17.7

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	23.6	25.1	6.4%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	23.6	2,000	1,850	91.4%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 55146-55155**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fx (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-TZ	Date Reported:	07-19-10
Lab ID#:	55146	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	265

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-TZ	Date Reported:	07-19-10
Lab ID#:	55147	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	165

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-1	Date Reported:	07-19-10
Lab ID#:	55148	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	**175**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 | Fax (505) 632-1865

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-2	Date Reported:	07-19-10
Lab ID#:	55149	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	375

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983., Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-3	Date Reported:	07-19-10
Lab ID#:	55150	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	410

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

David Thompson
Analyst

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2S-VZ-4	Date Reported:	07-19-10
Lab ID#:	55151	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	**130**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-1	Date Reported:	07-19-10
Lab ID#:	55152	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	**5**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-2	Date Reported:	07-19-10
Lab ID#:	55153	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	55

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-3	Date Reported:	07-19-10
Lab ID#:	55154	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	235

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2N-VZ-4	Date Reported:	07-19-10
Lab ID#:	55155	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-16-10
Condition:	Intact	Chain of Custody:	9944

Parameter	Concentration (mg/Kg)
Total Chloride	180

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**
TZ=Treatment Zone; VZ=Vadose Zone; S=South; N=North

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fx (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

CHAIN OF CUSTODY RECORD

09744

Client: KEY ENERGY	Project Name / Location: KEY FARMINGTON NM1-9 LANDFARM
Client Address: 5651 US Hwy 64 87401	Sampler Name: WAYNE PRICE — PRICELLC
Client Phone No.: 1-505-715-2809	Client No.: 98065-0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative: None	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
CELL-2S-TZ	7-14-10	10:14 AM	55146	Soil Solid Sludge Aqueous	4oz -2-			X	X	X							X	X				✓	✓
CELL-2N-TZ	"	10:27 AM	55147	Soil Solid Sludge Aqueous	4oz -2-			X	X	X							X	X				✓	✓
CELL-2S-VZ-1	"	10:49 AM	55148	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2S-VZ-2	"	12:28 PM	55149	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2S-VZ-3	"	12:38 PM	55150	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2S-VZ-4	"	12:54 PM	55151	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2N-VZ-1	"	1:02 PM	55152	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2N-VZ-2	"	1:23 PM	55153	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2N-VZ-3	"	1:43 PM	55154	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓
CELL-2N-VZ-4	"	1:58 PM	55155	Soil Solid Sludge Aqueous	11			X	X	X							X	X				✓	✓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
WAYNE PRICE	7-14-10	2:15 PM		7/14/10	1415
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

TZ = TREATMENT ZONE
VZ = VADOSE ZONE

S = SOUTH
N = NORTH

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- NOT SELECTED

SEE ATTACHED - LANDFARM PLOT PLAN 09744 FOR VZ SAMPLE LOCATIONS

email Wayne & H.C. Price w/ results.

ACCENT Printing • Form 28-0807

Key Energy Farmington Permit NM1-9 Landfarm Sample Report-2nd Quarter 2010

Sample Results Matrix Table for 2nd QTR 2010

Sample ID:	Date:	Sample Matrix	Chlorides Total mg/kg	TPH 418.1 Total mg/kg	TPH 8015 Total mg/kg	GRO mg/kg	DRO mg/kg	BTEX 8021 Total mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl-Ben mg/kg	M-P,Xylene mg/kg	O-Xylene mg/kg
Treatment Zone-TZ													
Cell-2S-TZ	"7/14/2010"	Soil	265	86,800	19.1	7.9	11.2	ND	ND	ND	ND	ND	ND
Cell-2N-TZ	"7/14/2010"	Soil	165	49,500	128	28.3	99.7	48.5	6.2	7.9	8.1	14.9	11.4
		Average	215	68,150									
Vadose Zone-VZ													
Cell-2S-VZ-1	"7/14/2010"	Soil*	175	117	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cell-2S-VZ-2	"7/14/2010"	Soil	375	23.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cell-2S-VZ-3	"7/14/2010"	Soil	410	2730	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cell-2S-VZ-4	"7/14/2010"	Soil	130	6650	4.4	2.1	2.3	ND	ND	ND	ND	ND	ND
Cell-2N-VZ-1	"7/14/2010"	Soil	5	347	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cell-2N-VZ-2	"7/14/2010"	Soil*	55	51.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cell-2N-VZ-3	"7/14/2010"	Soil*	235	11,100	25.8	8.3	17.5	ND	ND	ND	ND	ND	ND
Cell-2N-VZ-4	"7/14/2010"	Soil*	180	158	ND	ND	ND	ND	ND	ND	ND	ND	ND
		Average	196	2647									
Dirt Pile	"7/14/2010"	Soil*	400	27,800	1.3	ND	1.3	11.2	ND	ND	ND	6.1	5.1

Notes and Comments See Sample Field Notes below for sample collection location grids.
Example: Cell-2N-VZ-1 was collected from the North half of Cell #2 in grid #7.

>Soil* these areas were noted to have dark stained soils with moderate hydrocarbon odors approximately 1-2 feet deep in places. See attached photos

>Cell-2S is South half of Cell #2
>Cell-2N is North half of Cell #2

>Cell #1 not sampled out of service for several years

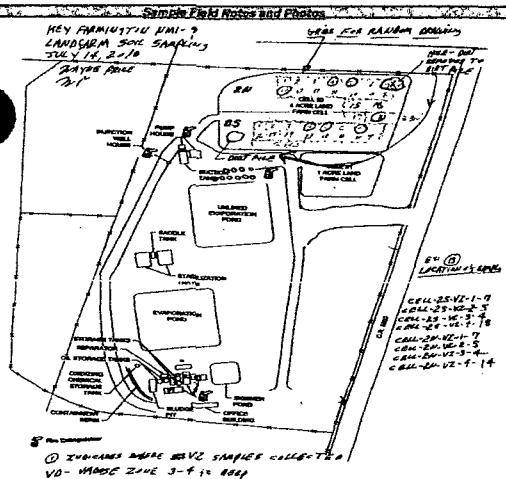
>Treatment Zone samples were 1 composite from 4 discrete samples
>Vadose Zone samples were randomly selected using "out of the hat number draw" for grids- sample taken between 3-4 feet below the treatment zone-
>Dirt Pile sample was 1 composite from 12 discrete samples
>Background Samples not yet established

Highlighted cells requires action Action: More aggressive tilling

Rule 711/Part 36 Required Sampling Periods & Analysis

Sample Frequency	1st Qtr Analysis	2nd Qtr Analysis	3 rd Qtr Analysis	4th Qtr Analysis	5-years Analysis
Permit 711 requirements					
Treatment Zone	NA	NA		NA	NA
Vadose Zone- 1 random sample 2+3 ft below bottom of treatment zone	TPH/BTEX	TPH/BTEX	TPH/BTEX	TPH/BTEX/Gen Chem/WQCC metals	NA
Part 36 requirements					
Treatment Zone-one composite from 4 discrete samples		TPH/Cl		TPH/Cl	
Vadose Zone- 4 random samples per cell 3+4 ft below bottom of treatment zone		TPH/BTEX/Cl		TPH/BTEX/Cl	WQCC 3103 A&B

Sample Field Notes and Photos



Key Energy Services NM1-9 SWM
Landfarm Sampling and Safety Plan: (SEMI-ANNUAL)+ (QUARTERLY)

Date: July 14 2010 C-0-C # 07949

Objectives:

Collect soil samples pursuant to requirements of the NMOCD rule 711 and Part 36 permit requirements

Procedure and protocol:

All samples will be collected and analyzed per approved EPA methods. QA/QC will be performed in the field, transport, delivery and analysing of the samples.

Standard industry sampling SOP's and protocols will be used in equipment cleaning, personal protection, sample containers, prevention of cross-contamination, and proper preservation, etc.

Sampling personnel will have previous experience in collecting EPA type samples. On-the-job training will be conducted during this exercise for Key and other employees responsible for future sample collection

Landfarm description:

Landfarm cell #2 is divided in two sections, the south and north sections. In the past these samples have been labeled Cell #1 and Cell #2. The south samples will be labeled cell 2-S, and the north samples will be labeled cell 2-N. Landfarm cell #1 is an old inactive cell

Sample description, type and locations

Vadose Zone Sampling:

The existing permit conditions per the rule 711 requires Treatment Zone Sampling (which is actually Vadose zone) a minimum of one random soil sample to be collected per cell (+5pt) quarterly and analyzed for TPH(418.1 or 8015m) and BTEX (8020) to be collected 2-3 feet below the landfarm surface ground surface.

The relative new rule part 36 for landfarms requires that vadose zone sampling be a minimum of four random soil samples collected per cell (+5 pt) semi-annually and analyzed for TPH(418.1, 8015m DRO+GRO), BTEX (8020), and Chlorides (EPA 300.1) to be collected 3-4 feet below the landfarm original ground surface

7-14-10

In order to satisfy both permit conditions, the following vadose samples will be collected and analyzed for the following constituents:

Cell #2-S- 4 random selected points, 3-4 feet deep, analyzed for TPH 418.1, 8015m DRO/GRO, BTEX (8021), Chlorides 300.1.
Cell #2-N 4 random selected points, 3-4 feet deep. Analyzed same as cell #2-S.

Treatment Zone Sampling:

Part 36 also requires semi-annual sampling of the treated soil (Treatment Zone). One composite soil sample consisting of 4 discrete soil samples must be collected and analyzed for TPH 418.1 or 8015m DRO/GRO and Chlorides EPA 300.1.

In order to satisfy both permit conditions, the following treatment zone soil samples will be collected and analyzed for the following constituents:

Cell #2-S- 1 composite soil sample consisting of 4 discrete soil samples collected from the treatment zone surface to approximately one foot deep and analyzed for TPH 418.1, 8015m DRO/GRO, Chlorides 300.1.
Cell #2-N 1 composite soil sample consisting of 4 discrete soil samples collected from the treatment zone surface to approximately one foot deep and analyzed for TPH 418.1, 8015m DRO/GRO, Chlorides 300.1.

Selected Sampling:

Located in the SW corner of Cell #2-N is a dirt pile that was taken from the NE corner of Cell #2-N, as it was considered to be high in Chlorides. This pile will be sampled to determine the current status.

Dirt Pile will be sampled by taking 12 random selected samples and composite into one and will be analyzed for TPH 418.1, 8015m DRO/GRO, BTEX (8021), Chlorides 300.1.

Note: Random sample selection will be determined in the field using a simple "out of the hat" drawing. 4 samples will be drawn from 16 equal areas from each cell. See attached plot plan
18

7-14-10

Safety Plan:

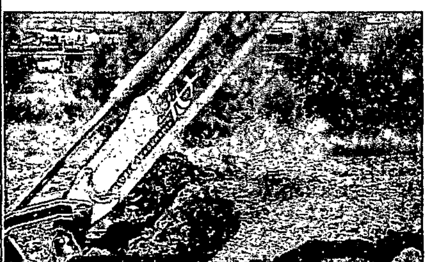
An on-site tailgate safety meeting will be conducted by the Key Personal describing on-site hazards.

Price LLC will include any safety issues concerning sampling.

Note all Hazards: WIND "CALM" TEMP 70°F–95°F
[illegible]
[illegible]

Sign-off: Attending:
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Below-Photo of Cell-2N-VZ-2 shows oily stained dirt about one foot under surface.



Below-Photo of Cell-2N-VZ-3 shows oily stained dirt about one foot under surface.

Below-Photo of Coll-2H-V2-4 shows oily stained dirt about one foot under surface.

Appendix VIII- 2010 Dirt Pile Sampling

- Sampling Results
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Dirt Pile	Date Reported:	07-15-10
Laboratory Number:	55156	Date Sampled:	07-14-10
Chain of Custody No:	9945	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**1.3**	**0.1**
Total Petroleum Hydrocarbons	**1.3**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph: (505) 632-0615 Fax: (505) 632-1865

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-15-10 QA/QC	Date Reported:	07-15-10
Laboratory Number:	55143	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-15-10
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	05-07-07	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	05-07-07	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**255**	**102%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**252**	**101%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 55141, 55143-55145 and 55156**

Analyst

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Dirt Pile	Date Reported:	07-15-10
Laboratory Number:	55156	Date Sampled:	07-14-10
Chain of Custody:	9945	Date Received:	07-14-10
Sample Matrix:	Soil	Date Analyzed:	07-15-10
Preservative:	Cool	Date Extracted:	07-14-10
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**6.1**	**1.2**
o-Xylene	**5.1**	**0.9**
Total BTEX	**11.2**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Land Farm**

Analyst

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0715BBLK QA/QC	Date Reported:	07-15-10
Laboratory Number:	55143	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-15-10
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	7.9583E+005	7.9742E+005	0.2%	ND	0.1
Toluene	8.7319E+005	8.7494E+005	0.2%	ND	0.1
Ethylbenzene	7.8172E+005	7.8329E+005	0.2%	ND	0.1
p,m-Xylene	1.8923E+006	1.8961E+006	0.2%	ND	0.1
o-Xylene	6.6287E+005	6.6420E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	2.2	2.0	9.1%	0 - 30%	1.2
o-Xylene	5.1	5.1	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	50.2	100%	39 - 150
Toluene	ND	50.0	49.5	99.0%	46 - 148
Ethylbenzene	ND	50.0	49.4	98.8%	32 - 160
p,m-Xylene	2.2	100	99.1	98.9%	46 - 148
o-Xylene	5.1	50.0	50.0	99.0%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 55141-55143 and 55156**

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Dirt Pile	Date Reported:	07-15-10
Laboratory Number:	55156	Date Sampled:	07-14-10
Chain of Custody No:	9945	Date Received:	07-14-10
Sample Matrix:	Soil	Date Extracted:	07-15-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**27,800**	**151**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Land Farm**

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	07-15-10
Laboratory Number:	07-15-TPH.QA/QC 55156	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	07-15-10
Preservative:	N/A	Date Extracted:	07-15-10
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	06-30-10	07-15-10	1,716	1,770	3.1%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	15.1

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	27,800	23,400	15.8%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	27,800	2,000	24,700	82.9%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 55156, 55141, 55143 and 55159**

Analyst

Review

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Dirt Pile	Date Reported:	07-15-10
Lab ID#:	55156	Date Sampled:	07-14-10
Sample Matrix:	Soil	Date Received:	07-14-10
Preservative:	Cool	Date Analyzed:	07-15-10
Condition:	Intact	Chain of Custody:	9945

Parameter	Concentration (mg/Kg)
Total Chloride	**400**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NMI-9 Land Farm**

Analyst

Review

CHAIN OF CUSTODY RECORD

0994~~84~~45

Client: KEY ENERGY	Project Name / Location: KEY FARMINGTON NM1-9 LANDFARM
Client Address: 5651 US HWY 64 87401	Sampler Name: WAYNE PRICE - PRICE LLC
Client Phone No.: 1-505-715-2809	Client No.: 98065 - 0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative HgCl2	Preservative HCl	Preservative Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
DIRT PILE	7-14-10	11:10 AM	55156	(Soil) Solid Sludge Aqueous	4oz 2			X	X	X							X	X				✓	✓
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
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				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
WAYNE PRICE [signature]	7-14-10	2:15 pm	[signature]	7/14/10	1415
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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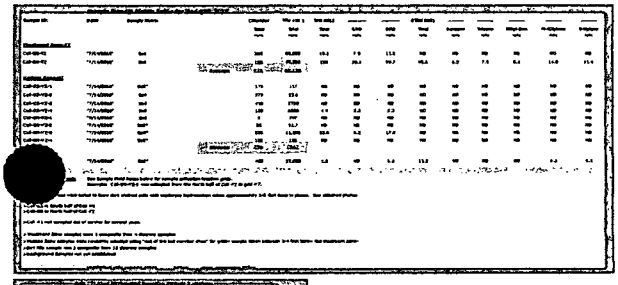

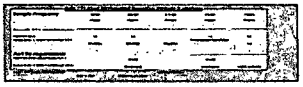

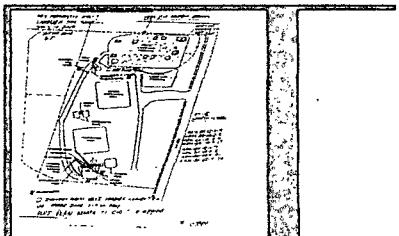

Appendix VIII- 2010 Third Quarter Sampling

- Sampling Results
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2N-VZ-1-7	Date Reported:	10-11-10
Laboratory Number:	56115	Date Sampled:	10-07-10
Chain of Custody No:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Extracted:	10-08-10
Preservative:	Cool	Date Analyzed:	10-11-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fx (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2S-VZ-1-4	Date Reported:	10-11-10
Laboratory Number:	56116	Date Sampled:	10-07-10
Chain of Custody No:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Extracted:	10-08-10
Preservative:	Cool	Date Analyzed:	10-11-10
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	10-11-10 QA/QC	Date Reported:	10-11-10
Laboratory Number:	56109	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-11-10
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	10-11-10	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	10-11-10	9.9960E+002	1.0000E+003	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**232**	**92.7%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**240**	**96.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 56109, 56113, 56115-56116, 56122**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fx (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2N-VZ-1-7	Date Reported:	10-11-10
Laboratory Number:	56115	Date Sampled:	10-07-10
Chain of Custody:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Analyzed:	10-11-10
Preservative:	Cool	Date Extracted:	10-08-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**1.5**	**0.9**
Total BTEX	**1.5**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**102 %**
	1,4-difluorobenzene	**92.9 %**
	Bromochlorobenzene	**103 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2S-VZ-1-4	Date Reported:	10-11-10
Laboratory Number:	56116	Date Sampled:	10-07-10
Chain of Custody:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Analyzed:	10-11-10
Preservative:	Cool	Date Extracted:	10-08-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**2.2**	**0.9**
Total BTEX	**2.2**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**97.0 %**
	1,4-difluorobenzene	**105 %**
	Bromochlorobenzene	**105 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	1011BBLK QA/QC	Date Reported:	10-11-10
Laboratory Number:	56120	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-11-10
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.6566E+005	3.6639E+005	0.2%	ND	0.1
Toluene	4.3456E+005	4.3543E+005	0.2%	ND	0.1
Ethylbenzene	3.9461E+005	3.9540E+005	0.2%	ND	0.1
p,m-Xylene	9.3605E+005	9.3793E+005	0.2%	ND	0.1
o-Xylene	3.5110E+005	3.5181E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	3.6	3.5	2.8%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	276	292	5.9%	0 - 30%	1.2
o-Xylene	82.5	81.4	1.3%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	%Recovery	Accept Range
Benzene	ND	500	585	117%	39 - 150
Toluene	3.6	500	554	110%	46 - 148
Ethylbenzene	ND	500	592	118%	32 - 160
p,m-Xylene	276	1000	1,510	118%	46 - 148
o-Xylene	82.5	500	663	114%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 56109, 56113, 56115-56116, 56118, 56120-56122

Analyst

Review

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2N-VZ-1-7	Date Reported:	10-11-10
Laboratory Number:	56115	Date Sampled:	10-07-10
Chain of Custody No:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Extracted:	10-08-10
Preservative:	Cool	Date Analyzed:	10-08-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**51.3**	**39.4**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2S-VZ-1-4	Date Reported:	10-11-10
Laboratory Number:	56116	Date Sampled:	10-07-10
Chain of Custody No:	9948	Date Received:	10-07-10
Sample Matrix:	Soil	Date Extracted:	10-08-10
Preservative:	Cool	Date Analyzed:	10-08-10
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**50.0**	**39.4**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2N-VZ-1-7	Date Reported:	10-08-10
Lab ID#:	56115	Date Sampled:	10-07-10
Sample Matrix:	Soil	Date Received:	10-07-10
Preservative:	Cool	Date Analyzed:	10-08-10
Condition:	Intact	Chain of Custody:	9948

Parameter	Concentration (mg/Kg)
Total Chloride	**240**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell 2S-VZ-1-4	Date Reported:	10-08-10
Lab ID#:	56116	Date Sampled:	10-07-10
Sample Matrix:	Soil	Date Received:	10-07-10
Preservative:	Cool	Date Analyzed:	10-08-10
Condition:	Intact	Chain of Custody:	9948

Parameter	Concentration (mg/Kg)
Total Chloride	**65**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM 1-9 Land Farm**

Analyst

Review

CHAIN OF CUSTODY RECORD

09948

Client:	Project Name / Location:
KEY ENERGY	KEY FARMINGTON NM1-9 LANDFARM
Client Address: 5651 US HWY 64 87401	Sampler Name: WAYNE PRICE PRICE LLC
Client Phone No.: 1-505-715-2809	Client No.: 98065-0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: H_2SO_4	Preservative: HCl	Preservative: Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
CELL 2N-VZ-1-T	10-7-10	1:47 P	56115	(Soil) Solid Sludge Aqueous	1/40Z			✓	X	X							X	X				Y	Y
CELL 2S-VZ-1-T	10-7-10	2:12 P	56116	(Soil) Solid Sludge Aqueous	1/40Z			✓	X	X							X	X				Y	Y
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Wayne Price	10-7-10	3:00 PM		10/07/10	3100PM
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

TZ = TREATMENT ZONE
VZ = VADOSE ZONE
S = SOUTH
N = NORTH

SEE ATTACHED-LANDFARM PLOT PLAN 09948 FOR VZ SAMPLE LOCATIONS

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ACCENT Printing • Form 28-0807

DATE: OCT 7, 2010

BY: WAYNE & MARY ANN PRICE

KEY CELL 2N + 2S

RANDOM FIELD SELECTION: 2N = (1) 2S = (4)

TEMP 75°

WIND 15-20 MPH SSW ↑ V

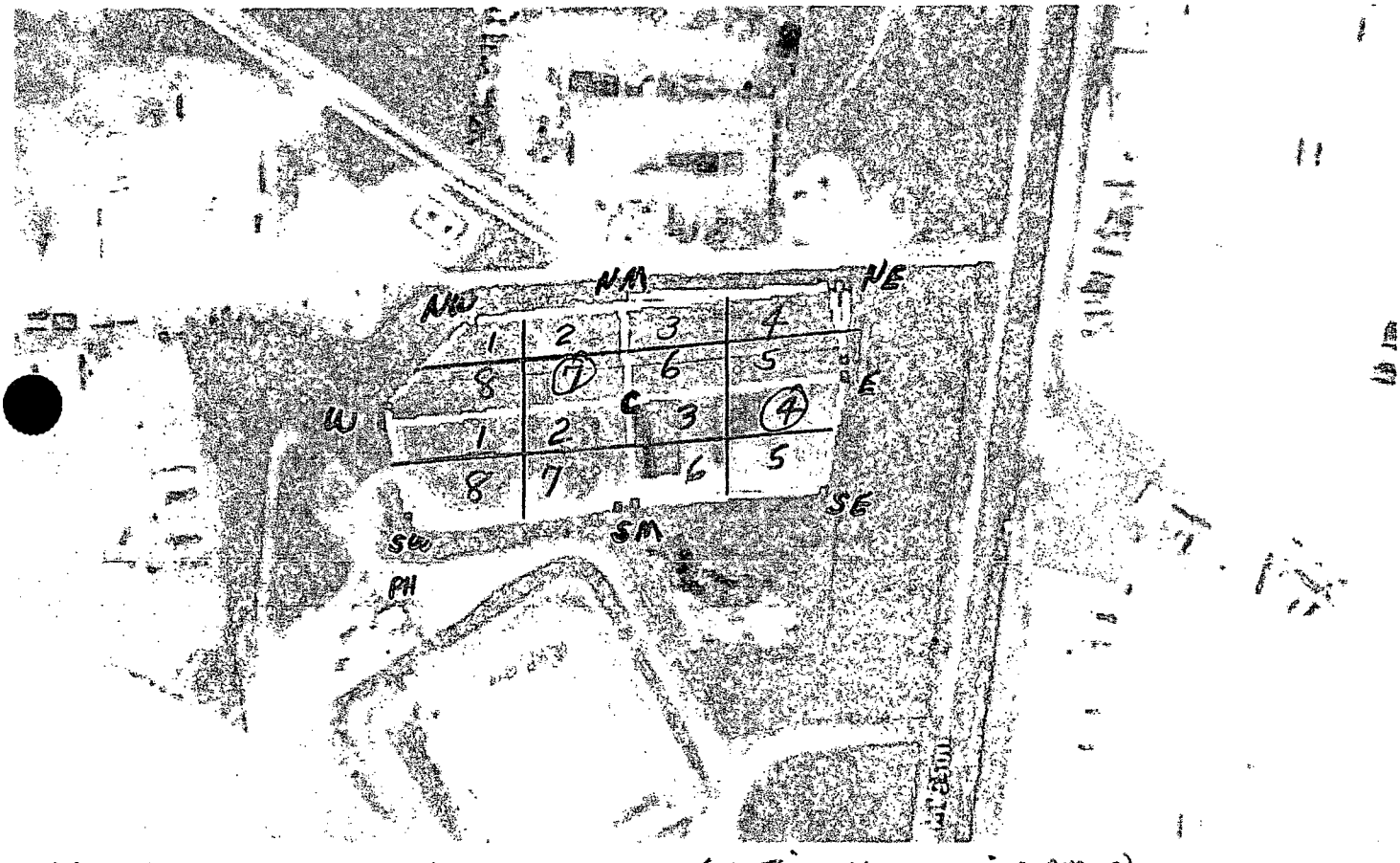
SAMPLES COC # 09948

CELL 2N-VE-1-7

CELL 2S-VZ-1-4

KEY LANDFARM 3rd QTR PER # NM1-7 SAMPLING PLAN

	DEPTH	SAMPLE LOCATIONS LAT-N	LONG-W
2N = (1)	4-5'	36° 45.539'	108° 04.326'
2S = (4)	4-5'	36° 45.534'	108° 04.279'



LANDFARM PERIMETER LAT/LONG LOCATIONS (ACTIVE PART - INSIDE BERMS)

CENTER	N 36 - 45.535'	W 108° - 4.321'
SOUTH WEST (SW)	N 36 - 45.507	W 108° - 4.386'
SOUTH MIDDLE (SM)	N 36 - 45.514	W 108° - 4.318
SOUTH EAST (SE)	N 36 - 45.517	W 108 - 4.273'
EAST (E)	N 36 - 45.539	W 108 - 4.267'
NORTH EAST (NE)	N 36 - 45.559	W 108 - 4.266'
NORTH MIDDLE (NM)	N 36 - 45.557	W 108 - 4.323'
NORTH WEST (NW)	N 36 - 45.554	W 108 - 4.370'
WEST (W)	N 36 - 45.532	W 108 - 4.393'
PUMPHOUSE (PH)	N 36 - 45.491	W 108 - 4.392'

Appendix VIII- 2010 Fourth Quarter Sampling

- Sampling Results
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-1-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57321	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-3-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57322	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-6-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57323	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-2-VZ-5'	Date Reported:	02-26-11
Laboratory Number:	57324	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-TZ	Date Reported:	02-26-11
Laboratory Number:	57325	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**5.8**	**0.2**
Diesel Range (C10 - C28)	**11.4**	**0.1**
Total Petroleum Hydrocarbons	**17.2**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-TZ	Date Reported:	02-26-11
Laboratory Number:	57326	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**5.9**	**0.2**
Diesel Range (C10 - C28)	**16.5**	**0.1**
Total Petroleum Hydrocarbons	**22.4**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-TZ	Date Reported:	02-26-11
Laboratory Number:	57327	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**4.3**	**0.2**
Diesel Range (C10 - C28)	**6.8**	**0.1**
Total Petroleum Hydrocarbons	**11.1**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-TZ	Date Reported:	02-26-11
Laboratory Number:	57328	Date Sampled:	02-24-11
Chain of Custody No:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Extracted:	02-25-11
Preservative:	Cool	Date Analyzed:	02-25-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	02-25-11 QA/QC	Date Reported:	02-25-11
Laboratory Number:	57315	Date Sampled:	N/A
Sample Matrix	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	02-25-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-25-11	9.9960E+002	1.0000E+003	0.04%	0 - 15%
Diesel Range C10 - C28	02-25-11	9.9960E+002	1.0000E+003	0.04%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	254	102%	75 - 125%
Diesel Range C10 - C28	ND	250	255	102%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 57315-57328, 57291-57293**

Analyst

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-1-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57321	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**22.2**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**22.2**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**92.2 %**
	1,4-difluorobenzene	**93.2 %**
	Bromochlorobenzene	**90.5 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-3-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57322	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**106 %**
	1,4-difluorobenzene	**91.5 %**
	Bromochlorobenzene	**98.9 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-6-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57323	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**1.5**	**1.0**
p,m-Xylene	**25.0**	**1.2**
o-Xylene	**2.1**	**0.9**
Total BTEX	**28.6**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**113 %**
	1,4-difluorobenzene	**108 %**
	Bromochlorobenzene	**104 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-2-VZ-5'	Date Reported:	02-25-11
Laboratory Number:	57324	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**103 %**
	1,4-difluorobenzene	**87.8 %**
	Bromochlorobenzene	**101 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-TZ	Date Reported:	02-25-11
Laboratory Number:	57325	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**105 %**
	1,4-difluorobenzene	**86.4 %**
	Bromochlorobenzene	**97.2 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-TZ	Date Reported:	02-25-11
Laboratory Number:	57326	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**95.4 %**
	1,4-difluorobenzene	**93.7 %**
	Bromochlorobenzene	**95.9 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0225BBLK QA/QC	Date Reported:	02-25-11
Laboratory Number:	57315	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	02-25-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff: Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.4101E+005	1.4129E+005	0.2%	ND	0.1
Toluene	1.4303E+005	1.4332E+005	0.2%	ND	0.1
Ethylbenzene	1.2437E+005	1.2462E+005	0.2%	ND	0.1
p,m-Xylene	2.8746E+005	2.8803E+005	0.2%	ND	0.1
o-Xylene	1.1856E+005	1.1879E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	423	84.6%	39 - 150
Toluene	ND	500	525	105%	46 - 148
Ethylbenzene	ND	500	439	87.8%	32 - 160
p,m-Xylene	ND	1000	1,020	102%	46 - 148
o-Xylene	ND	500	433	86.6%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 57315, 57321-57326, 57291-57293

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	CELL-2C-TZ	Date Reported:	02-25-11
Laboratory Number:	57327	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**99.3 %**
	1,4-difluorobenzene	**108 %**
	Bromochlorobenzene	**89.1 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	CELL-2D-TZ	Date Reported:	02-25-11
Laboratory Number:	57328	Date Sampled:	02-24-11
Chain of Custody:	11227	Date Received:	02-24-11
Sample Matrix:	Soil	Date Analyzed:	02-25-11
Preservative:	Cool	Date Extracted:	02-25-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**107 %**
	1,4-difluorobenzene	**114 %**
	Bromochlorobenzene	**105 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0225BBLK QA/QC	Date Reported:	02-25-11
Laboratory Number:	57317	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	02-25-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	4.2789E+006	4.2875E+006	0.2%	ND	0.1
Toluene	1.2882E+006	1.2908E+006	0.2%	ND	0.1
Ethylbenzene	9.8101E+005	9.8298E+005	0.2%	ND	0.1
p,m-Xylene	2.1486E+006	2.1529E+006	0.2%	ND	0.1
o-Xylene	7.9345E+005	7.9504E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	161	168	4.3%	0 - 30%	1.0
Ethylbenzene	14.9	14.4	3.4%	0 - 30%	1.0
p,m-Xylene	1,300	1,380	6.2%	0 - 30%	1.2
o-Xylene	111	116	4.2%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	528	106%	39 - 150
Toluene	161	500	682	103%	46 - 148
Ethylbenzene	14.9	500	512	99.5%	32 - 160
p,m-Xylene	1,300	1000	2,380	103%	46 - 148
o-Xylene	111	500	658	108%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 57317, 57319-57320, 57327-57328, 57275, 57277

Analyst

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796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-1-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57321	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.91**	**0.01**
Aluminum	**4920**	**0.01**
Barium	**202**	**0.01**
Cadmium	**0.30**	**0.01**
Chromium	**3.55**	**0.01**
Cobalt	**2.56**	**0.01**
Copper	**6.08**	**0.01**
Iron	**4100**	**0.01**
Lead	**4.79**	**0.01**
Manganese	**193**	**0.01**
Molybdenum	**0.08**	**0.01**
Mercury	**ND**	**0.01**
Nickel	**4.18**	**0.01**
Selenium	**0.05**	**0.01**
Silver	**ND**	**0.01**
Zinc	**17.1**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-3-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57322	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.08**	**0.01**
Aluminum	**5850**	**0.01**
Barium	**234**	**0.01**
Cadmium	**0.33**	**0.01**
Chromium	**3.91**	**0.01**
Cobalt	**2.80**	**0.01**
Copper	**7.01**	**0.01**
Iron	**4670**	**0.01**
Lead	**4.68**	**0.01**
Manganese	**192**	**0.01**
Molybdenum	**0.06**	**0.01**
Mercury	**ND**	**0.01**
Nickel	**4.89**	**0.01**
Selenium	**0.09**	**0.01**
Silver	**ND**	**0.01**
Zinc	**19.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-6-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57323	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**0.92**	**0.01**
Aluminum	**1250**	**0.01**
Barium	**56.5**	**0.01**
Cadmium	**0.11**	**0.01**
Chromium	**0.72**	**0.01**
Cobalt	**1.33**	**0.01**
Copper	**1.15**	**0.01**
Iron	**1710**	**0.01**
Lead	**2.07**	**0.01**
Manganese	**141**	**0.01**
Molybdenum	**0.29**	**0.01**
Mercury	**ND**	**0.01**
Nickel	**1.24**	**0.01**
Selenium	**0.08**	**0.01**
Silver	**ND**	**0.01**
Zinc	**5.55**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-2-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57324	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.31**	**0.01**
Aluminum	**2540**	**0.01**
Barium	**291**	**0.01**
Cadmium	**0.12**	**0.01**
Chromium	**1.23**	**0.01**
Cobalt	**1.82**	**0.01**
Copper	**1.79**	**0.01**
Iron	**1910**	**0.01**
Lead	**2.38**	**0.01**
Manganese	**145**	**0.01**
Molybdenum	**0.27**	**0.01**
Mercury	**ND**	**0.01**
Nickel	**1.99**	**0.01**
Selenium	**ND**	**0.01**
Silver	**ND**	**0.01**
Zinc	**6.47**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-TZ	Date Reported:	03/03/11
Laboratory Number:	57325	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.31**	**0.01**
Aluminum	**3630**	**0.01**
Barium	**947**	**0.01**
Cadmium	**0.63**	**0.01**
Chromium	**8.16**	**0.01**
Cobalt	**2.34**	**0.01**
Copper	**20.0**	**0.01**
Iron	**7200**	**0.01**
Lead	**12.6**	**0.01**
Manganese	**267**	**0.01**
Molybdenum	**0.86**	**0.01**
Mercury	**1.07**	**0.01**
Nickel	**5.37**	**0.01**
Selenium	**0.24**	**0.01**
Silver	**ND**	**0.01**
Zinc	**71.4**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-TZ	Date Reported:	03/03/11
Laboratory Number:	57326	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.49**	**0.01**
Aluminum	**3980**	**0.01**
Barium	**1030**	**0.01**
Cadmium	**0.53**	**0.01**
Chromium	**8.54**	**0.01**
Cobalt	**2.43**	**0.01**
Copper	**19.1**	**0.01**
Iron	**6960**	**0.01**
Lead	**13.0**	**0.01**
Manganese	**266**	**0.01**
Molybdenum	**0.78**	**0.01**
Mercury	**0.94**	**0.01**
Nickel	**5.20**	**0.01**
Selenium	**1.63**	**0.01**
Silver	**ND**	**0.01**
Zinc	**81.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-TZ	Date Reported:	03/03/11
Laboratory Number:	57327	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.26**	**0.01**
Aluminum	**3700**	**0.01**
Barium	**971**	**0.01**
Cadmium	**0.43**	**0.01**
Chromium	**7.20**	**0.01**
Cobalt	**2.14**	**0.01**
Copper	**14.8**	**0.01**
Iron	**5900**	**0.01**
Lead	**10.5**	**0.01**
Manganese	**196**	**0.01**
Molybdenum	**0.69**	**0.01**
Mercury	**0.49**	**0.01**
Nickel	**4.52**	**0.01**
Selenium	**0.15**	**0.01**
Silver	**ND**	**0.01**
Zinc	**44.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-TZ	Date Reported:	03/03/11
Laboratory Number:	57328	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Analyzed:	02/28/11
Preservative:	Cool	Date Digested:	02/28/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.92**	**0.01**
Aluminum	**2980**	**0.01**
Barium	**470**	**0.01**
Cadmium	**0.29**	**0.01**
Chromium	**3.65**	**0.01**
Cobalt	**1.95**	**0.01**
Copper	**7.96**	**0.01**
Iron	**3720**	**0.01**
Lead	**9.13**	**0.01**
Manganese	**162**	**0.01**
Molybdenum	**0.45**	**0.01**
Mercury	**0.07**	**0.01**
Nickel	**3.63**	**0.01**
Selenium	**0.03**	**0.01**
Silver	**ND**	**0.01**
Zinc	**26.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	02-28 TM QA/QC	Date Reported:	03/03/11
Laboratory Number:	57323	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	02/28/11
Condition:	N/A	Date Digested:	02/28/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	0.92	0.91	0.5%	0% - 30%
Aluminum	ND	ND	0.01	1,250	1,260	0.8%	0% - 30%
Barium	ND	ND	0.01	56.5	56.4	0.2%	0% - 30%
Cadmium	ND	ND	0.01	0.11	0.11	0.0%	0% - 30%
Chromium	ND	ND	0.01	0.72	0.73	0.4%	0% - 30%
Cobalt	ND	ND	0.01	1.33	1.32	0.4%	0% - 30%
Copper	ND	ND	0.01	1.15	1.16	1.0%	0% - 30%
Iron	ND	ND	0.01	1,710	1,700	0.6%	0% - 30%
Lead	ND	ND	0.01	2.07	2.06	0.2%	0% - 30%
Manganese	ND	ND	0.01	141	140	0.6%	0% - 30%
Molybdenum	ND	ND	0.01	0.29	0.29	0.0%	0% - 30%
Mercury	ND	ND	0.01	ND	ND	0.0%	0% - 30%
Nickel	ND	ND	0.01	1.24	1.24	0.0%	0% - 30%
Selenium	ND	ND	0.01	0.08	0.08	0.0%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.0%	0% - 30%
Zinc	ND	ND	0.01	5.55	5.53	0.4%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.50	0.92	3.23	94.5%	80% - 120%
Aluminum	2.50	1,250	1,180	94.2%	80% - 120%
Barium	5.00	56.5	58.4	94.9%	80% - 120%
Cadmium	2.50	0.11	2.40	92.1%	80% - 120%
Chromium	5.00	0.72	5.51	96.2%	80% - 120%
Cobalt	2.50	1.33	3.46	90.6%	80% - 120%
Copper	5.00	1.15	6.03	98.1%	80% - 120%
Iron	2.50	1,710	1,540	89.9%	80% - 120%
Lead	5.00	2.07	6.35	89.9%	80% - 120%
Manganese	2.50	141	135	94.0%	80% - 120%
Molybdenum	1.00	0.29	1.19	92.2%	80% - 120%
Mercury	1.00	ND	0.88	88.4%	80% - 120%
Nickel	5.00	1.24	5.64	90.4%	80% - 120%
Selenium	1.00	0.08	1.01	93.8%	80% - 120%
Silver	1.00	ND	0.97	97.4%	80% - 120%
Zinc	5.00	5.55	10.1	95.4%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 57321-57328**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505)632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-1-VZ-5'	Date Reported:	03/01/11
Laboratory Number:	57321	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**999**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-3-VZ-5'	Date Reported:	03/01/11
Laboratory Number:	57322	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**480**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-6-VZ-5'	Date Reported:	03/01/11
Laboratory Number:	57323	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**45.3**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-2-VZ-5'	Date Reported:	03/01/11
Laboratory Number:	57324	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**26.6**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-TZ	Date Reported:	03/01/11
Laboratory Number:	57325	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**10,800**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-TZ	Date Reported:	03/01/11
Laboratory Number:	57326	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**12,000**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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96 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-TZ	Date Reported:	03/01/11
Laboratory Number:	57327	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**14,000**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

96 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-TZ	Date Reported:	03/01/11
Laboratory Number:	57328	Date Sampled:	02/24/11
Chain of Custody No:	11227	Date Received:	02/24/11
Sample Matrix:	Soil	Date Extracted:	03/01/11
Preservative:	Cool	Date Analyzed:	03/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**4,060**	**6.7**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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96 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	03/01/11
Laboratory Number:	03-01-TPH.QA/QC 57321	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	03/01/11
Preservative:	N/A	Date Extracted:	03/01/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	03/01/11	03/01/11	1,660	1,720	3.6%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	6.7

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	999	932	6.7%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	999	2,000	2,930	97.7%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 57321-57328**

Analyst

Review

796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

CHAIN OF CUSTODY RECORD

11[illegible]7

Client:	Project Name / Location:
KEY ENERGY	KEY FARMINGTON NM1-9 LANDFARM
Client Address:	**Sampler Name:**
5651 US HWY 64 87401	WAYNE PRICE / PRICE LLC
Client Phone No.:	**Client No.:**
1-505-715-2809	98065-0013

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: $HgCl_2$	HCl	Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals + WQCC (see list)	Cation / Anion GEN CHEM	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	WQCC METALS			Sample Cool	Sample Intact
CELL-2A-1-VZ-5'	2/24/11	13:53	57321	Soil / Solid / Sludge / Aqueous	2-4oz			X	X	X		X	X				X					Y	Y
CELL-2B-3-VZ-5'	"	14:01	57322	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2C-4-VZ-5'	"	14:18	57323	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2D-2-VZ-5'	"	14:28	57324	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2A-TZ	"	14:38	57325	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2B-TZ	"	14:43	57326	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2C-TZ	"	14:48	57327	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X						
CELL-2D-TZ	"	14:50	57328	Soil / Solid / Sludge / Aqueous	"			X	X	X		X	X				X		Ca, Fe, Zn, Mn, Al, Cd, Mo, Ni				
				Soil / Solid / Sludge / Aqueous																			
				Soil / Solid / Sludge / Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
WAYNE PRICE JR.	2/24/11	15:26	Wayne Price Jr.	2/24/11	15:26
Wayne Price Jr	2/24/11	15:35		2/24/11	15:34
Relinquished by: (Signature)			Received by: (Signature)		

RUSH

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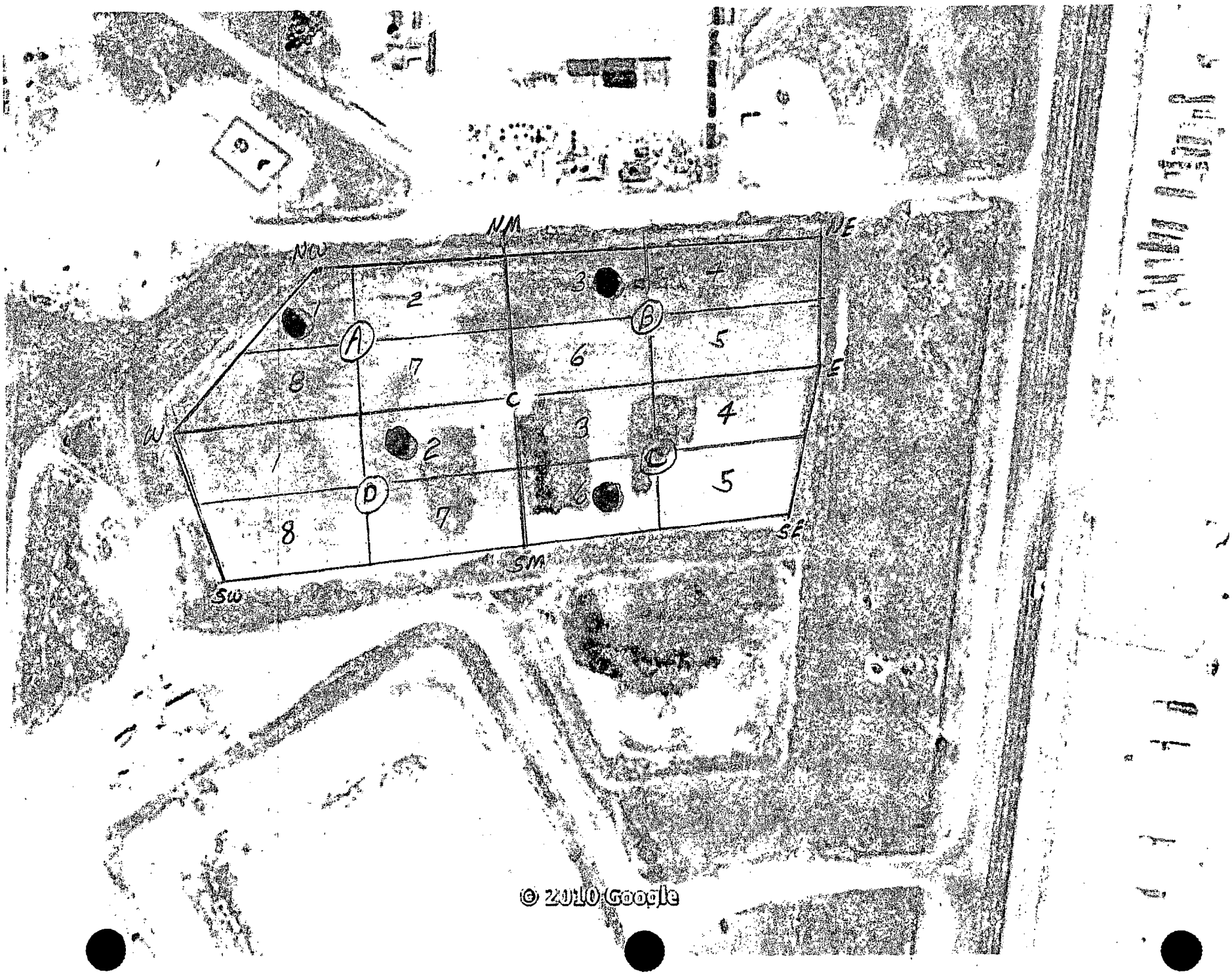
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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-1-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57321	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**7.66**	s.u.		
Conductivity @ 25° C	**501**	umhos/cm		
Total Dissolved Solids @ 180C	**276**	mg/L		
Total Dissolved Solids (Calc)	**288**	mg/L		
SAR	**1.50**	ratio		
Total Alkalinity as CaCO3	**100**	mg/L		
Total Hardness as CaCO3	**151**	mg/L		
Bicarbonate as HCO3	**100**	mg/L	1.64	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.29**	mg/L	0.07	meq/L
Nitrite Nitrogen	**0.012**	mg/L	0.00	meq/L
Chloride	**82.0**	mg/L	2.31	meq/L
Fluoride	**1.89**	mg/L	0.10	meq/L
Phosphate	**4.70**	mg/L	0.15	meq/L
Sulfate	**35.0**	mg/L	0.73	meq/L
Iron	**0.321**	mg/L	0.01	meq/L
Calcium	**39.8**	mg/L	1.99	meq/L
Magnesium	**12.6**	mg/L	1.04	meq/L
Potassium	**5.14**	mg/L	0.13	meq/L
Sodium	**42.1**	mg/L	1.83	meq/L
Cations			5.00	meq/L
Anions			5.00	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-3-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57322	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**7.41**	s.u.		
Conductivity @ 25° C	**1,320**	umhos/cm		
Total Dissolved Solids @ 180C	**744**	mg/L		
Total Dissolved Solids (Calc)	**807**	mg/L		
SAR	**3.00**	ratio		
Total Alkalinity as CaCO3	**104**	mg/L		
Total Hardness as CaCO3	**399**	mg/L		
Bicarbonate as HCO3	**104**	mg/L	1.70	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.71**	mg/L	0.076	meq/L
Nitrite Nitrogen	**0.020**	mg/L	0.00	meq/L
Chloride	**356**	mg/L	10.03	meq/L
Fluoride	**1.72**	mg/L	0.090	meq/L
Phosphate	**4.55**	mg/L	0.144	meq/L
Sulfate	**99.5**	mg/L	2.07	meq/L
Iron	**0.206**	mg/L	0.007	meq/L
Calcium	**96.6**	mg/L	4.82	meq/L
Magnesium	**38.4**	mg/L	3.16	meq/L
Potassium	**3.91**	mg/L	0.100	meq/L
Sodium	**139**	mg/L	6.03	meq/L
Cations			14.1	meq/L
Anions			14.1	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-6-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57323	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**9.56**	s.u.		
Conductivity @ 25° C	**393**	umhos/cm		
Total Dissolved Solids @ 180C	**256**	mg/L		
Total Dissolved Solids (Calc)	**252**	mg/L		
SAR	**4.30**	ratio		
Total Alkalinity as CaCO3	**108**	mg/L		
Total Hardness as CaCO3	**44.2**	mg/L		
Bicarbonate as HCO3	**108**	mg/L	1.77	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.22**	mg/L	0.068	meq/L
Nitrite Nitrogen	**0.093**	mg/L	0.00	meq/L
Chloride	**40.5**	mg/L	1.14	meq/L
Fluoride	**2.85**	mg/L	0.150	meq/L
Phosphate	**4.73**	mg/L	0.150	meq/L
Sulfate	**47.2**	mg/L	0.983	meq/L
Iron	**9.07**	mg/L	0.325	meq/L
Calcium	**8.19**	mg/L	0.409	meq/L
Magnesium	**5.80**	mg/L	0.477	meq/L
Potassium	**6.62**	mg/L	0.169	meq/L
Sodium	**66.4**	mg/L	2.89	meq/L
Cations			4.27	meq/L
Anions			4.27	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-2-VZ-5'	Date Reported:	03/03/11
Laboratory Number:	57324	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**8.48**	s.u.		
Conductivity @ 25° C	**1,390**	umhos/cm		
Total Dissolved Solids @ 180C	**832**	mg/L		
Total Dissolved Solids (Calc)	**943**	mg/L		
SAR	**8.90**	ratio		
Total Alkalinity as CaCO3	**90.0**	mg/L		
Total Hardness as CaCO3	**168**	mg/L		
Bicarbonate as HCO3	**90.0**	mg/L	1.48	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.46**	mg/L	0.072	meq/L
Nitrite Nitrogen	**0.010**	mg/L	0.00	meq/L
Chloride	**195**	mg/L	5.49	meq/L
Fluoride	**6.25**	mg/L	0.329	meq/L
Phosphate	**4.66**	mg/L	0.147	meq/L
Sulfate	**358**	mg/L	7.46	meq/L
Iron	**0.063**	mg/L	0.00	meq/L
Calcium	**28.3**	mg/L	1.41	meq/L
Magnesium	**23.8**	mg/L	1.96	meq/L
Potassium	**2.86**	mg/L	0.073	meq/L
Sodium	**265**	mg/L	11.53	meq/L
Cations			15.0	meq/L
Anions			15.0	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2A-TZ	Date Reported:	03/03/11
Laboratory Number:	57325	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**7.38**	s.u.		
Conductivity @ 25° C	**1,460**	umhos/cm		
Total Dissolved Solids @ 180C	**1,070**	mg/L		
Total Dissolved Solids (Calc)	**1,020**	mg/L		
SAR	**4.60**	ratio		
Total Alkalinity as CaCO3	**124**	mg/L		
Total Hardness as CaCO3	**358**	mg/L		
Bicarbonate as HCO3	**124**	mg/L	2.03	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.33**	mg/L	0.070	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.00	meq/L
Chloride	**238**	mg/L	6.72	meq/L
Fluoride	**2.80**	mg/L	0.147	meq/L
Phosphate	**5.06**	mg/L	0.160	meq/L
Sulfate	**345**	mg/L	7.18	meq/L
Iron	**0.079**	mg/L	0.00	meq/L
Calcium	**102**	mg/L	5.10	meq/L
Magnesium	**25.1**	mg/L	2.06	meq/L
Potassium	**20.2**	mg/L	0.517	meq/L
Sodium	**198**	mg/L	8.63	meq/L
Cations			16.3	meq/L
Anions			16.3	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2B-TZ	Date Reported:	03/03/11
Laboratory Number:	57326	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**7.32**	s.u.		
Conductivity @ 25° C	**1,590**	umhos/cm		
Total Dissolved Solids @ 180C	**1,110**	mg/L		
Total Dissolved Solids (Calc)	**1,080**	mg/L		
SAR	**5.30**	ratio		
Total Alkalinity as CaCO3	**118**	mg/L		
Total Hardness as CaCO3	**357**	mg/L		
Bicarbonate as HCO3	**118**	mg/L	1.93	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.39**	mg/L	0.071	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.00	meq/L
Chloride	**285**	mg/L	8.05	meq/L
Fluoride	**2.93**	mg/L	0.154	meq/L
Phosphate	**4.85**	mg/L	0.153	meq/L
Sulfate	**343**	mg/L	7.14	meq/L
Iron	**0.097**	mg/L	0.00	meq/L
Calcium	**99.6**	mg/L	4.97	meq/L
Magnesium	**26.5**	mg/L	2.18	meq/L
Potassium	**11.1**	mg/L	0.284	meq/L
Sodium	**232**	mg/L	10.1	meq/L
Cations			17.5	meq/L
Anions			17.5	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2C-TZ	Date Reported:	03/03/11
Laboratory Number:	57327	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**7.52**	s.u.		
Conductivity @ 25° C	**2,440**	umhos/cm		
Total Dissolved Solids @ 180C	**1,430**	mg/L		
Total Dissolved Solids (Calc)	**1,510**	mg/L		
SAR	**6.60**	ratio		
Total Alkalinity as CaCO3	**70.0**	mg/L		
Total Hardness as CaCO3	**480**	mg/L		
Bicarbonate as HCO3	**70.0**	mg/L	1.15	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**42.3**	mg/L	0.682	meq/L
Nitrite Nitrogen	**0.010**	mg/L	0.00	meq/L
Chloride	**350**	mg/L	9.9	meq/L
Fluoride	**16.1**	mg/L	0.845	meq/L
Phosphate	**46.2**	mg/L	1.46	meq/L
Sulfate	**500**	mg/L	10.4	meq/L
Iron	**0.083**	mg/L	0.00	meq/L
Calcium	**142**	mg/L	7.09	meq/L
Magnesium	**30.6**	mg/L	2.52	meq/L
Potassium	**9.94**	mg/L	0.254	meq/L
Sodium	**335**	mg/L	14.6	meq/L
Cations			24.4	meq/L
Anions			24.4	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell-2D-TZ	Date Reported:	03/03/11
Laboratory Number:	57328	Date Sampled:	02/24/11
Chain of Custody:	11227	Date Received:	02/24/11
Sample Matrix:	Soil Extract	Date Extracted:	02/25/11
Preservative:	Cool	Date Analyzed:	02/28/11
Condition:	Intact		

Parameter	Analytical Result	Units		Units
pH	**8.72**	s.u.		
Conductivity @ 25° C	**382**	umhos/cm		
Total Dissolved Solids @ 180C	**218**	mg/L		
Total Dissolved Solids (Calc)	**236**	mg/L		
SAR	**3.90**	ratio		
Total Alkalinity as CaCO3	**102**	mg/L		
Total Hardness as CaCO3	**48.9**	mg/L		
Bicarbonate as HCO3	**102**	mg/L	1.67	meq/L
Carbonate as CO3	**< 0.01**	mg/L	0.00	meq/L
Hydroxide as OH	**< 0.01**	mg/L	0.00	meq/L
Nitrate Nitrogen	**4.22**	mg/L	0.07	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.00	meq/L
Chloride	**22.2**	mg/L	0.63	meq/L
Fluoride	**5.25**	mg/L	0.28	meq/L
Phosphate	**4.60**	mg/L	0.15	meq/L
Sulfate	**55.6**	mg/L	1.16	meq/L
Iron	**5.64**	mg/L	0.20	meq/L
Calcium	**15.0**	mg/L	0.75	meq/L
Magnesium	**2.78**	mg/L	0.23	meq/L
Potassium	**2.16**	mg/L	0.06	meq/L
Sodium	**62.3**	mg/L	2.71	meq/L
Cations			3.95	meq/L
Anions			3.95	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

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796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

Appendix VIII- 2011 First Quarter Sampling

- Sampling Results
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04-22-11
Laboratory Number:	57951	Date Sampled:	04-21-11
Chain of Custody No:	11230	Date Received:	04-21-11
Sample Matrix:	Soil	Date Extracted:	04-22-11
Preservative:	Cool	Date Analyzed:	04-22-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-4	Date Reported:	04-22-11
Laboratory Number:	57952	Date Sampled:	04-21-11
Chain of Custody No:	11230	Date Received:	04-21-11
Sample Matrix:	Soil	Date Extracted:	04-22-11
Preservative:	Cool	Date Analyzed:	04-22-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	04-22-11 QA/QC	Date Reported:	04-22-11
Laboratory Number:	57951	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	04-22-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	04-22-11	9.9960E+002	1.0000E+003	0.04%	0 - 15%
Diesel Range C10 - C28	04-22-11	9.9960E+002	1.0000E+003	0.04%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	208	83.1%	75 - 125%
Diesel Range C10 - C28	ND	250	259	103%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 57951-57952, 57959-57961**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04-22-11
Laboratory Number:	57951	Date Sampled:	04-21-11
Chain of Custody:	11230	Date Received:	04-21-11
Sample Matrix:	Soil	Date Analyzed:	04-22-11
Preservative:	Cool	Date Extracted:	04-21-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**105 %**
	1,4-difluorobenzene	**107 %**
	Bromochlorobenzene	**95.6 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-4	Date Reported:	04-22-11
Laboratory Number:	57952	Date Sampled:	04-21-11
Chain of Custody:	11230	Date Received:	04-21-11
Sample Matrix:	Soil	Date Analyzed:	04-22-11
Preservative:	Cool	Date Extracted:	04-21-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**109 %**
	1,4-difluorobenzene	**109 %**
	Bromochlorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0422BBLK QA/QC	Date Reported:	04-22-11
Laboratory Number:	57947	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	04-22-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.1326E+005	1.1349E+005	0.2%	ND	0.1
Toluene	1.2344E+005	1.2368E+005	0.2%	ND	0.1
Ethylbenzene	1.1103E+005	1.1125E+005	0.2%	ND	0.1
p,m-Xylene	2.5893E+005	2.5944E+005	0.2%	ND	0.1
o-Xylene	1.0519E+005	1.0540E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	2.9	2.9	0.0%	0 - 30%	1.0
Ethylbenzene	1.8	1.9	5.6%	0 - 30%	1.0
p,m-Xylene	49.1	56.9	15.9%	0 - 30%	1.2
o-Xylene	8.3	6.7	19.3%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	555	111%	39 - 150
Toluene	2.9	500	520	103%	46 - 148
Ethylbenzene	1.8	500	559	111%	32 - 160
p,m-Xylene	49.1	1000	1,130	108%	46 - 148
o-Xylene	8.3	500	585	115%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 57947-57948, 57951-57952

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Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04/22/11
Laboratory Number:	57951	Date Sampled:	04/21/11
Chain of Custody No:	11230	Date Received:	04/21/11
Sample Matrix:	Soil	Date Extracted:	04/22/11
Preservative:	Cool	Date Analyzed:	04/22/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**483**	**7.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-4	Date Reported:	04/22/11
Laboratory Number:	57952	Date Sampled:	04/21/11
Chain of Custody No:	11230	Date Received:	04/21/11
Sample Matrix:	Soil	Date Extracted:	04/22/11
Preservative:	Cool	Date Analyzed:	04/22/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**63.6**	**7.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	04/22/11
Laboratory Number:	04-22-TPH.QA/QC 57951	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	04/22/11
Preservative:	N/A	Date Extracted:	04/22/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	04/15/11	04/22/11	1,590	1,490	6.3%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	7.6

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	483	572	18.4%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	483	2,000	2,350	94.6%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 57951-57952, 57946**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04/29/11
Laboratory Number:	57951	Date Sampled:	04/21/11
Chain of Custody:	11230	Date Received:	04/21/11
Sample Matrix:	Soil	Date Analyzed:	04/27/11
Preservative:	Cool	Date Digested:	04/26/11
Condition:	Intact	Analysis Needed:	Total Metals
		Dilution:	10

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**0.04**	**0.01**
Aluminum	**3,380**	**0.01**
Barium	**161**	**0.01**
Boron	**3.31**	**0.01**
Cadmium	**0.03**	**0.01**
Chromium	**1.33**	**0.01**
Cobalt	**1.76**	**0.01**
Copper	**2.77**	**0.01**
Iron	**2,360**	**0.01**
Lead	**2.59**	**0.01**
Manganese	**104**	**0.01**
Molybdenum	**0.12**	**0.01**
Mercury	**0.02**	**0.01**
Nickel	**2.66**	**0.01**
Selenium	**0.01**	**0.01**
Silver	**2.10**	**0.01**
Zinc	**7.60**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-4	Date Reported:	04/29/11
Laboratory Number:	57952	Date Sampled:	04/21/11
Chain of Custody:	11230	Date Received:	04/21/11
Sample Matrix:	Soil	Date Analyzed:	04/27/11
Preservative:	Cool	Date Digested:	04/26/11
Condition:	Intact	Analysis Needed:	Total Metals
		Dilution:	10

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**0.08**	**0.01**
Aluminum	**5,790**	**0.01**
Barium	**103**	**0.01**
Boron	**2.22**	**0.01**
Cadmium	**0.08**	**0.01**
Chromium	**3.88**	**0.01**
Cobalt	**3.44**	**0.01**
Copper	**5.30**	**0.01**
Iron	**5,410**	**0.01**
Lead	**5.58**	**0.01**
Manganese	**250**	**0.01**
Molybdenum	**0.14**	**0.01**
Mercury	**0.01**	**0.01**
Nickel	**5.09**	**0.01**
Selenium	**0.15**	**0.01**
Silver	**4.50**	**0.01**
Zinc	**18.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	04-27-TM QA/QC	Date Reported:	04/29/11
Laboratory Number:	57955	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	04/27/11
Condition:	N/A	Date Digested:	04/26/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	0.044	0.045	4.13%	0% - 30%
Aluminum	ND	ND	0.01	3440	3450	0.29%	0% - 30%
Barium	ND	ND	0.01	74.5	74.7	0.24%	0% - 30%
Boron	ND	ND	0.01	1.17	1.17	0.00%	0% - 30%
Cadmium	ND	ND	0.01	0.040	0.043	7.56%	0% - 30%
Chromium	ND	ND	0.01	2.10	2.26	7.92%	0% - 30%
Cobalt	ND	ND	0.01	2.24	2.22	0.85%	0% - 30%
Copper	ND	ND	0.01	2.72	2.73	0.26%	0% - 30%
Iron	ND	ND	0.01	4340	4340	0.00%	0% - 30%
Lead	ND	ND	0.01	3.26	3.20	1.75%	0% - 30%
Manganese	ND	ND	0.01	152	152	0.00%	0% - 30%
Molybdenum	ND	ND	0.01	0.148	0.147	0.34%	0% - 30%
Mercury	ND	ND	0.01	2.11	2.11	0.00%	0% - 30%
Nickel	ND	ND	0.01	2.80	2.79	0.29%	0% - 30%
Selenium	ND	ND	0.01	0.086	0.073	14.7%	0% - 30%
Silver	ND	ND	0.01	2.59	2.84	9.56%	0% - 30%
Zinc	ND	ND	0.01	13.2	13.2	0.00%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.50	0.044	2.34	92.1%	80% - 120%
Aluminum	2.50	3,440	3,330	96.7%	80% - 120%
Barium	5.00	74.5	74.9	94.3%	80% - 120%
Boron	5.00	1.17	5.89	95.5%	80% - 120%
Cadmium	2.50	0.040	2.34	92.3%	80% - 120%
Chromium	5.00	2.10	7.58	107%	80% - 120%
Cobalt	2.50	2.24	4.44	93.7%	80% - 120%
Copper	5.00	2.72	7.81	101%	80% - 120%
Iron	2.50	4,340	4,190	96.5%	80% - 120%
Lead	5.00	3.26	7.44	90.0%	80% - 120%
Manganese	2.50	152	150	96.8%	80% - 120%
Molybdenum	1.00	0.148	1.04	90.8%	80% - 120%
Mercury	1.00	2.11	2.92	93.7%	80% - 120%
Nickel	5.00	2.80	7.25	92.9%	80% - 120%
Selenium	1.00	0.086	1.01	93.4%	80% - 120%
Silver	1.00	2.59	3.70	103%	80% - 120%
Zinc	5.00	13.2	17.2	94.6%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 57951-57952, 57955-57958, 57965, 57973**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04/27/11
Laboratory Number:	57951	Date Sampled:	04/21/11
Chain of Custody:	11230	Date Received:	04/25/11
Sample Matrix:	Soil	Date Analyzed:	04/26/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**6.94**	s.u.		
Conductivity @ 25° C	**2,790**	umhos/cm		
Total Dissolved Solids @ 180C	**1,920**	mg/L		
Total Dissolved Solids (Calc)	**2,090**	mg/L		
SAR	**4.50**	ratio		
Total Alkalinity as CaCO3	**122**	mg/L		
Total Hardness as CaCO3	**1,040**	mg/L		
Bicarbonate as CaCO3	**122**	mg/L	2.00	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.500**	mg/L	0.008	meq/L
Nitrite Nitrogen	**0.018**	mg/L	0.000	meq/L
Chloride	**840**	mg/L	23.7	meq/L
Fluoride	**1.80**	mg/L	0.095	meq/L
Phosphate	**4.20**	mg/L	0.133	meq/L
Sulfate	**470**	mg/L	9.785	meq/L
Iron	**0.820**	mg/L	0.029	meq/L
Calcium	**244**	mg/L	12.2	meq/L
Magnesium	**104**	mg/L	8.56	meq/L
Potassium	**18.7**	mg/L	0.478	meq/L
Sodium	**333**	mg/L	14.51	meq/L
Cations			35.7	meq/L
Anions			35.7	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-1	Date Reported:	04/26/11
Laboratory Number:	57951	Date Sampled:	04/21/11
Sample Matrix:	Soil Extract	Date Received:	04/25/11
Preservative:	Cool	Date Analyzed:	04/26/11
Condition:	Intact	Chain of Custody:	11230

Parameter	Analytical Result	Units
Cyanide (total)	**0.025**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-4	Date Reported:	04/26/11
Laboratory Number:	57952	Date Sampled:	04/21/11
Sample Matrix:	Soil Extract	Date Received:	04/25/11
Preservative:	Cool	Date Analyzed:	04/26/11
Condition:	Intact	Chain of Custody:	11230

Parameter	Analytical Result	Units
Cyanide (total)	**0.002**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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CHAIN OF CUSTODY RECORD

11230

Client:	Project Name / Location:
KEY Energy	KEY FARMINGTON NM I-9 LANDFARM
Client Address:	**Sampler Name:**
5651 US Hwy 64 87401	LESTER WAYNE PRICE JR. Price LLC
Client Phone No.:	**Client No.:**
832-657-4873	98065-0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: $HgCl_2$	HCl	Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals + Cu, Fe, Zn, Mn, Al, Co, Mo, Ni (Add'l Metals)	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	CN			Sample Cool	Sample Intact
2N-VZ-1	4/21/11		57931	Soil Sludge Solid Aqueous	2-4oz			X	X	X		X	X				X		X			Y	Y
2S-VZ-4	"		57932	Soil Sludge Solid Aqueous	"			X	X	X		X	X				X		X			Y	Y
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			

Added 4/25/11 per Wayne Price

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
LESTER WAYNE PRICE JR	4/21/11	3:14	Ronda Vaquera	4/21/11	3:14
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

NON RUSH

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ACCENT Printing • Form 28-0807

Soil

Safety and Sampling Plan:

Location of Facility: Key Energy Farmington Landfarm NM-9

Sample Event: 1st Quarter Sampling-2011

Requirements: OCD 711 requirements- 1 vadose random sample collected per cell for TPH/BTEX. TPH = 418.1 & 8015-M, and BTEX = 8021.

Tailgate Safety Meeting: Discuss and point out any onsite safety hazardous:
Note any Hazards and Safety Equipment to be used:

4/21/11 Liston Wayne Price Jr. LWP
4/21/11 Neil Allen [signature]
4/21/11 Steve [signature] 04129

Date, print names and initial:

Sampling Objective and Plan: To collect soil samples and perform analytical work pursuant to EPA protocols, procedures and methods per SW-846. Cell #2 is actually broken down into Cell # 2N (north) and Cell # 2S. Note: Cell #2 has always been considered one cell and extra samples are collected to improve representativeness.

Only clean 4 oz soil jars will be used, filled to capacity and pressed in. Cross-contamination will be reduced by wearing new sampling gloves for each sample. No smoking or engine exhaust near sampling. Jars will be placed on Ice immediately after collection. Clean stainless steel bowls and spoons shall be used and decontaminated between sample collections. All jar labels shall be pre-completed and placed on Jars, except time.

Samples may be collected with Hand auger, backhoe, or by hand. Caution should be used not to cross-contaminate surface soils with vadose zone soils.

Random out of the hat drawing shall be used to determine sample locations. (Completed)

Photos Taken: Yes (No)

Location Map on back-side for reference:

Date: 4/21/11 Sampling COC # 11230

Location: Key Energy Farmington Landfarm- NM9

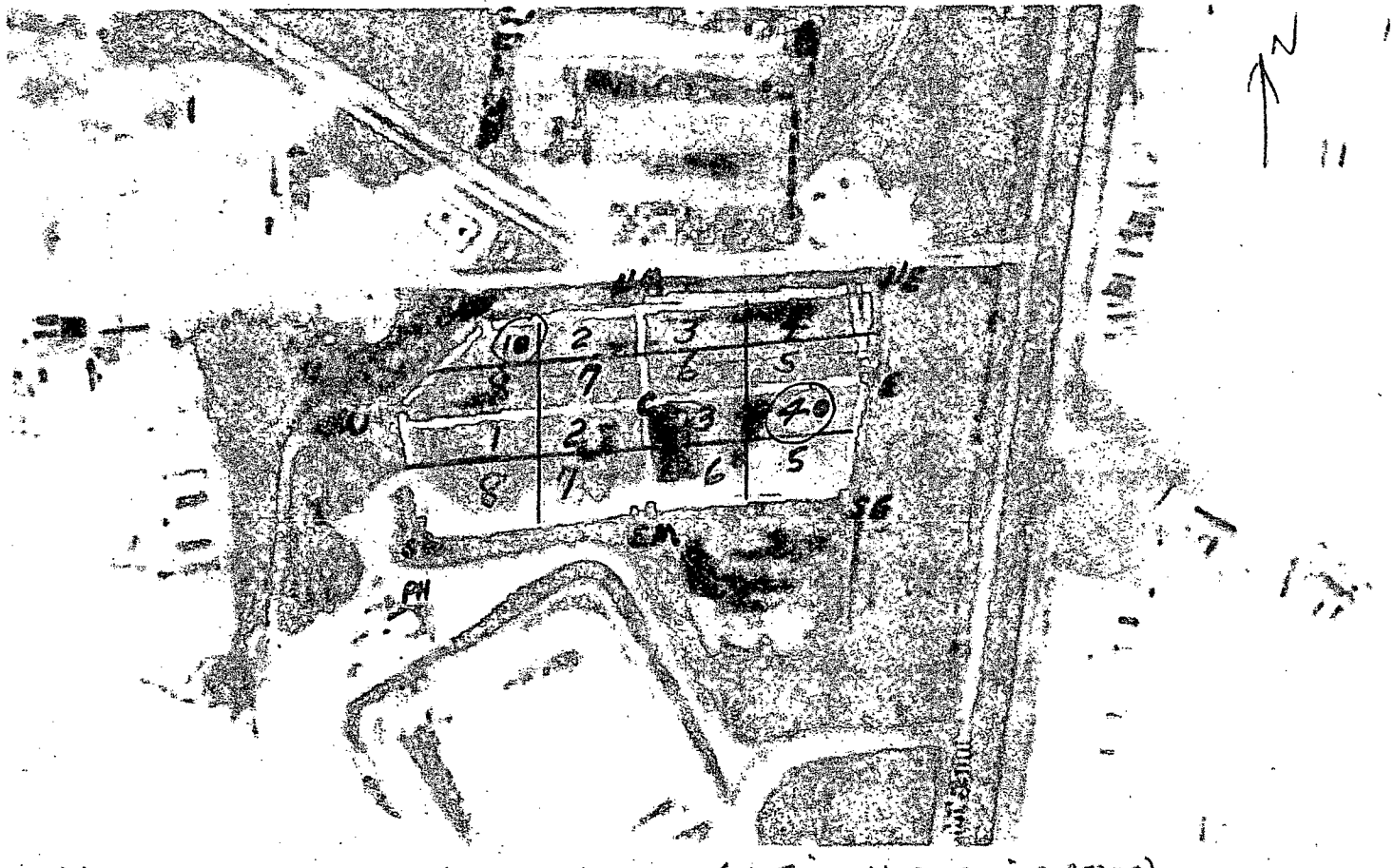
Sampled By: Wayne Price Jr.

Conditions:

Sky Blue Partly cloudy Temp: 75 Wind: 20 SW Other:

Sample #	Depth	Lat	Long	Notes:
2N-VZ-1	5.5'	N36°45.528	W 108°04.284'	#
2S-VZ-4	5.5'	N36°45.54	W108°04.357'	#

* VZ = vadose zone



LANDFARM PERIMETER LAT/LONG LOCATIONS (ACTIVE PART - INSIDE BERMS)

CENTER	N 36 - 45.535	W 108° 4.321'
SOUTH WEST (SW)	N 36 - 45.507	W 108° - 4.386'
SOUTH MIDDLE (SM)	N 36 - 45.514	W 108° - 4.318
SOUTH EAST (SE)	N 36 - 45.517	W 108 - 4.273
EAST (E)	N 36 - 45.539	W 108 - 4.267
NORTH EAST (NE)	N 36 - 45.559	W 108 - 4.266
NORTH MIDDLE (NM)	N 36 - 45.557	W 108 - 4.323
NORTH WEST (NW)	N 36 - 45.554	W 108 - 4.370
WEST (W)	N 36 - 45.532	W 108 - 4.393
PUMP HOUSE (PH)	N 36 - 45.491	W 108 - 4.392

Field Notes:

Appendix VIII- 2011 Second Quarter Sampling

- Sampling Results
- 8015D Oil Range Organics (ORO) results included.
- COC's
- Field Reports and Selected Photos

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	07-06-11
Laboratory Number:	58754	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**11.9**	**0.2**
Diesel Range (C10 - C28)	**27.5**	**0.1**
Total Petroleum Hydrocarbons	**39.4**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	07-06-11
Laboratory Number:	58755	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**2.4**	**0.2**
Diesel Range (C10 - C28)	**14.2**	**0.1**
Total Petroleum Hydrocarbons	**16.6**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-5	Date Reported:	07-06-11
Laboratory Number:	58756	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-8	Date Reported:	07-06-11
Laboratory Number:	58757	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-Comp	Date Reported:	07-06-11
Laboratory Number:	58759	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**1.1**	**0.2**
Diesel Range (C10 - C28)	**12.4**	**0.1**
Total Petroleum Hydrocarbons	**13.5**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-Comp	Date Reported:	07-06-11
Laboratory Number:	58760	Sampled:	06-30-11
Chain of Custody No:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Extracted:	07-01-11
Preservative:	Cool	Date Analyzed:	07-05-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**2.1**	**0.2**
Diesel Range (C10 - C28)	**4.1**	**0.1**
Total Petroleum Hydrocarbons	**6.2**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-05-11 QA/QC	Date Reported:	07-22-11
Laboratory Number:	58754	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-05-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	07/05/11	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	07/05/11	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**6.8**	**0.2**
Diesel Range C10 - C28	**1.6**	**0.1**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Range
Gasoline Range C5 - C10	**11.9**	**11.8**	**1.0%**	**0 - 30%**
Diesel Range C10 - C28	**27.5**	**25.3**	**7.9%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**11.9**	**250**	**255**	**97.2%**	**75 - 125%**
Diesel Range C10 - C28	**27.5**	**250**	**290**	**105%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste,

SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 58751, 58754-58757, 58759-58760, 58768-58770, 58774-58775**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	07-06-11
Laboratory Number:	58754	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**3.7**	**0.9**
Toluene	**7.8**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**8.3**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**19.8**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**94.5 %**
	1,4-difluorobenzene	**98.9 %**
	Bromochlorobenzene	**97.3 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	07-06-11
Laboratory Number:	58755	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**1.5**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**1.5**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.7 %**
	1,4-difluorobenzene	**105 %**
	Bromochlorobenzene	**96.7 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-5	Date Reported:	07-06-11
Laboratory Number:	58766	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**96.9 %**
	1,4-difluorobenzene	**99.2 %**
	Bromochlorobenzene	**94.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-8	Date Reported:	07-06-11
Laboratory Number:	58757	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**94.3 %**
	1,4-difluorobenzene	**98.4 %**
	Bromochlorobenzene	**96.1 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-Comp	Date Reported:	07-06-11
Laboratory Number:	58759	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**97.5 %**
	1,4-difluorobenzene	**105 %**
	Bromochlorobenzene	**102 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-Comp	Date Reported:	07-06-11
Laboratory Number:	58760	Date Sampled:	06-30-11
Chain of Custody:	9950	Date Received:	06-30-11
Sample Matrix:	Soil	Date Analyzed:	07-05-11
Preservative:	Cool	Date Extracted:	07-01-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**2.5**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**2.5**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**95.7 %**
	1,4-difluorobenzene	**108 %**
	Bromochlorobenzene	**98.2 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0705BBLK QA/QC	Date Reported:	07-08-11
Laboratory Number:	58754	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-05-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.8532E+006	3.8609E+006	0.2%	ND	0.1
Toluene	4.1412E+006	4.1495E+006	0.2%	ND	0.1
Ethylbenzene	3.6195E+006	3.6268E+006	0.2%	ND	0.1
p,m-Xylene	9.9442E+006	9.9642E+006	0.2%	ND	0.1
o-Xylene	3.3683E+006	3.3750E+006	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	3.7	3.2	13.5%	0 - 30%	0.9
Toluene	7.8	7.6	2.6%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	8.3	8.5	2.4%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	3.7	500	510	101%	39 - 150
Toluene	7.8	500	528	104%	46 - 148
Ethylbenzene	ND	500	505	101%	32 - 160
p,m-Xylene	8.3	1000	1,030	102%	46 - 148
o-Xylene	ND	500	503	101%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photolonization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 58737-58741, 58751, 58754-58757, 58759-58760, 58774-58775

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	07/01/11
Laboratory Number:	58754	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**19,400**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	07/01/11
Laboratory Number:	58755	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**2,500**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-5	Date Reported:	07/01/11
Laboratory Number:	58756	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**501**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-8	Date Reported:	07/01/11
Laboratory Number:	58757	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**81.1**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-Comp	Date Reported:	07/01/11
Laboratory Number:	58759	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**367**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-Comp	Date Reported:	07/01/11
Laboratory Number:	58760	Date Sampled:	06/30/11
Chain of Custody No:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Extracted:	07/01/11
Preservative:	Cool	Date Analyzed:	07/01/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**26,400**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	07/01/11
Laboratory Number:	07-01-TPH.QA/QC 58742	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	07/01/11
Preservative:	N/A	Date Extracted:	07/01/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	06/14/11	07/01/11	1,760	1,640	6.8%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	14.1	5.0

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	1,550	1,680	8.4%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	1,550	2,000	3,280	92.4%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 58742-58744, 58751, 58754-58757, 58759-58760**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	07/06/11
Lab ID#:	58754	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**1,580**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	07/06/11
Lab ID#:	58755	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**560**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-5	Date Reported:	07/06/11
Lab ID#:	58756	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**1,280**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-8	Date Reported:	07/06/11
Lab ID#:	58757	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**440**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-Comp	Date Reported:	07/06/11
Lab ID#:	58759	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**360**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983. Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-Comp	Date Reported:	07/06/11
Lab ID#:	58760	Date Sampled:	06/30/11
Sample Matrix:	Soil	Date Received:	06/30/11
Preservative:	Cool	Date Analyzed:	07/05/11
Condition:	Intact	Chain of Custody:	9950

Parameter	Concentration (mg/Kg)
Total Chloride	**460**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Lab Comp from Above Four	Date Reported:	07/22/11
Laboratory Number:	58758	Date Sampled:	06/30/11
Chain of Custody:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Analyzed:	07/11/11
Preservative:	Cool	Date Digested:	07/05/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**0.01**	**0.01**
Aluminum	**6,450**	**0.01**
Barium	**1,260**	**0.01**
Cadmium	**ND**	**0.01**
Chromium	**7.07**	**0.01**
Cobalt	**3.24**	**0.01**
Copper	**14.4**	**0.01**
Iron	**10,300**	**0.01**
Lead	**8.71**	**0.01**
Manganese	**295**	**0.01**
Molybdenum	**0.59**	**0.01**
Mercury	**1.49**	**0.01**
Nickel	**6.08**	**0.01**
Selenium	**0.37**	**0.01**
Silver	**ND**	**0.01**
Zinc	**42.2**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Lab Comp from Above Two	Date Reported:	07/22/11
Laboratory Number:	58761	Date Sampled:	06/30/11
Chain of Custody:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Analyzed:	07/11/11
Preservative:	Cool	Date Digested:	07/05/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**0.01**	**0.01**
Aluminum	**6,790**	**0.01**
Barium	**1,660**	**0.01**
Cadmium	**ND**	**0.01**
Chromium	**7.81**	**0.01**
Cobalt	**2.90**	**0.01**
Copper	**10.7**	**0.01**
Iron	**7,800**	**0.01**
Lead	**10.1**	**0.01**
Manganese	**232**	**0.01**
Molybdenum	**0.43**	**0.01**
Mercury	**0.54**	**0.01**
Nickel	**5.71**	**0.01**
Selenium	**0.16**	**0.01**
Silver	**ND**	**0.01**
Zinc	**37.2**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-11-TM QA/QC	Date Reported:	07/22/11
Laboratory Number:	58779	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	07/11/11
Condition:	N/A	Date Digested:	07/11/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	0.04	0.04	0.00%	0% - 30%
Aluminum	ND	ND	0.01	5,230	5,280	1.07%	0% - 30%
Barium	ND	ND	0.01	144	146	1.53%	0% - 30%
Cadmium	ND	ND	0.01	0.04	0.04	0.00%	0% - 30%
Chromium	ND	ND	0.01	3.19	3.29	3.14%	0% - 30%
Cobalt	ND	ND	0.01	3.34	3.36	0.66%	0% - 30%
Copper	ND	ND	0.01	8.45	8.56	1.25%	0% - 30%
Iron	ND	ND	0.01	6,420	6,280	2.12%	0% - 30%
Lead	ND	ND	0.01	5.24	5.23	0.19%	0% - 30%
Manganese	ND	ND	0.01	202	207	2.63%	0% - 30%
Molybdenum	ND	ND	0.01	0.52	0.53	0.61%	0% - 30%
Mercury	ND	ND	0.01	0.02	0.02	0.00%	0% - 30%
Nickel	ND	ND	0.01	3.90	3.89	0.15%	0% - 30%
Selenium	ND	ND	0.01	0.21	0.21	0.00%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Zinc	ND	ND	0.01	39.0	39.0	0.00%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.50	0.04	2.45	96.3%	80% - 120%
Aluminum	2.50	5,230	5,480	105%	80% - 120%
Barium	5.00	144	156	105%	80% - 120%
Cadmium	2.50	0.04	2.44	96.3%	80% - 120%
Chromium	5.00	3.19	9.19	112%	80% - 120%
Cobalt	2.50	3.34	5.84	99.9%	80% - 120%
Copper	5.00	8.45	14.3	106%	80% - 120%
Iron	2.50	6,420	6,690	104%	80% - 120%
Lead	5.00	5.24	9.65	94.2%	80% - 120%
Manganese	2.50	202	218	107%	80% - 120%
Molybdenum	1.00	0.52	1.48	97.3%	80% - 120%
Mercury	1.00	0.02	1.00	98.5%	80% - 120%
Nickel	5.00	3.90	8.58	96.5%	80% - 120%
Selenium	1.00	0.21	1.23	102%	80% - 120%
Silver	1.00	ND	0.94	93.8%	80% - 120%
Zinc	5.00	39.0	44.6	101%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 58779, 58758, 58761**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Lab Composite for Above Four	Date Reported:	07/08/11
Laboratory Number:	58758	Date Sampled:	06/30/11
Chain of Custody:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Analyzed:	07/01/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**6.99**	s.u.		
Conductivity @ 25° C	**2,370**	umhos/cm		
Total Dissolved Solids @ 180C	**1,420**	mg/L		
Total Dissolved Solids (Calc)	**1,580**	mg/L		
SAR	**7.80**	ratio		
Total Alkalinity as CaCO3	**180**	mg/L		
Total Hardness as CaCO3	**477**	mg/L		
Bicarbonate as CaCO3	**180**	mg/L	2.95	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**2.50**	mg/L	0.040	meq/L
Nitrite Nitrogen	**0.070**	mg/L	0.002	meq/L
Chloride	**640**	mg/L	18.1	meq/L
Fluoride	**2.20**	mg/L	0.116	meq/L
Phosphate	**4.74**	mg/L	0.150	meq/L
Sulfate	**263**	mg/L	5.47	meq/L
Iron	**2.67**	mg/L	0.096	meq/L
Calcium	**96.7**	mg/L	4.83	meq/L
Magnesium	**57.4**	mg/L	4.72	meq/L
Potassium	**10.3**	mg/L	0.263	meq/L
Sodium	**390**	mg/L	17.0	meq/L
Cations			26.8	meq/L
Anions			26.8	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Lab Composite for Above Two	Date Reported:	07/08/11
Laboratory Number:	58761	Date Sampled:	06/30/11
Chain of Custody:	9950	Date Received:	06/30/11
Sample Matrix:	Soil	Date Analyzed:	07/01/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.58**	s.u.		
Conductivity @ 25° C	**1,360**	umhos/cm		
Total Dissolved Solids @ 180C	**904**	mg/L		
Total Dissolved Solids (Calc)	**1,010**	mg/L		
SAR	**7.50**	ratio		
Total Alkalinity as CaCO3	**280**	mg/L		
Total Hardness as CaCO3	**251**	mg/L		
Bicarbonate as CaCO3	**280**	mg/L	4.59	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**6.00**	mg/L	0.097	meq/L
Nitrite Nitrogen	**0.190**	mg/L	0.004	meq/L
Chloride	**320**	mg/L	9.03	meq/L
Fluoride	**2.10**	mg/L	0.111	meq/L
Phosphate	**1.13**	mg/L	0.036	meq/L
Sulfate	**150**	mg/L	3.12	meq/L
Iron	**0.694**	mg/L	0.025	meq/L
Calcium	**59.9**	mg/L	2.99	meq/L
Magnesium	**24.8**	mg/L	2.04	meq/L
Potassium	**5.15**	mg/L	0.132	meq/L
Sodium	**272**	mg/L	11.8	meq/L
Cations			17.0	meq/L
Anions			17.0	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NM1-9 Land Farm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

CHAIN OF CUSTODY RECORD

029950

Client: KEY Energy

Client Address: 5651 Hwy 64 87401

Client Phone No.: 832-657-4873

Project Name / Location: NM1-9 Land Farm KEY Farmington ~~UIC-5 Inj Water~~

Sampler Name: Leston Wayne Puric Jr. Puric LLC

Client No.: 98065-0013

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	Preservative Cool	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	~~Gen Chem~~ Cation/Anion	WQCC METALS		Sample Cool	Sample Intact
2N-VZ-5	6/30/11		58754	Soil	2-4oz			X	X	X							X	X				Y	Y
2N-VZ-8	6/30/11		58755	Soil	2-4oz			X	X	X							X	X					
2S-VZ-5	6/30/11		58756	Soil	2-4oz			X	X	X							X	X					
2S-VZ-8	6/30/11		58757	Soil	2-4oz			X	X	X							X	X					
Lab Composite For Above Four			58758	Soil															X	X			
2N-TZ-Comp	6/30/11		58759	Soil	2-4oz			X	X								X	X					
2S-TZ-Comp	6/30/11		58760	Soil	2-4oz			X	X								X	X					
Lab Composite For Above Two			58761	Soil															X	X			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Leston Wayne Puric Jr.	6/30/11	4:28	Randi Vaquera	6/30/11	4:28
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Non Rush

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Analytical Laboratory

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Safety and Sampling Plan:

Location of Facility: Key Energy Farmington Landfarm NM-9
Sample Event: 2nd Quarter Sampling-2011

Requirements: OCD Part 36 Requirements:

Treatment Zone Monitoring: Collect samples from surface to 12" deep to determine the quality of the treatment process:

- *North Half (Cell 2N) Treatment Zone Monitoring*: Collect one composite sample from four discrete samples: (Run TPH 418.1, TPH 8015-M DRO/GRO, Chlorides.)
- *South Half (Cell 2S) Treatment Zone Monitoring*: Collect one composite sample from four discrete samples: (Run TPH 418.1, TPH 8015-M DRO/GRO, Chlorides.)
- *Labortory to make one composite from above two samples and run General Chemistry and WQCC Metals*.

Vadose Zone Monitoring: Collect 4 random samples per cell 3-4 feet below the bottom of the treatment zone. This will be approximately 5 feet deep.

- *North Half Treatment Zone Monitoring*: Collect 2 samples 5 ft deep as shown on the attached plot plan: (Run TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides.)
- *South Half Treatment Zone Monitoring*: Collect 2 samples 5 ft deep as shown on the attached plot plan: (Run TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides.)
- *Labortory to make one composite from above 4 samples and run General Chemistry and WQCC Metals*.

Tailgate Safety Meeting: Discuss and point out any onsite safety hazardous:
Note any Hazards and Safety Equipment to be used:

6/3/11 LESTER WAYNE PRICE JR
6/3/11 NEIL ALLEN
6/3/11 STEVE WILSON 04/29

Date, print names and initial:

Sampling Objective and Plan: To collect soil samples and perform analytical work pursuant to EPA protocols, procedures and methods per SW-846. Cell #2 is actually broken down into Cell # 2N (north) and Cell # 2S. Note: Cell #2 has always been considered one cell and extra samples are collected to improve representativeness.

Only clean 4 oz soil jars will be used, filled to capacity and pressed in. Cross-contamination will be reduced by wearing new sampling gloves for each sample. No smoking or engine exhaust near sampling. Jars will be placed on Ice immediately after collection. Clean stainless steel bowls and spoons shall be used and decontaminated between sample collections. All jar labels shall be pre-completed and placed on Jars, except time.

Samples may be collected with Hand auger, backhoe, or by hand. Caution should be used not to cross-contaminate surface soils with vadose zone soils.

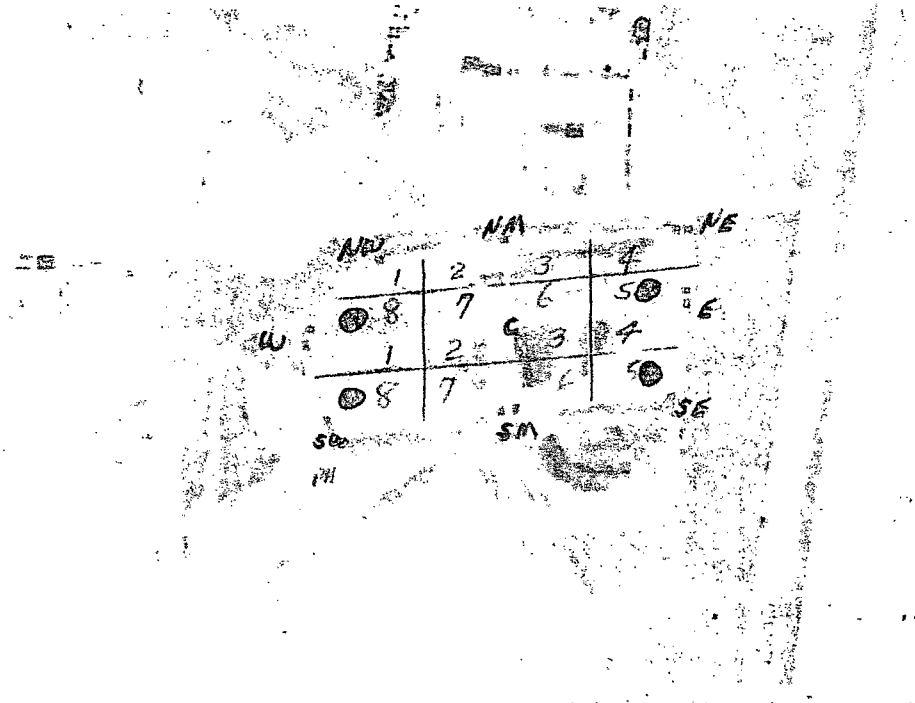
Random out of the hat drawing shall be used to determine sample locations. (Completed see sample Location Map on back-side for reference:)

COC #

Date:

Location: Key Energy Farmington Landfarm-NM9

Sample #	Depth	Lat	Long	Jars-4oz	Notes
2N-VZ-5	5.5ft	36°45.590'	108°04.9K'	2	TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides
2N-VZ-8	5.5ft	36°[illegible]	108°04.2[illegible]	2	TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides
2S-VZ-5	5.5ft	36°45.581'	108°04.2[illegible]'	2	TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides
2S-VZ-8	5.5ft	36°45.517	108°04.35'	2	TPH 418.1, TPH 8015-M DRO/GRO, BTEX 8021, Chlorides
Labortory:	To make one composite from the 4 samples above and run General Chemistry and WQCC metals:				
2N-TZ-Comp				2	TPH 418.1, TPH 8015-M DRO/GRO, Chlorides
2S-TZ-Comp				2	TPH 418.1, TPH 8015-M DRO/GRO, Chlorides
Labortory:	To make one composite from the 2 samples above and run General Chemistry and WQCC metals:				



Summary Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: August 18, 2011

Work Order: 11080821

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
274066	2N-VZ-5	soil	2011-08-05	00:00	2011-08-08
274067	2N-VZ-8	soil	2011-08-05	00:00	2011-08-08
274068	2S-VZ-5	soil	2011-08-05	00:00	2011-08-08
274069	2S-VZ-8	soil	2011-08-05	00:00	2011-08-08
274070	2N-TZ-Comp.	soil	2011-08-05	00:00	2011-08-08
274071	2S-TZ-Comp.	soil	2011-08-05	00:00	2011-08-08

Sample - Field Code	TPH 418.1 TRPHC (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
274066 - 2N-VZ-5	**14500**	**2150** Qs	<10.0 [1] Qs
274067 - 2N-VZ-8	**15100**	**2750** Qs	<10.0 [2] Qs
274068 - 2S-VZ-5	**107**	<50.0 Qs	<2.00
274069 - 2S-VZ-8	<10.0	<50.0 Qs	<2.00
274070 - 2N-TZ-Comp.	**19.4**	<50.0 Qs	<2.00
274071 - 2S-TZ-Comp.	**14800**	<50.0 Qs	<40.0 [3]

Sample: 274066 - 2N-VZ-5

Param	Flag	Result	Units	RL
Chloride	Qs	**2380**	mg/Kg	10
Moisture		**4.05**	%	
ORO	Qc,Qs	**1330**	mg/Kg	50

[1]Sample dilution due to turbidity.
[2]Sample dilution due to turbidity.
[3]Sample dilution due to surfactants.

Sample: 274067 - 2N-VZ-8

Param	Flag	Result	Units	RL
Chloride	Qs	**848**	mg/Kg	10
Moisture		**1.20**	%	
ORO	Qc,Qs	**1890**	mg/Kg	50

Sample: 274068 - 2S-VZ-5

Param	Flag	Result	Units	RL
Chloride	Qs	**1190**	mg/Kg	10
Moisture		**9.06**	%	
ORO	Qc,Qs	<50.0	mg/Kg	50

Sample: 274069 - 2S-VZ-8

Param	Flag	Result	Units	RL
Chloride	Qs	**228**	mg/Kg	10
Moisture		**23.5**	%	
ORO	Qc,Qs	<50.0	mg/Kg	50

Sample: 274070 - 2N-TZ-Comp.

Param	Flag	Result	Units	RL
Chloride	Qs	**311**	mg/Kg	10
Moisture		**14.3**	%	
ORO	Qc,Qs	<50.0	mg/Kg	50

Sample: 274071 - 2S-TZ-Comp.

Param	Flag	Result	Units	RL
Chloride	Qs	**964**	mg/Kg	10
Moisture		**19.9**	%	
ORO	Qc,Qs	<50.0	mg/Kg	50

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: August 18, 2011

Work Order: 11080821

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

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
274066	2N-VZ-5	soil	2011-08-05	00:00	2011-08-08
274067	2N-VZ-8	soil	2011-08-05	00:00	2011-08-08
274068	2S-VZ-5	soil	2011-08-05	00:00	2011-08-08
274069	2S-VZ-8	soil	2011-08-05	00:00	2011-08-08
274070	2N-TZ-Comp.	soil	2011-08-05	00:00	2011-08-08
274071	2S-TZ-Comp.	soil	2011-08-05	00:00	2011-08-08

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.

Michael Abel

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

Report Contents

Case Narrative

Samples for project NM1-9 Landfarm were received by TraceAnalysis, Inc. on 2011-08-08 and assigned to work order 11080821. Samples for work order 11080821 were received intact at a temperature of 15.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	71165	2011-08-11 at 14:31	83797	2011-08-11 at 14:32
Moisture Content	ASTM D 2216-05	71102	2011-08-09 at 11:28	83722	2011-08-09 at 11:31
TPH 418.1	E 418.1	71316	2011-08-17 at 13:30	83984	2011-08-17 at 13:43
TPH DRO - NEW	S 8015 D	71087	2011-08-08 at 14:00	83699	2011-08-08 at 20:00
TPH GRO	S 8015 D	71076	2011-08-08 at 08:32	83684	2011-08-08 at 08:32
TPH GRO	S 8015 D	71209	2011-08-12 at 16:55	83853	2011-08-12 at 16:55
TPH ORO	S 8015 D	71206	2011-08-08 at 14:00	83847	2011-08-08 at 21:00

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 11080821 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: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q8	1	**2380**	mg/Kg	5	10.0

Sample: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Moisture		1	**4.05**	%	1	0.00

Sample: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
TRPHC			**14500**	mg/Kg	20	10.0

Sample: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q_8	1	**2150**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q_{sr}		266	mg/Kg	1	100	266	61.5 - 159

Sample: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83853	Date Analyzed:	2011-08-12	Analyzed By:	MT
Prep Batch:	71209	Sample Preparation:	2011-08-12	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q_8,U	1	<10.0	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.99	mg/Kg	5	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)	J		1.94	mg/Kg	5	2.00	97	70 - 130

Sample: 274066 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Q_C,Q_8		**1330**	**1330**	**1330**	**1330**	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q_{sr}		266	mg/Kg	1	100	266	61.5 - 159
n-Triacontane	Q_{sr}		1650	mg/Kg	1	100	1650	70 - 166

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs	1	**848**	mg/Kg	5	10.0

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Moisture		1	**1.20**	%	1	0.00

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
TRPHC			**15100**	mg/Kg	20	10.0

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**2750**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr		327	mg/Kg	1	100	327	61.5 - 159

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83853	Date Analyzed:	2011-08-12	Analyzed By:	MT
Prep Batch:	71209	Sample Preparation:	2011-08-12	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [2]	Qs,U	1	<10.0	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		2.04	mg/Kg	5	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)	J		2.00	mg/Kg	5	2.00	100	70 - 130

Sample: 274067 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qc,Qs		**1890**	**1890**	**1890**	**1890**	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr		327	mg/Kg	1	100	327	61.5 - 159
n-Triacontane	Qsr		2260	mg/Kg	1	100	2260	70 - 166

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qe	1	**1190**	mg/Kg	5	10.0

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Moisture		1	**9.06**	%	1	0.00

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
TRPHC			**107**	mg/Kg	1	10.0

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	61.5 - 159

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83684	Date Analyzed:	2011-08-08	Analyzed By:	ZLM
Prep Batch:	71076	Sample Preparation:	2011-08-08	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)			2.22	mg/Kg	1	2.00	111	70 - 130
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	70 - 130

Sample: 274068 - 2S-VZ-5

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qc,Qs,U		<17.1	<50.0	<50.0	<50.0	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	61.5 - 159
n-Triacontane			123	mg/Kg	1	100	123	70 - 166

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs	1	**228**	mg/Kg	5	10.0

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Moisture		1	**23.5**	%	1	0.00

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
TRPHC	U		<10.0	mg/Kg	1	10.0

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.2	mg/Kg	1	100	99	61.5 - 159

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83684	Date Analyzed:	2011-08-08	Analyzed By:	ZLM
Prep Batch:	71076	Sample Preparation:	2011-08-08	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)	J		1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)	J		1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 274069 - 2S-VZ-8

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qc,Qs,U		<17.1	<50.0	<50.0	<50.0	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.2	mg/Kg	1	100	99	61.5 - 159
n-Triacontane			113	mg/Kg	1	100	113	70 - 166

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs	1	**311**	mg/Kg	5	10.0

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Moisture		1	**14.3**	%	1	0.00

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
TRPHC			**19.4**	mg/Kg	1	10.0

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.6	mg/Kg	1	100	100	61.5 - 159

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83684	Date Analyzed:	2011-08-08	Analyzed By:	ZLM
Prep Batch:	71076	Sample Preparation:	2011-08-08	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL 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)			2.09	mg/Kg	1	2.00	104	70 - 130

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sample continued ...

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

Sample: 274070 - 2N-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qc,Qs,U		<17.1	<50.0	<50.0	<50.0	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.6	mg/Kg	1	100	100	61.5 - 159
n-Triacontane			114	mg/Kg	1	100	114	70 - 166

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	83797	Date Analyzed:	2011-08-11	Analyzed By:	CR
Prep Batch:	71165	Sample Preparation:	2011-08-10	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs	1	**964**	mg/Kg	5	10.0

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	Moisture Content	Analytical Method:	ASTM D 2216-05	Prep Method:	N/A
QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	Sample Preparation:	2011-08-09	Prepared By:	CR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Moisture		1	**19.9**	%	1	0.00

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH 418.1	Analytical Method:	E 418.1	Prep Method:	N/A
QC Batch:	83984	Date Analyzed:	2011-08-17	Analyzed By:	DS
Prep Batch:	71316	Sample Preparation:	2011-08-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
TRPHC			**14800**	mg/Kg	20	10.0

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83699	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71087	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	$Q_{s,U}$	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			100	mg/Kg	1	100	100	61.5 - 159

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	83684	Date Analyzed:	2011-08-08	Analyzed By:	ZLM
Prep Batch:	71076	Sample Preparation:	2011-08-08	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [3]	U	1	<40.0	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		2.10	mg/Kg	20	2.00	105	70 - 130
4-Bromofluorobenzene (4-BFB)	J		1.74	mg/Kg	20	2.00	87	70 - 130

Sample: 274071 - 2S-TZ-Comp.

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	83847	Date Analyzed:	2011-08-08	Analyzed By:	BP
Prep Batch:	71206	Sample Preparation:	2011-08-08	Prepared By:	BP

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qc,Qs,U		<17.1	<50.0	<50.0	<50.0	mg/Kg	1	17.1	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			100	mg/Kg	1	100	100	61.5 - 159
n-Triacontane			113	mg/Kg	1	100	113	70 - 166

Method Blanks

Method Blank (1) QC Batch: 83684

QC Batch: 83684 | Date Analyzed: 2011-08-08 | Analyzed By: ZLM
Prep Batch: 71076 | QC Preparation: 2011-08-08 | Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

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)			1.81	mg/Kg	1	2.00	90	70 - 130

Method Blank (1) QC Batch: 83699

QC Batch: 83699 | Date Analyzed: 2011-08-08 | Analyzed By: BP
Prep Batch: 71087 | QC Preparation: 2011-08-08 | Prepared By: EB

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<17.1	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.5	mg/Kg	1	100	96	61.5 - 159

Method Blank (1) QC Batch: 83797

QC Batch: 83797 | Date Analyzed: 2011-08-11 | Analyzed By: CR
Prep Batch: 71165 | QC Preparation: 2011-08-11 | Prepared By: CR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	0.0900	mg/Kg	10

Method Blank (1) QC Batch: 83847

QC Batch: 83847 | Date Analyzed: 2011-08-08 | Analyzed By: BP
Prep Batch: 71206 | QC Preparation: 2011-08-08 | Prepared By: EB

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<17.1	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.5	mg/Kg	1	100	96	61.5 - 159
n-Triacontane			85.8	mg/Kg	1	100	86	70 - 166

Method Blank (1) QC Batch: 83853

QC Batch: 83853 | Date Analyzed: 2011-08-12 | Analyzed By: MT
Prep Batch: 71209 | QC Preparation: 2011-08-12 | Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 83984

QC Batch: 83984 | Date Analyzed: 2011-08-17 | Analyzed By: DS
Prep Batch: 71316 | QC Preparation: 2011-08-17 | Prepared By: DS

Parameter	Flag	Cert	MDL Result	Units	RL
TRPHC			<4.79	mg/Kg	10

Duplicates (1) Duplicated Sample: 274022

QC Batch:	83722	Date Analyzed:	2011-08-09	Analyzed By:	CR
Prep Batch:	71102	QC Preparation:	2011-08-09	Prepared By:	CR

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Moisture	1	0.370	0.430	%	1	15	20

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 83684 | Date Analyzed: 2011-08-08 | Analyzed By: ZLM
Prep Batch: 71076 | QC Preparation: 2011-08-08 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.3	mg/Kg	1	20.0	<0.446	96	70 - 130

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	19.1	mg/Kg	1	20.0	<0.446	96	70 - 130	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)	1.90	1.91	mg/Kg	1	2.00	95	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.86	1.87	mg/Kg	1	2.00	93	94	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 83699 | Date Analyzed: 2011-08-08 | Analyzed By: BP
Prep Batch: 71087 | QC Preparation: 2011-08-08 | Prepared By: EB

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	246	mg/Kg	1	250	<17.1	98	75.6 - 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
DRO		1	244	mg/Kg	1	250	<17.1	98	75.6 - 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
n-Tricosane	92.5	90.4	mg/Kg	1	100	92	90	61.5 - 159

Laboratory Control Spike (LCS-1)

QC Batch: 83797 | Date Analyzed: 2011-08-11 | Analyzed By: CR
Prep Batch: 71165 | QC Preparation: 2011-08-11 | Prepared By: CR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	237	mg/Kg	1	250	0.09	95	90 - 110

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
Chloride		1	237	mg/Kg	1	250	0.09	95	90 - 110	0	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 83847 | Date Analyzed: 2011-08-08 | Analyzed By: BP
Prep Batch: 71206 | QC Preparation: 2011-08-08 | Prepared By: EB

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	92.5	90.4	mg/Kg	1	100	92	90	61.5 - 159
n-Triacontane	87.6	84.3	mg/Kg	1	100	88	84	70 - 166

Laboratory Control Spike (LCS-1)

QC Batch: 83853 | Date Analyzed: 2011-08-12 | Analyzed By: MT
Prep Batch: 71209 | QC Preparation: 2011-08-12 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.8	mg/Kg	1	20.0	<0.446	99	70 - 130

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	20.6	mg/Kg	1	20.0	<0.446	103	70 - 130	4	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)	1.96	1.93	mg/Kg	1	2.00	98	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.92	1.91	mg/Kg	1	2.00	96	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 83984 | Date Analyzed: 2011-08-17 | Analyzed By: DS
Prep Batch: 71316 | QC Preparation: 2011-08-17 | Prepared By: DS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
TRPHC			297	mg/Kg	1	250	<4.79	119	84.3 - 122

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
TRPHC			281	mg/Kg	1	250	<4.79	112	84.3 - 122	6	

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

Matrix Spike (MS-1) Spiked Sample: 274021

QC Batch: 83684 | Date Analyzed: 2011-08-08 | Analyzed By: ZLM
Prep Batch: 71076 | QC Preparation: 2011-08-08 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.6	mg/Kg	1	20.0	<0.446	93	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	19.8	mg/Kg	1	20.0	<0.446	99	70 - 130	6	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)	2.13	2.04	mg/Kg	1	2	106	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.29	2.32	mg/Kg	1	2	114	116	70 - 130

Matrix Spike (MS-1) Spiked Sample: 274020

QC Batch: 83699 | Date Analyzed: 2011-08-08 | Analyzed By: BP
Prep Batch: 71087 | QC Preparation: 2011-08-08 | Prepared By: EB

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qe	1	42700	mg/Kg	20	250	44800	-840	58 - 129

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	Qe	1	40800	mg/Kg	20	250	44800	-1600	58 - 129	5	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	11000	10500	mg/Kg	20	100	11000	10500	61.5 - 159

Matrix Spike (MS-1) Spiked Sample: 274071

QC Batch: 83797 | Date Analyzed: 2011-08-11 | Analyzed By: CR
Prep Batch: 71165 | QC Preparation: 2011-08-11 | Prepared By: CR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Qe	1	2120	mg/Kg	6	1500	965	77	90 - 110

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
Chloride	Qe	1	2120	mg/Kg	6	1500	965	77	90 - 110	0	20

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

Matrix Spike (MS-1) Spiked Sample: 274067

QC Batch: 83853 | Date Analyzed: 2011-08-12 | Analyzed By: MT
Prep Batch: 71209 | QC Preparation: 2011-08-12 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	1	3.33	mg/Kg	1	20.0	<0.446	17	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	Qs	1	3.97	mg/Kg	1	20.0	<0.446	20	70 - 130	18	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)	Qsr	0.352	0.388	mg/Kg	1	2	18	19	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	0.357	0.425	mg/Kg	1	2	18	21	70 - 130

Matrix Spike (MS-1) Spiked Sample: 274069

QC Batch: 83984 | Date Analyzed: 2011-08-17 | Analyzed By: DS
Prep Batch: 71316 | QC Preparation: 2011-08-17 | Prepared By: DS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
TRPHC			243	mg/Kg	1	250	<4.79	97	43 - 161

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
TRPHC			235	mg/Kg	1	250	<4.79	94	43 - 161	3	

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

Calibration Standards

Standard (CCV-1)

QC Batch: 83684 Date Analyzed: 2011-08-08 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	0.919	92	80 - 120	2011-08-08

Standard (CCV-2)

QC Batch: 83684 Date Analyzed: 2011-08-08 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	0.865	86	80 - 120	2011-08-08

Standard (CCV-1)

QC Batch: 83699 Date Analyzed: 2011-08-08 Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	257	103	80 - 120	2011-08-08

Standard (CCV-2)

QC Batch: 83699 Date Analyzed: 2011-08-08 Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	234	94	80 - 120	2011-08-08

Standard (CCV-3)

QC Batch: 83699 | Date Analyzed: 2011-08-08 | Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	224	90	80 - 120	2011-08-08

Standard (CCV-1)

QC Batch: 83797 | Date Analyzed: 2011-08-11 | Analyzed By: CR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	25.0	23.7	95	90 - 110	2011-08-11

Standard (CCV-2)

QC Batch: 83797 | Date Analyzed: 2011-08-11 | Analyzed By: CR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	25.0	23.0	92	90 - 110	2011-08-11

Standard (CCV-1)

QC Batch: 83853 | Date Analyzed: 2011-08-12 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.932	93	80 - 120	2011-08-12

Standard (CCV-2)

QC Batch: 83853 | Date Analyzed: 2011-08-12 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.862	86	80 - 120	2011-08-12

Standard (CCV-1)

QC Batch: 83984 Date Analyzed: 2011-08-17 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC			mg/Kg	100	105	105	80 - 120	2011-08-17

Standard (CCV-2)

QC Batch: 83984 Date Analyzed: 2011-08-17 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC			mg/Kg	100	105	105	80 - 120	2011-08-17

Standard (CCV-3)

QC Batch: 83984 Date Analyzed: 2011-08-17 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC			mg/Kg	100	106	106	80 - 120	2011-08-17

Appendix

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	T104704219-11-4	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

Result Comments

1 Sample dilution due to turbidity.
2 Sample dilution due to turbidity.
3 Sample dilution due to surfactants.

Attachments

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

LAB Order ID [redacted]U80821

Page 1 of [redacted]

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: KEY ENERGY — Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RD CT NE RIO RANCHO NM 87124 — Fax #:

Contact Person: WAYNE PRICE — E-mail: WAYNEPRICE77@EARTHLINK.NET

Invoice to: (If different from above) KEY ENERGY

Project #: RE-TEST #1 — Project Name: NM1-9 LANDFARM

Project Location (including state): FARMINGTON NM — Sampler Signature: WAYNE PRICE JR

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / ~~TX1005~~ / TX1005 Ext(C35)	TPH 8015 GRO / DRO / ~~TRRP~~ ERO / ORO	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	CHLORIDES			Turn Around Time if different from standard	Hold
27406	2N-VZ-5		402		X							X		8-5-11			X	X												X				X			
067	2N-VZ-8		4		X							X					X	X												X				X			
068	2S-VZ-5		4		X							X					X	X												X				X			
069	2S-VZ-8		4		X							X					X	X												X				X			
070	2N-TZ-COMP		11		X							X					X	X												X				X			
071	2S-TZ-COMP		11		X							X					X	X												X				X			

TRANSFER DATE

Relinquished by: X [signature] Company: Enviroteck Date: 8/5/11 Time: 1:50PM
Received by: WAYNE PRICE - KEY + Lester Wayne Price Company: Date: 8/5/11 Time: 1:50 PM INST ____ °C OBS ____ °C COR ____ °C

Relinquished by: WAYNE PRICE - KEY + Lester Wayne Price Company: Date: 8/5/11 Time: ____
Received by: Randi Ingram Company: Enviroteck Date: 8/5/11 Time: 1:55 COR ____ °C

Relinquished by: ____ Company: ____ Date: ____ Time: ____
Received by: [signature] Company: TAS Date: 8/8/11 Time: 10:00 INST 15.4 °C OBS 15.0 °C COR 15.0 °C

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

ORIGINAL COPY

LAB USE ONLY

Intact Y / N

Headspace Y / N / NA

Log-In-Review

Dry Weight Basis Required

TRRP Report Required

Check If Special Reporting Limits Are Needed

REMARKS: SAMPLES WERE TAKEN ON 6/30/11 - PRESERVED AT ENVIRO TECK - FARM. NM ⇒ SENDING TO TRACE ANALYSIS FOR QA/QC. SEE COC # 09950 ATTACHED.

Carrier # FEDEX: 7966 5991 0782

Appendix VIII- 2011 Third Quarter Sampling

- Sampling Results
- 8015D ORO/TX1005 ERO results included.
- COC's
- Field Reports and Selected Photos

envirotech
Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	10-13-11
Laboratory Number:	59750	Date Sampled:	09-22-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**1.9**	**0.1**
Total Petroleum Hydrocarbons	**1.9**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

envirotech
Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-7	Date Reported:	10-13-11
Laboratory Number:	59751	Date Sampled:	09-22-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**1.2**	**0.1**
Total Petroleum Hydrocarbons	**1.2**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	10-13-11
Laboratory Number:	59752	Date Sampled:	09-22-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**1.6**	**0.1**
Total Petroleum Hydrocarbons	**1.6**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	10-13-11
Laboratory Number:	59753	Date Sampled:	09-23-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**1.2**	**0.1**
Total Petroleum Hydrocarbons	**1.2**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	10-13-11
Laboratory Number:	59754	Date Sampled:	09-23-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**33.6**	**0.2**
Diesel Range (C10 - C28)	**36.2**	**0.1**
Total Petroleum Hydrocarbons	**69.8**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	10-13-11
Laboratory Number:	59755	Date Sampled:	09-23-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**36.4**	**0.2**
Diesel Range (C10 - C28)	**118**	**0.1**
Total Petroleum Hydrocarbons	**154**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-C	Date Reported:	10-13-11
Laboratory Number:	59756	Date Sampled:	09-23-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**31.3**	**0.2**
Diesel Range (C10 - C28)	**23.4**	**0.1**
Total Petroleum Hydrocarbons	**54.7**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-D	Date Reported:	10-13-11
Laboratory Number:	59757	Date Sampled:	09-23-11
Chain of Custody No:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	10-03-11
Preservative:	Cool	Date Analyzed:	10-03-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**23.1**	**0.2**
Diesel Range (C10 - C28)	**15.7**	**0.1**
Total Petroleum Hydrocarbons	**38.8**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	10-03-11 QA/QC	Date Reported:	10-13-11
Laboratory Number:	59764	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-03-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	40819	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	40819	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**3.00**	**0.2**
Diesel Range C10 - C28	**5.53**	**0.1**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.00%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.00%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**248**	**99.1%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**249**	**99.4%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste,

SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59750-59757, 59764, 59774, 59777**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	10-19-11
Laboratory Number:	59750	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**7.2**	**1.0**
Ethylbenzene	**5.5**	**1.0**
p,m-Xylene	**23.2**	**1.2**
o-Xylene	**9.9**	**0.9**
Total BTEX	**45.8**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**96.3 %**
	1,4-difluorobenzene	**104 %**
	Bromochlorobenzene	**98.7 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-7	Date Reported:	10-19-11
Laboratory Number:	59751	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**1.7**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**1.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**100 %**
	1,4-difluorobenzene	**98.9 %**
	Bromochlorobenzene	**101 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	10-19-11
Laboratory Number:	59752	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**0.9**	**0.9**
Toluene	**4.0**	**1.0**
Ethylbenzene	**1.8**	**1.0**
p,m-Xylene	**6.6**	**1.2**
o-Xylene	**3.4**	**0.9**
Total BTEX	**16.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**102 %**
	1,4-difluorobenzene	**97.0 %**
	Bromochlorobenzene	**101 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	10-19-11
Laboratory Number:	59753	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**1.5**	**0.9**
Toluene	**31.5**	**1.0**
Ethylbenzene	**28.3**	**1.0**
p,m-Xylene	**373**	**1.2**
o-Xylene	**63.6**	**0.9**
Total BTEX	**498**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**95.7 %**
	1,4-difluorobenzene	**102 %**
	Bromochlorobenzene	**98.5 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	10-19-11
Laboratory Number:	59754	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**1.8**	**0.9**
Toluene	**16.5**	**1.0**
Ethylbenzene	**8.7**	**1.0**
p,m-Xylene	**41.7**	**1.2**
o-Xylene	**12.7**	**0.9**
Total BTEX	**81.4**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.9 %**
	1,4-difluorobenzene	**103 %**
	Bromochlorobenzene	**97.2 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	10-19-11
Laboratory Number:	59755	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**3.0**	**0.9**
Toluene	**15.1**	**1.0**
Ethylbenzene	**5.8**	**1.0**
p,m-Xylene	**30.3**	**1.2**
o-Xylene	**10.7**	**0.9**
Total BTEX	**64.9**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**97.8 %**
	1,4-difluorobenzene	**103 %**
	Bromochlorobenzene	**98.4 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-C	Date Reported:	10-19-11
Laboratory Number:	59756	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**2.8**	**0.9**
Toluene	**17.4**	**1.0**
Ethylbenzene	**10.6**	**1.0**
p,m-Xylene	**42.2**	**1.2**
o-Xylene	**15.8**	**0.9**
Total BTEX	**88.8**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**99.9 %**
	1,4-difluorobenzene	**108 %**
	Bromochlorobenzene	**98.3 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-D	Date Reported:	10-19-11
Laboratory Number:	59757	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-04-11
Preservative:	Cool	Date Extracted:	10-04-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**2.0**	**0.9**
Toluene	**13.2**	**1.0**
Ethylbenzene	**13.2**	**1.0**
p,m-Xylene	**38.9**	**1.2**
o-Xylene	**18.4**	**0.9**
Total BTEX	**85.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**93.8 %**
	1,4-difluorobenzene	**100 %**
	Bromochlorobenzene	**99.3 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	1004BBLK QA/QC	Date Reported:	10-19-11
Laboratory Number:	59837	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-04-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.1554E+006	3.1617E+006	0.2%	ND	0.1
Toluene	3.2681E+006	3.2746E+006	0.2%	ND	0.1
Ethylbenzene	2.9129E+006	2.9187E+006	0.2%	ND	0.1
p,m-Xylene	8.1093E+006	8.1255E+006	0.2%	ND	0.1
o-Xylene	2.7916E+006	2.7971E+006	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	450	90.0%	39 - 150
Toluene	ND	500	420	84.1%	46 - 148
Ethylbenzene	ND	500	420	84.0%	32 - 160
p,m-Xylene	ND	1000	930	93.0%	46 - 148
o-Xylene	ND	500	470	94.0%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 59837-59838, 59750-59757

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	10-19-11
Laboratory Number:	59750	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.78**	**0.001**
Aluminum	**4280**	**0.001**
Barium	**294**	**0.001**
Boron	**1.72**	**0.001**
Cadmium	**0.020**	**0.001**
Chromium	**3.15**	**0.001**
Cobalt	**3.02**	**0.001**
Copper	**7.35**	**0.001**
Iron	**3580**	**0.001**
Lead	**6.59**	**0.001**
Manganese	**155**	**0.001**
Molybdenum	**0.321**	**0.001**
Mercury	**0.079**	**0.001**
Nickel	**6.36**	**0.001**
Selenium	**0.058**	**0.001**
Silver	**0.028**	**0.001**
Zinc	**17.6**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-7	Date Reported:	10-19-11
Laboratory Number:	59751	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.75**	**0.001**
Aluminum	**2110**	**0.001**
Barium	**159**	**0.001**
Boron	**1.45**	**0.001**
Cadmium	**0.003**	**0.001**
Chromium	**1.36**	**0.001**
Cobalt	**1.90**	**0.001**
Copper	**6.65**	**0.001**
Iron	**2190**	**0.001**
Lead	**3.73**	**0.001**
Manganese	**129**	**0.001**
Molybdenum	**ND**	**0.001**
Mercury	**0.034**	**0.001**
Nickel	**5.32**	**0.001**
Selenium	**0.007**	**0.001**
Silver	**0.101**	**0.001**
Zinc	**8.37**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	10-19-11
Laboratory Number:	59752	Date Sampled:	09-22-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.58**	**0.001**
Aluminum	**4200**	**0.001**
Barium	**120**	**0.001**
Boron	**0.83**	**0.001**
Cadmium	**0.050**	**0.001**
Chromium	**3.28**	**0.001**
Cobalt	**3.18**	**0.001**
Copper	**8.91**	**0.001**
Iron	**3490**	**0.001**
Lead	**10.2**	**0.001**
Manganese	**210**	**0.001**
Molybdenum	**0.622**	**0.001**
Mercury	**0.011**	**0.001**
Nickel	**6.11**	**0.001**
Selenium	**0.150**	**0.001**
Silver	**0.062**	**0.001**
Zinc	**16.5**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	10-19-11
Laboratory Number:	59753	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.52**	**0.001**
Aluminum	**4170**	**0.001**
Barium	**121**	**0.001**
Boron	**0.844**	**0.001**
Cadmium	**0.013**	**0.001**
Chromium	**6.98**	**0.001**
Cobalt	**3.31**	**0.001**
Copper	**8.36**	**0.001**
Iron	**3600**	**0.001**
Lead	**6.98**	**0.001**
Manganese	**182**	**0.001**
Molybdenum	**0.042**	**0.001**
Mercury	**0.029**	**0.001**
Nickel	**6.25**	**0.001**
Selenium	**0.039**	**0.001**
Silver	**ND**	**0.001**
Zinc	**15.8**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	10-19-11
Laboratory Number:	59754	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.44**	**0.001**
Aluminum	**4130**	**0.001**
Barium	**947**	**0.001**
Boron	**2.25**	**0.001**
Cadmium	**0.096**	**0.001**
Chromium	**7.31**	**0.001**
Cobalt	**3.99**	**0.001**
Copper	**17.3**	**0.001**
Iron	**6680**	**0.001**
Lead	**24.7**	**0.001**
Manganese	**228**	**0.001**
Molybdenum	**0.143**	**0.001**
Mercury	**1.02**	**0.001**
Nickel	**12.8**	**0.001**
Selenium	**0.561**	**0.001**
Silver	**ND**	**0.001**
Zinc	**62.5**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	10-19-11
Laboratory Number:	59755	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.31**	**0.001**
Aluminum	**4010**	**0.001**
Barium	**916**	**0.001**
Boron	**2.38**	**0.001**
Cadmium	**0.089**	**0.001**
Chromium	**7.28**	**0.001**
Cobalt	**3.91**	**0.001**
Copper	**18.1**	**0.001**
Iron	**6480**	**0.001**
Lead	**22.4**	**0.001**
Manganese	**214**	**0.001**
Molybdenum	**ND**	**0.001**
Mercury	**1.49**	**0.001**
Nickel	**13.0**	**0.001**
Selenium	**0.331**	**0.001**
Silver	**0.090**	**0.001**
Zinc	**55.0**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-C	Date Reported:	10-19-11
Laboratory Number:	59756	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.26**	**0.001**
Aluminum	**3860**	**0.001**
Barium	**1160**	**0.001**
Boron	**2.71**	**0.001**
Cadmium	**0.085**	**0.001**
Chromium	**8.12**	**0.001**
Cobalt	**3.40**	**0.001**
Copper	**13.0**	**0.001**
Iron	**5610**	**0.001**
Lead	**14.3**	**0.001**
Manganese	**189**	**0.001**
Molybdenum	**ND**	**0.001**
Mercury	**0.696**	**0.001**
Nickel	**13.6**	**0.001**
Selenium	**0.122**	**0.001**
Silver	**0.082**	**0.001**
Zinc	**44.8**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-D	Date Reported:	10-19-11
Laboratory Number:	59757	Date Sampled:	09-23-11
Chain of Custody:	09953	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.30**	**0.001**
Aluminum	**4120**	**0.001**
Barium	**945**	**0.001**
Boron	**2.53**	**0.001**
Cadmium	**0.078**	**0.001**
Chromium	**5.99**	**0.001**
Cobalt	**4.04**	**0.001**
Copper	**14.3**	**0.001**
Iron	**5830**	**0.001**
Lead	**19.6**	**0.001**
Manganese	**192**	**0.001**
Molybdenum	**ND**	**0.001**
Mercury	**0.660**	**0.001**
Nickel	**11.3**	**0.001**
Selenium	**0.144**	**0.001**
Silver	**ND**	**0.001**
Zinc	**49.3**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	10-17-TM QA/QC	Date Reported:	10/18/11
Laboratory Number:	59749	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	10/17/11
Condition:	N/A	Date Digested:	10/06/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	1.42	1.41	0.21%	0% - 30%
Aluminum	ND	ND	0.01	2510	2470	1.32%	0% - 30%
Barium	ND	ND	0.01	123	122	0.89%	0% - 30%
Cadmium	ND	ND	0.01	0.03	0.03	0.00%	0% - 30%
Chromium	ND	ND	0.01	1.54	1.60	3.43%	0% - 30%
Cobalt	ND	ND	0.01	1.52	1.56	2.84%	0% - 30%
Copper	ND	ND	0.01	4.80	4.80	0.00%	0% - 30%
Iron	ND	ND	0.01	1910	1890	1.15%	0% - 30%
Lead	ND	ND	0.01	1.89	2.04	7.90%	0% - 30%
Manganese	ND	ND	0.01	45.9	45.8	0.20%	0% - 30%
Molybdenum	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Mercury	ND	ND	0.01	0.17	0.17	0.00%	0% - 30%
Nickel	ND	ND	0.01	4.25	4.30	1.10%	0% - 30%
Selenium	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Zinc	ND	ND	0.01	7.02	7.05	0.33%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.500	1.42	3.61	92.2%	80% - 120%
Aluminum	2.500	2,510	2,370	94.3%	80% - 120%
Barium	5.000	123	121	94.4%	80% - 120%
Cadmium	2.500	0.03	2.07	82.0%	80% - 120%
Chromium	5.000	1.54	5.55	84.9%	80% - 120%
Cobalt	5.000	1.52	3.51	53.9%	80% - 120%
Copper	5.000	4.80	7.88	80.4%	80% - 120%
Iron	2.500	1,910	1,820	95.0%	80% - 120%
Lead	5.000	1.89	5.81	84.3%	80% - 120%
Manganese	2.500	45.9	46.8	96.7%	80% - 120%
Molybdenum	1.000	ND	0.84	84.0%	80% - 120%
Mercury	1.000	0.17	0.95	81.2%	80% - 120%
Nickel	5.000	4.25	7.69	83.1%	80% - 120%
Selenium	1.000	ND	0.84	83.6%	80% - 120%
Silver	1.000	ND	0.84	84.0%	80% - 120%
Zinc	5.000	7.02	11.1	92.2%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59748-59757, 59888, 59847.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	10/12/11
Laboratory Number:	59750	Date Sampled:	09/22/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**8.50**	s.u.		
Conductivity @ 25° C	**764**	umhos/cm		
Total Dissolved Solids @ 180C	**700**	mg/L		
Total Dissolved Solids (Calc)	**780**	mg/L		
SAR	**14.7**	ratio		
Total Alkalinity as CaCO3	**81.0**	mg/L		
Total Hardness as CaCO3	**61.0**	mg/L		
Bicarbonate as CaCO3	**81.0**	mg/L	1.3	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.030**	mg/L	0.000	meq/L
Nitrite Nitrogen	**0.003**	mg/L	0.000	meq/L
Chloride	**360**	mg/L	10	meq/L
Fluoride	**5.00**	mg/L	0.263	meq/L
Phosphate	**2.30**	mg/L	0.073	meq/L
Sulfate	**68.0**	mg/L	1.42	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**10.9**	mg/L	1	meq/L
Magnesium	**8.97**	mg/L	1	meq/L
Potassium	**4.30**	mg/L	0.1	meq/L
Sodium	**270**	mg/L	12	meq/L
Cations			13	meq/L
Anions			13	meq/L
Cation/Anion Difference			**0.66%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-7	Date Reported:	10/12/11
Laboratory Number:	59751	Date Sampled:	09/22/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**8.92**	s.u.		
Conductivity @ 25° C	**738**	umhos/cm		
Total Dissolved Solids @ 180C	**620**	mg/L		
Total Dissolved Solids (Calc)	**710**	mg/L		
SAR	**19.0**	ratio		
Total Alkalinity as CaCO3	**59.0**	mg/L		
Total Hardness as CaCO3	**27.0**	mg/L		
Bicarbonate as CaCO3	**59.0**	mg/L	1.0	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.020**	mg/L	0.000	meq/L
Nitrite Nitrogen	**0.001**	mg/L	0.000	meq/L
Chloride	**160**	mg/L	5	meq/L
Fluoride	**4.60**	mg/L	0.242	meq/L
Phosphate	**0.600**	mg/L	0.019	meq/L
Sulfate	**260**	mg/L	5.41	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**3.59**	mg/L	0	meq/L
Magnesium	**5.14**	mg/L	0	meq/L
Potassium	**4.38**	mg/L	0.1	meq/L
Sodium	**240**	mg/L	10	meq/L
Cations			11	meq/L
Anions			11	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	10/12/11
Laboratory Number:	59752	Date Sampled:	09/22/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.80**	s.u.		
Conductivity @ 25° C	**942**	umhos/cm		
Total Dissolved Solids @ 180C	**650**	mg/L		
Total Dissolved Solids (Calc)	**770**	mg/L		
SAR	**9.00**	ratio		
Total Alkalinity as CaCO3	**52.0**	mg/L		
Total Hardness as CaCO3	**121**	mg/L		
Bicarbonate as CaCO3	**52.0**	mg/L	0.9	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.130**	mg/L	0.002	meq/L
Nitrite Nitrogen	**0.039**	mg/L	0.001	meq/L
Chloride	**270**	mg/L	8	meq/L
Fluoride	**0.390**	mg/L	0.021	meq/L
Phosphate	**2.00**	mg/L	0.063	meq/L
Sulfate	**193**	mg/L	4.01	meq/L
Iron	**0.032**	mg/L	0.001	meq/L
Calcium	**30.3**	mg/L	2	meq/L
Magnesium	**11.7**	mg/L	1	meq/L
Potassium	**5.44**	mg/L	0.1	meq/L
Sodium	**230**	mg/L	10	meq/L
Cations			13	meq/L
Anions			13	meq/L
Cation/Anion Difference			**0.35%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	10/12/11
Laboratory Number:	59753	Date Sampled:	09/23/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.94**	s.u.		
Conductivity @ 25° C	**1,080**	umhos/cm		
Total Dissolved Solids @ 180C	**910**	mg/L		
Total Dissolved Solids (Calc)	**1,100**	mg/L		
SAR	**18.8**	ratio		
Total Alkalinity as CaCO3	**57.0**	mg/L		
Total Hardness as CaCO3	**78.4**	mg/L		
Bicarbonate as CaCO3	**57.0**	mg/L	0.9	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.100**	mg/L	0.002	meq/L
Nitrite Nitrogen	**0.002**	mg/L	0.000	meq/L
Chloride	**560**	mg/L	16	meq/L
Fluoride	**0.760**	mg/L	0.040	meq/L
Phosphate	**2.00**	mg/L	0.063	meq/L
Sulfate	**85.0**	mg/L	1.77	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**15.2**	mg/L	1	meq/L
Magnesium	**10.6**	mg/L	1	meq/L
Potassium	**4.59**	mg/L	0.1	meq/L
Sodium	**390**	mg/L	17	meq/L
Cations			19	meq/L
Anions			19	meq/L
Cation/Anion Difference			**0.47%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	10/12/11
Laboratory Number:	59754	Date Sampled:	09/23/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.61**	s.u.		
Conductivity @ 25° C	**2,520**	umhos/cm		
Total Dissolved Solids @ 180C	**1,880**	mg/L		
Total Dissolved Solids (Calc)	**2,470**	mg/L		
SAR	**20.0**	ratio		
Total Alkalinity as CaCO3	**180**	mg/L		
Total Hardness as CaCO3	**278**	mg/L		
Bicarbonate as CaCO3	**180**	mg/L	3.0	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.010**	mg/L	0.000	meq/L
Nitrite Nitrogen	**0.004**	mg/L	0.000	meq/L
Chloride	**750**	mg/L	21	meq/L
Fluoride	**1.46**	mg/L	0.077	meq/L
Phosphate	**1.20**	mg/L	0.038	meq/L
Sulfate	**730**	mg/L	15.20	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**78.3**	mg/L	4	meq/L
Magnesium	**20.7**	mg/L	2	meq/L
Potassium	**10.7**	mg/L	0.3	meq/L
Sodium	**770**	mg/L	33	meq/L
Cations			39	meq/L
Anions			39	meq/L
Cation/Anion Difference			**0.11%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	10/12/11
Laboratory Number:	59755	Date Sampled:	09/23/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.59**	s.u.		
Conductivity @ 25° C	**3,170**	umhos/cm		
Total Dissolved Solids @ 180C	**2,230**	mg/L		
Total Dissolved Solids (Calc)	**2,930**	mg/L		
SAR	**23.0**	ratio		
Total Alkalinity as CaCO3	**120**	mg/L		
Total Hardness as CaCO3	**305**	mg/L		
Bicarbonate as CaCO3	**120**	mg/L	2.0	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.010**	mg/L	0.000	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.000	meq/L
Chloride	**960**	mg/L	27	meq/L
Fluoride	**1.44**	mg/L	0.076	meq/L
Phosphate	**0.900**	mg/L	0.028	meq/L
Sulfate	**850**	mg/L	17.70	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**86.2**	mg/L	4	meq/L
Magnesium	**22.7**	mg/L	2	meq/L
Potassium	**10.0**	mg/L	0.3	meq/L
Sodium	**930**	mg/L	40	meq/L
Cations			47	meq/L
Anions			47	meq/L
Cation/Anion Difference			**0.09%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-C	Date Reported:	10/12/11
Laboratory Number:	59756	Date Sampled:	09/23/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.63**	s.u.		
Conductivity @ 25° C	**2,780**	umhos/cm		
Total Dissolved Solids @ 180C	**2,140**	mg/L		
Total Dissolved Solids (Calc)	**2,630**	mg/L		
SAR	**28.3**	ratio		
Total Alkalinity as CaCO3	**1,200**	mg/L		
Total Hardness as CaCO3	**200**	mg/L		
Bicarbonate as CaCO3	**1,200**	mg/L	19.7	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.030**	mg/L	0.000	meq/L
Nitrite Nitrogen	**0.010**	mg/L	0.000	meq/L
Chloride	**750**	mg/L	21	meq/L
Fluoride	**4.40**	mg/L	0.232	meq/L
Phosphate	**7.50**	mg/L	0.237	meq/L
Sulfate	**138**	mg/L	2.86	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**54.8**	mg/L	3	meq/L
Magnesium	**15.5**	mg/L	1	meq/L
Potassium	**7.34**	mg/L	0.2	meq/L
Sodium	**920**	mg/L	40	meq/L
Cations			44	meq/L
Anions			44	meq/L
Cation/Anion Difference			**0.10%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-D	Date Reported:	10/12/11
Laboratory Number:	59757	Date Sampled:	09/23/11
Chain of Custody:	9953	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.38**	s.u.		
Conductivity @ 25° C	**3,080**	umhos/cm		
Total Dissolved Solids @ 180C	**2,280**	mg/L		
Total Dissolved Solids (Calc)	**3,030**	mg/L		
SAR	**23.7**	ratio		
Total Alkalinity as CaCO3	**1,800**	mg/L		
Total Hardness as CaCO3	**350**	mg/L		
Bicarbonate as CaCO3	**1,800**	mg/L	29.5	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.050**	mg/L	0.001	meq/L
Nitrite Nitrogen	**0.010**	mg/L	0.000	meq/L
Chloride	**740**	mg/L	21	meq/L
Fluoride	**4.50**	mg/L	0.237	meq/L
Phosphate	**5.00**	mg/L	0.158	meq/L
Sulfate	**36.6**	mg/L	0.76	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**90.4**	mg/L	5	meq/L
Magnesium	**30.3**	mg/L	2	meq/L
Potassium	**8.66**	mg/L	0.2	meq/L
Sodium	**1,020**	mg/L	44	meq/L
Cations			52	meq/L
Anions			52	meq/L
Cation/Anion Difference			**0.08%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	09/29/11
Laboratory Number:	59750	Date Sampled:	09/22/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**139**	**9.8**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-VZ-7	Date Reported:	09/29/11
Laboratory Number:	59751	Date Sampled:	09/22/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**223**	**9.8**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Ft (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	09/29/11
Laboratory Number:	59752	Date Sampled:	09/22/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**69.7**	**9.8**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	09/29/11
Laboratory Number:	59753	Date Sampled:	09/23/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**97.6**	**9.8**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	09/29/11
Laboratory Number:	59754	Date Sampled:	09/23/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**21,600**	**97.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	09/29/11
Laboratory Number:	59755	Date Sampled:	09/23/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**30,700**	**97.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Ft (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-C	Date Reported:	09/29/11
Laboratory Number:	59756	Date Sampled:	09/23/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**27,200**	**97.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2S-TZ-D	Date Reported:	09/29/11
Laboratory Number:	59757	Date Sampled:	09/23/11
Chain of Custody No:	9953	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**39,100**	**97.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Ft (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	09/29/11
Laboratory Number:	09-29-TPH.QA/QC 59749	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	09/29/11
Preservative:	N/A	Date Extracted:	09/29/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	09/29/11	09/29/11	1,740	1,720	1.2%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	9.8

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	139	139	0.0%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	139	2,000	1,950	91.1%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 59748-59757.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-6	Date Reported:	09/26/11
Laboratory Number:	59750	Date Sampled:	09/22/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-7	Date Reported:	09/26/11
Laboratory Number:	59751	Date Sampled:	09/22/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**0.005**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-8	Date Reported:	09/26/11
Laboratory Number:	59752	Date Sampled:	09/22/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**0.002**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-VZ-5	Date Reported:	09/26/11
Laboratory Number:	59753	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-A	Date Reported:	09/26/11
Laboratory Number:	59754	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-B	Date Reported:	09/26/11
Laboratory Number:	59755	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-C	Date Reported:	09/26/11
Laboratory Number:	59756	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**0.002**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	2N-TZ-D	Date Reported:	09/26/11
Laboratory Number:	59757	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	9953

Parameter	Analytical Result	Units
Cyanide (total)	**0.003**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

CHAIN OF CUSTODY RECORD

09953

Client: KEY ENERGY	Project Name / Location: KEY FARMINGTON NM1-9 LANDFARM
Client Address: 5451 US HWY 64 NM 87401	Sampler Name: WAYNE PRICE
Client Phone No.: 505-715-2809	Client No.: 98065-0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	Preservative Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals + WQCC Metals	Cation / Anion + Gen Chem	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	Cl			Sample Cool	Sample Intact
2N-VZ-6	9-22-11	12:35P	59750	Soil	2-4oz JAR			X	X	X		X	X				X		X			Y	Y
2S-VZ-7	9-22-11	11:30 AM	59751	Soil	11			X	X	X		X	X				X		X			|	|
CELL 2N-TZ COMPOSITE	9-22-11	4:40P		Soil	11			X	X	X		X	X				X		X				
CELL 2S-TZ COMPOSITE	9-22-11	4:40P		Soil	11			X	X	X		X	X				X		X				
2N-VZ-8	9-22-11	2:10PM	59752	Soil	11			X	X	X		X	X				X		X			Y	Y
2N-VZ-5	9-23-11	3:30PM	59753	Soil	11			X	X	X		X	X				X		X			|	|
2N-TZ-A	9-23-11	11:00AM	59754	Soil	11			X	X	X		X	X				X		X			|	|
2N-TZ-B	9-23-11	1:45PM	59755	Soil	11			X	X	X		X	X				X		X			|	|
2S-TZ-C	9-23-11	11:20AM	59756	Soil	11			X	X	X		X	X				X		X			|	|
2S-TZ-D	9-23-11	11:05AM	59757	Soil	11			X	X	X		X	X				X		X			|	|

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Wayne Price	9/23/11	4:40pm	Terrell Winters	9.23	4:40
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

envirotech
Analytical Laboratory

5796 US Highway 64 • Farmington, NM 87401 • 505-632-0615 • lab@envirotech-inc.com

ACCENT Printing • Form 28-0807

PAGE 2 of 2

CHAIN OF CUSTODY RECORD

D9983
~~12857~~

Client: KEY ENERGY

Project Name / Location: KEY FARMINGTON NMI-9 LANDFARM

Client Address:

Sampler Name: WAYNE PRICE

Client Phone No.:

Client No.:

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	Preservative Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals + WQCC	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	CN			Sample Cool	Sample Intact
CELL#1-TZ-C	9/23/11	4:30 pm		(Soil) Solid Sludge Aqueous	2-4oz JAR				X	X		X	X				X		X				
CELL#1-VZ	9/23/11	2:20 pm		(Soil) Solid Sludge Aqueous	"				X	X		X	X				X		X				
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
PAGE 2 of 2 [signature] Wayne Price	9/23/11	4:40 PM	[signature]	9-23	4:40
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

TZ-C TREATMENT ZONE - COMPOSITE
VZ- VADOSE ZONE 3-5' DEEP

envirotech
Analytical Laboratory

Work Order Receipt

TRACEANALYSIS, INC.

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

Work Order Receipt

Order

Work Order	11092602
Receive Date	2011-09-24 at 09:45
Requestor	Wayne Price - Key Energy-Rio Rancho
Invoicing	Accts. Payable - Key Energy
Purchase Order	Wayne Price
Project	NM1-9 Landfarm
	COC # = KEY NM1-9-8-5-11
	Project Location = Farmington, NM
	Project Name = NM1-9 Landfarm
	Project Number = Re-Test #1
Information	
	Intact = Yes
	Temperature = 6.0
	Air Bill = FED 796659910065
	Report = Regular Report
Comment	N/A

Samples

Sample	Field Code	Priority	Matrix	Collect Date	Collect Time	Quantity
278270	BG-5	Normal	soil	2011-09-21	15:30	1
278271	BG-NW	Normal	soil	2011-09-21	17:30	1
278272	BG-NE	Normal	soil	2011-09-21	16:35	1
278273	2N-VZ-6	Normal	soil	2011-09-22	12:35	1
278274	2N-VZ-7	Normal	soil	2011-09-22	11:30	1
278275	Cell #1-TZ Comp.	Normal	soil	2011-09-22	16:30	1
278276	Cell #1-VZ	Normal	soil	2011-09-23	14:20	1
278277	2N-VZ-8	Normal	soil	2011-09-21	14:10	1
278278	2N-VZ-5	Normal	soil	2011-09-23	15:30	1
278279	2N-TZ-A	Normal	soil	2011-09-23	11:00	1

Work Order Receipt

Samples

Sample	Field Code	Priority	Matrix	Collect Date	Collect Time	Quantity
278280	2N-TZ-B	Normal	soil	2011-09-23	13:45	1
278281	25-TZ-C	Normal	soil	2011-09-23	11:20	1
278282	25-TZ-D	Normal	soil	2011-09-23	11:05	1

Sample	Test	Method	Prep	Priority
278270	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278271	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278272	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278273	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278274	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278275	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278276	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278277	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278278	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278279	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278280	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278281	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal
278282	TX1005 Extended to C40 - NEW	TX1005	N/A	Normal

LAB Order ID # [redacted] 1UM2602 CO[redacted] 07/4-11

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: KEY ENERGY **Phone #:** 505-715-2809
Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE RIO RANCHO **Fax #:** 87124
Contact Person: WAYNE PRICE **E-mail:** WAYNEPRICE77@EARTHLINK.NET
Invoice to: (If different from above) YES
Project #: NMI-9 **Project Name:** LANDFARM
Project Location (including state): FARMINGTON NM **Sampler Signature:** Wayne Price

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 ~~GRO / DRO / TVHC~~ ERO	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
278270	BG-5	1	4oz		X							X		9/21/11	3:30 PM				X																	
271	BG-NW	1	"		X							X		"	5:30 PM				X																	
272	BG-NE	1	"		X							X		"	4:35 PM				X																	
273	2N-VZ-6	1	"		X							X		9/22/11	12:35 P				X																	
274	2S-VZ-7	1	"		X							X		"	11:30 AM				X																	
	~~CELL 2N TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40 P~~				~~X~~																	
	~~CELL 2S TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40 P~~				~~X~~																	
275	CELL #1-TZ-COMP	1	"		X							X		9/22/11	4:30 PM				X																	
276	CELL #1-VZ	1	"		X							X		9/23/11	2:20 PM				X																	
277	2N-VZ-8	1	"		X							X		9-23-11	2:10 PM				X																	
278	2N-VZ-5	1	"		X							X		9-23-11	3:30 PM				X																	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
WAYNE PRICE	KEY	9/23/11	4:30 PM	[signature]	TA	9/24/11	9:45	INST 1R; OBS 5.0 °C; COR 6.0 °C
								INST ___; OBS ___ °C; COR ___ °C
								INST ___; OBS ___ °C; COR ___ °C

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

REMARKS:
BG = BACKGROUND
TZ = TREATMENT ZONE
COMP = COMPOSITE SAMPLE

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

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

Carrier # Fed ex 7966 5991 0065

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LAB Order ID # 11M1602 — C-01171 — Page 1 of 2

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: KEY ENERGY — Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE — Fax #:

Contact Person: WAYNE PRICE — E-mail:

Invoice to: (If different from above) YES

Project #: UM1-9 — Project Name: LANDFARM

Project Location (including state): — Sampler Signature:

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
278279	2N-TZ-A	1	4oz		X							X		9/23/11	11:00 AM
280	2N-TZ-B	1	1		X							X		"	7:45 AM
281	25-TZ-C	1	"		X							X		"	11:20 AM
282	25-TZ-D	1	"		X							X		"	11:5 AM

MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / ORO	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						Turn Around Time if different from standard	Hold
		X	X																						
		X	X																						
		X	X																						
		X	X																						

Relinquished by: WAYNE PRICE — Company: — Date: 9/23/11 — Time: 4:30 PM

Received by: — Company: — Date: — Time: — INST ___ °C, OBS ___ °C, COR ___ °C

Relinquished by: — Company: — Date: — Time:

Received by: — Company: — Date: 9/24/11 — Time: 9:45 — INST 1.2 °C, OBS 3.8 °C, COR 2.0 °C

Relinquished by: — Company: — Date: — Time:

Received by: — Company: — Date: — Time: — INST ___ °C, OBS ___ °C, COR ___ °C

LAB USE ONLY

Intact Y / N

Headspace Y / N / NA

Log-In-Review MW

REMARKS: TZ - TREATMENT ZONE LANDFARM CELL #2

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

Carrier # Fed ex 7946 5991 0006

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

ORIGINAL COPY

Summary Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: September 28, 2011

Work Order: 11092602

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
278270	BG-5	soil	2011-09-21	15:30	2011-09-24
278271	BG-NW	soil	2011-09-21	17:30	2011-09-24
278272	BG-NE	soil	2011-09-21	16:35	2011-09-24
278273	2N-VZ-6	soil	2011-09-22	12:35	2011-09-24
278274	25-VZ-7	soil	2011-09-22	11:30	2011-09-24
278275	Cell #1-TZ Comp.	soil	2011-09-22	16:30	2011-09-24
278276	Cell #1-VZ	soil	2011-09-23	14:20	2011-09-24
278277	2N-VZ-8	soil	2011-09-21	14:10	2011-09-24
278278	2N-VZ-5	soil	2011-09-23	15:30	2011-09-24
278279	2N-TZ-A	soil	2011-09-23	11:00	2011-09-24
278280	2N-TZ-B	soil	2011-09-23	13:45	2011-09-24
278281	25-TZ-C	soil	2011-09-23	11:20	2011-09-24
278282	25-TZ-D	soil	2011-09-23	11:05	2011-09-24

	TX1005 Extended to C40 - NEW	
Sample - Field Code	>C28-C35 (mg/Kg)	>C35-C40 (mg/Kg)
278270 - BG-5	<50.0	<50.0
278271 - BG-NW	<50.0	<50.0
278272 - BG-NE	<50.0	<50.0
278273 - 2N-VZ-6	<50.0	<50.0
278274 - 25-VZ-7	<50.0	<50.0
278275 - Cell #1-TZ Comp.	**7400**	<200
278276 - Cell #1-VZ	<50.0	<50.0
278277 - 2N-VZ-8	<50.0	<50.0
278278 - 2N-VZ-5	<50.0	<50.0
278279 - 2N-TZ-A	**5940**	<250
278280 - 2N-TZ-B	**5250**	<250

continued ...

... continued

Sample - Field Code	TX1005 Extended to C40 - NEW >C28-C35 (mg/Kg)	>C35-C40 (mg/Kg)
278281 - 25-TZ-C	**6180**	<250
278282 - 25-TZ-D	**3960**	<250

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: September 28, 2011

Work Order: 11092602

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

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
278270	BG-5	soil	2011-09-21	15:30	2011-09-24
278271	BG-NW	soil	2011-09-21	17:30	2011-09-24
278272	BG-NE	soil	2011-09-21	16:35	2011-09-24
278273	2N-VZ-6	soil	2011-09-22	12:35	2011-09-24
278274	25-VZ-7	soil	2011-09-22	11:30	2011-09-24
278275	Cell #1-TZ Comp.	soil	2011-09-22	16:30	2011-09-24
278276	Cell #1-VZ	soil	2011-09-23	14:20	2011-09-24
278277	2N-VZ-8	soil	2011-09-21	14:10	2011-09-24
278278	2N-VZ-5	soil	2011-09-23	15:30	2011-09-24
278279	2N-TZ-A	soil	2011-09-23	11:00	2011-09-24
278280	2N-TZ-B	soil	2011-09-23	13:45	2011-09-24
278281	25-TZ-C	soil	2011-09-23	11:20	2011-09-24
278282	25-TZ-D	soil	2011-09-23	11:05	2011-09-24

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 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abel

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

Report Contents

Case Narrative

Samples for project NM1-9 Landfarm were received by TraceAnalysis, Inc. on 2011-09-24 and assigned to work order 11092602. Samples for work order 11092602 were received intact at a temperature of 6.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TX1005 Extended to C40 - NEW	TX1005	72240	2011-09-27 at 13:00	85073	2011-09-28 at 04:00

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 11092602 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: 278270 - BG-5

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	Q_s,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q_s,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			72.3	mg/Kg	1	100	72	68.8 - 145
n-Octane			73.3	mg/Kg	1	100	73	55.1 - 140
n-Tricosane			69.4	mg/Kg	1	100	69	65.2 - 142

Sample: 278271 - BG-NW

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	Q_s,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q_s,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			68.9	mg/Kg	1	100	69	68.8 - 145
n-Octane			66.7	mg/Kg	1	100	67	55.1 - 140
n-Tricosane			66.3	mg/Kg	1	100	66	65.2 - 142

Sample: 278272 - BG-NE

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Qs,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			111	mg/Kg	1	100	111	68.8 - 145
n-Octane			110	mg/Kg	1	100	110	55.1 - 140
n-Tricosane			109	mg/Kg	1	100	109	65.2 - 142

Sample: 278273 - 2N-VZ-6

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Qs,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			69.3	mg/Kg	1	100	69	68.8 - 145
n-Octane			69.6	mg/Kg	1	100	70	55.1 - 140
n-Tricosane	Qsr		64.3	mg/Kg	1	100	64	65.2 - 142

Sample: 278274 - 25-VZ-7

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Qs,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			99.4	mg/Kg	1	100	99	68.8 - 145
n-Octane			95.1	mg/Kg	1	100	95	55.1 - 140
n-Tricosane			95.3	mg/Kg	1	100	95	65.2 - 142

Sample: 278275 - Cell #1-TZ Comp.

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs	1	**7400**	mg/Kg	4	50.0
>C35-C40	Qs,U	1	<200	mg/Kg	4	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	Qsr		2520	mg/Kg	4	100	2520	68.8 - 145
n-Octane			92.0	mg/Kg	4	100	92	55.1 - 140
n-Tricosane	Qsr		929	mg/Kg	4	100	929	65.2 - 142

Sample: 278276 - Cell #1-VZ

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Qs,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			86.6	mg/Kg	1	100	87	68.8 - 145
n-Octane			81.4	mg/Kg	1	100	81	55.1 - 140
n-Tricosane			82.2	mg/Kg	1	100	82	65.2 - 142

Sample: 278277 - 2N-VZ-8

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Q_s,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q_s,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			115	mg/Kg	1	100	115	68.8 - 145
n-Octane			106	mg/Kg	1	100	106	55.1 - 140
n-Tricosane			109	mg/Kg	1	100	109	65.2 - 142

Sample: 278278 - 2N-VZ-5

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Q_s,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q_s,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			105	mg/Kg	1	100	105	68.8 - 145
n-Octane			94.7	mg/Kg	1	100	95	55.1 - 140
n-Tricosane			99.4	mg/Kg	1	100	99	65.2 - 142

Sample: 278279 - 2N-TZ-A

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	Q_s	1	**5940**	mg/Kg	5	50.0
>C35-C40	Q_s,U	1	<250	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	Q_{sr}		1900	mg/Kg	5	100	1900	68.8 - 145
n-Octane			93.5	mg/Kg	5	100	94	55.1 - 140
n-Tricosane	Q_{sr}		970	mg/Kg	5	100	970	65.2 - 142

Sample: 278280 - 2N-TZ-B

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	Q_s	1	**5250**	mg/Kg	5	50.0
>C35-C40	Q_s,U	1	<250	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	Q_{sr}		2190	mg/Kg	5	100	2190	68.8 - 145
n-Octane			95.6	mg/Kg	5	100	96	55.1 - 140
n-Tricosane	Q_{sr}		514	mg/Kg	5	100	514	65.2 - 142

Sample: 278281 - 25-TZ-C

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs	1	**6180**	mg/Kg	5	50.0
>C35-C40	Qs,U	1	<250	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	Qsr		2010	mg/Kg	5	100	2010	68.8 - 145
n-Octane			88.0	mg/Kg	5	100	88	55.1 - 140
n-Tricosane	Qsr		853	mg/Kg	5	100	853	65.2 - 142

Sample: 278282 - 25-TZ-D

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Qs	1	**3960**	mg/Kg	5	50.0
>C35-C40	Qs,U	1	<250	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	Qsr		2550	mg/Kg	5	100	2550	68.8 - 145
n-Octane			94.0	mg/Kg	5	100	94	55.1 - 140
n-Tricosane	Qsr		498	mg/Kg	5	100	498	65.2 - 142

Method Blanks

Method Blank (1) QC Batch: 85073

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP
Prep Batch: 72240 | QC Preparation: 2011-09-27 | Prepared By: EB

Parameter	Flag	Cert	MDL Result	Units	RL
C6-C12		1	<12.9	mg/Kg	50
>C12-C28		1	<11.2	mg/Kg	50
>C28-C35		1	<11.2	mg/Kg	50
>C35-C40		1	<11.2	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			94.3	mg/Kg	1	100	94	68.8 - 145
n-Octane			96.0	mg/Kg	1	100	96	55.1 - 140
n-Tricosane			90.3	mg/Kg	1	100	90	65.2 - 142

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP
Prep Batch: 72240 | QC Preparation: 2011-09-27 | Prepared By: EB

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
C6-C12		1	243	mg/Kg	1	250	<12.9	97	81.6 - 129
>C12-C28		1	260	mg/Kg	1	250	<11.2	104	72.3 - 113

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
C6-C12		1	257	mg/Kg	1	250	<12.9	103	81.6 - 129	6	20
>C12-C28		1	277	mg/Kg	1	250	<11.2	111	72.3 - 113	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
n-Triacontane	108	121	mg/Kg	1	100	108	121	68.8 - 145
n-Octane	110	115	mg/Kg	1	100	110	115	55.1 - 140
n-Tricosane	104	115	mg/Kg	1	100	104	115	65.2 - 142

Matrix Spike (MS-1) Spiked Sample: 278270

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP
Prep Batch: 72240 | QC Preparation: 2011-09-27 | Prepared By: EB

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
C6-C12	Q8	1	178	mg/Kg	1	250	<12.9	71	75 - 114
>C12-C28		1	193	mg/Kg	1	250	<11.2	77	50.8 - 119

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
C6-C12		1	197	mg/Kg	1	250	<12.9	79	75 - 114	10	20
>C12-C28		1	218	mg/Kg	1	250	<11.2	87	50.8 - 119	12	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-Triacontane	77.7	86.1	mg/Kg	1	100	78	86	68.8 - 145
n-Octane	81.1	84.8	mg/Kg	1	100	81	85	55.1 - 140
n-Tricosane	76.2	83.2	mg/Kg	1	100	76	83	65.2 - 142

Calibration Standards

Standard (CCV-1)

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
C6-C12		1	mg/Kg	250	274	110	75 - 125	2011-09-28
>C12-C28		1	mg/Kg	250	283	113	75 - 125	2011-09-28

Standard (CCV-2)

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
C6-C12		1	mg/Kg	250	260	104	75 - 125	2011-09-28
>C12-C28		1	mg/Kg	250	274	110	75 - 125	2011-09-28

Standard (CCV-3)

QC Batch: 85073 | Date Analyzed: 2011-09-28 | Analyzed By: BP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
C6-C12		1	mg/Kg	250	245	98	75 - 125	2011-09-28
>C12-C28		1	mg/Kg	250	263	105	75 - 125	2011-09-28

Appendix

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	T104704219-11-4	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 # 1109260? CC 07/4-11 Page 1 of

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: KEY ENERGY
Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE RIO RANCHO
Fax #: 87124

Contact Person: WAYNE PRICE
E-mail: WAYNEPRICE77@EARTHLINK.NET

Invoice to: (If different from above) YES

Project #: NM1-9
Project Name: LANDFARM

Project Location (including state): FARMINGTON NM
Sampler Signature: Wayne Price

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~~ ERO	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	Turn Around Time if different from standard	Hold
278270	BG-5	1	4oz		X							X		9/21/11	3:30pm				X																	
271	BG-NW	1	"		X							X		"	5:30pm				X																	
272	BG-NE	1	"		X							X		"	4:30pm				X																	
273	2N-VZ-6	1	"		X							X		9/22/11	12:35pm				X																	
274	2S-VZ-7	1	"		X							X		"	11:30am				X																	
	~~CELL 2N TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40p~~				~~X~~																	
	~~CELL 2S TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40p~~				~~X~~																	
275	CELL #1-TZ-COMP	1	"		X							X		9/22/11	4:30pm				X																	
276	CELL #1-VZ	1	"		X							X		9/23/11	2:20PM				X																	
277	2N-VZ-8	1	"		X							X		9-22-11	2:10PM				X																	
278	2N-VZ-5	1	"		X							X		9-23-11	3:30pm				X																	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	Temp.
WAYNE PRICE	KEY	9/23/11	4:30pm	[signature]	TA	9/24/11	9:45	INST 12 / OBS 5.0 °C / COR 6.0 °C
								INST ___ / OBS ___ °C / COR ___ °C
								INST ___ / OBS ___ °C / COR ___ °C

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

REMARKS:
BG = BACKGROUND
TZ = TREATMENT ZONE
COMP = COMPOSITE SAMPLE

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

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

Carrier # Fed ex 7966 5991 0065

ORIGINAL COPY

LAB Order ID # 1UM602 — Page 1 of 2

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: KEY ENERGY — Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RIDGE Ct NE — Fax #:

Contact Person: WAYNE PRICE — E-mail:

Invoice to: (If different from above) YES

Project #: UM1-9 — Project Name: LANDFARM

Project Location (including state): — Sampler Signature: [signature]

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
278279	2N-TZ-A	1	4oz		X							X		9/23/14	11:00 AM
280	2N-TZ-B	1	"		X							X		"	7:45 AM
281	2S-TZ-C	1	"		X							X		"	11:20 AM
282	2S-TZ-D	1	"		X							X		"	11:5 AM

MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / ~~DRO~~ / ORO	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
			X																						
			X																						
			X																						
			X																						

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
WAYNE PRICE		9/23/14	4:30 PM					INST ____ OBS ____ °C COR ____ °C
				[signature]		9/24/14	9:45	INST 1.6 °C OBS 3.8 °C COR 0.0 °C
								INST ____ OBS ____ °C COR ____ °C

LAB USE ONLY

Intact Y / N

Headspace Y / N / NA

Log-In-Review [initials]

REMARKS:

TZ - TREATMENT ZONE

LANDFARM CELL #2

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

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

Carrier # Fed ex 7946 5991 0006

ORIGINAL COPY

Safety and Sampling Plan:

Location of Facility: Key Energy Farmington Landfarm NM1-9
Sample Event: 3nd Quarter Sampling-2011

Requirements: OCD Rule 711 & Part 36 Requirements:

Tailgate Safety Meeting: Discuss and point out any onsite safety hazardous:
Note any Hazards and Safety Equipment to be used:

1. When sampling outside landfarm area, make sure 1-800-Dig has flagged all utilities.
2. Buddy system will be used for safety- watch out for moving trucks and tractors.
3. Areas with holes shall have safety cones.
4. If sampling from backhoe, tractor must be shut down and bucket on ground before sampling.
5. Watch out for wasp, bees, ants and snakes.
6. Walkie-talkies will be used.
7. Staging and sampling lab will be set up on south side of landfarm.
8. H2S monitors will be used, standard safety equipment, hard hats, boots, safety glasses etc.
9. No smoking

Date, print names and initial:

9/21/11 [illegible]

Sampling Objective and Plan: Collect site background samples in three undisturbed locations outside of landfarm. Remove contaminated soils from 2N-VZ-5, 6, and 8, send to approved off-site disposal facility. Set up mobile lab to screen for TPH/Cl's during excavation delineation efforts. Log field results. Collect laboratory conformation soil samples for 2N-VZ-5, 6, and 8. Sample 2S-VZ-7.

Collect discrete TZ Samples in four zones A,B,C & D. Sample Cell #1, by collecting one five point surface composite sample and one vadose zone composite sample.

Collect 3rd quarter Injection well water samples. Collect full suite per permit UIC-5.

All soil samples shall be analyzed for TPH 418.1, 8015M GRO/DRO, 8021 BTEX, Gen Chemistry (Cations & Anions, ph, TDS, SAR, +etc.), WQCC metals, and cyanide. In addition, all samples shall be analyzed for ORO/ERO extended range organics.

Sampling Plot plan attached showing locations.

Sampling Protocol: ***(SOP)*** All composite samples shall have an equal volume taken from each discrete sample point. No smoking or engine exhaust near sampling. Clean stainless steel bowls, spoons shall be used to collect soil samples and decontaminated between sample collections. All jar labels shall be pre-completed and placed on Jars, except time. Only clean 4 oz soil jars will be used for soils, filled to capacity and pressed in. Cross-contamination will be reduced by wearing new sampling gloves for each sample. Jars will be placed on Ice immediately after collection. Samples may be collected using a backhoe, hand auger, shovel or other approved means. *Caution should be used not to cross*-contaminate surface soils with vadose zone soils.

[illegible]


T2 SAMPLES
V2 SAMPLES
NW
NM
CELL #2
NE
DIRTY STOCK PILE
EXCAVATED SOILS
CLEAN DIRT
HOLE
A
B
C
D
W
E
SW
SM
SE
1
2
3
4
5
6
7
8
JP SEPT 2011
STAIN AREAS
CELL #1
© 2010 Google

COMPILED FROM FIELD NOTES.

Field Notes: Key Farmington Landfarm NM1-9
Date: Sept 21-2011
Time: 3pm
Conditions: Wind S-SW 10-15 mph Temp- 60-70 F

Collected site background samples for excavated areas called BG-S, BG-NE and BG-NW.
Ran TPH/Cl field test for comparision using Dexsil-Petro-Flag TPH analyizer and Hach Chloro-tabs.
Collected equal volumes from top of hole, middle and bottom, composite and place in 4oz jars put on ice.
Took photos, and ran field test.

Field Test Results:

BG-S	TPh = 169 ppm	Cl = nil	GPS = N36 45.409 - W 108 04.269
BG-NE	TPH = 339 ppm	Cl = nil	GPS = N36 45.537 - W 108 04.258
BG-NW	TPH = 104 ppm	Cl = 496 ppm	GPS = N36 45.510 –W 108 04.386

Field Notes:
Date: Sept 22-2011
Time: Start 7 am
Conditions: Wind: Calm Temp: 50-70 F

Located Hot spots by using past GPS readings and excavated zones 2N-VZ-5,6, and 8 with backhoe. Found oily-dark soil in 5&6. 8 had slight visual contamination. Stocked piled for disposal. Clean soil was segregated and field tested for backfill. De-con bucket, dug 2S-VZ-7 (no visual contamination).

Ran field TPH/CL test for delineation until clean soil was found.

Field test results of stocked pile contaminated soil: Took Photos.
TPH > 6000 ppm, ran 10:1 diluation TPH = 25,720 ppm: Cl = 544 ppm

2S-VZ-7 TPH = 317 ppm: Cl = nil

After Excavation ran Field Test:
2N-VZ-6 TPH = 318 ppm Cl = 288 ppm- Collected confirmation Lab sample
2N-VZ-8 TPH = 148 ppm Cl = 196 ppm- Collected confirmation Lab sample

Cell #1- 4:30 pm collected samples for field test:
Cell#1- 5-point surface composite: TPH > 6000 ppm Cl = nil: Collected confirmation Lab sample. Took Photos.
Cell #1 – Vadose zone composite: TPH > 6000 ppm Cl = 408 ppm

Field Notes:
Date: Sept 23-2011
Time: Start 7 am
Conditions: Wind: 0-10 variable Temp: 50-70 F

Set flags using GPS readings to re-define Cell #2 Quads A,B,C & D.

Collected four discrete (Non-Random) treatment zone samples from Quad A,D,C,B. Ran Field test.
Quad A = TPH > 6000 ppm Cl = 884 ppm.- Collected confirmation Lab sample.
Quad D = TPH 6000 ppm, 10:1 dilution 26,580 ppm-Collected confirmation Lab sample.
Quad C = TPH > 6000 ppm, Cl = 544 ppm-Collected confirmation Lab sample.
Quad B = TPH = 28,450 10:1 dilution, Cl = 820 ppm-Collected confirmation Lab sample.

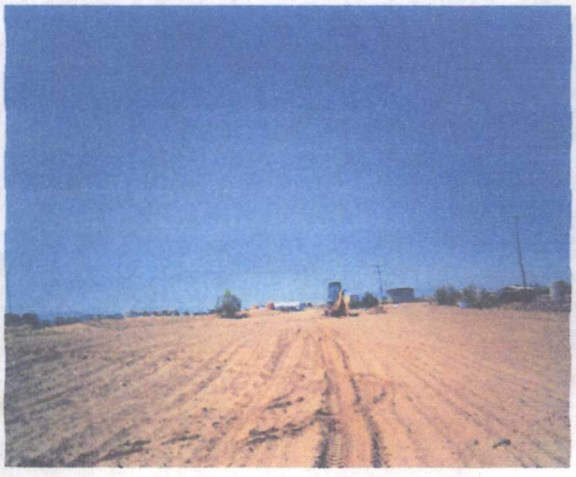
Cell#1-VZ - Collected vadose zone composite samples, ran field test.-Collected confirmation Lab sample.
TPH = 506 ppm, Cl = 884

Cell #2 – resample the 2N-VZ-5 & 6 area using field test.
TPH = 201 ppm, Cl= nil; Collected confirmation Lab sample.

Conducted on-site training with Key-Steve Wilson. Discussed permit conditions, waste disposal, and inspections. Discussed backfilling excavated areas by using on-site clean soils from background areas, landfarm and clean stock-pile from off-site certified borrow locations.

Cell #2 Staging and Field Lab Area.

Contaminated soils form 2N-VZ-5&6 area.



Looking West- Removing soil from 2N-VZ-8 area.

Clean soils- from background, landfarm and off-site certified soils for backfill.

Appendix VIII- 2011 Background Sampling

- Sampling Results
- 8015D ORO/TX1005 ERO results included.
- COC's
- Field Reports and Selected Photos

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Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	10-07-11
Laboratory Number:	59728	Date Sampled:	09-21-11
Chain of Custody No:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Extracted:	09-27-11
Preservative:	Cool	Date Analyzed:	09-27-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NM- NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	10-07-11
Laboratory Number:	59729	Date Sampled:	09-21-11
Chain of Custody No:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Extracted:	09-27-11
Preservative:	Cool	Date Analyzed:	09-27-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Energy NM- NMI-9 Background**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	10-07-11
Laboratory Number:	59730	Date Sampled:	09-21-11
Chain of Custody No:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Extracted:	09-27-11
Preservative:	Cool	Date Analyzed:	09-27-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**0.8**	**0.1**
Total Petroleum Hydrocarbons	**0.8**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Energy NM- NMI-9 Background**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	09-27-11 QA/QC	Date Reported:	09-29-11
Laboratory Number:	59668	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-27-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	40813	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	40813	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**7.78**	**0.2**
Diesel Range C10 - C28	**2.36**	**0.1**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.00%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.00%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**253**	**101%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**254**	**102%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste,

SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59668-59669, 59683, 59703-59704, 59716-59720, 59726-59730, 59744-59747.**

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	10-07-11
Laboratory Number:	59728	Date Sampled:	09-21-11
Chain of Custody:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Analyzed:	09-27-11
Preservative:	Cool	Date Extracted:	09-27-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**92.3 %**
	1,4-difluorobenzene	**96.7 %**
	Bromochlorobenzene	**95.9 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NM- NMI-9 Background**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	10-07-11
Laboratory Number:	59729	Date Sampled:	09-21-11
Chain of Custody:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Analyzed:	09-27-11
Preservative:	Cool	Date Extracted:	09-27-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**1.7**	**1.0**
Ethylbenzene	**2.9**	**1.0**
p,m-Xylene	**15.8**	**1.2**
o-Xylene	**7.3**	**0.9**
Total BTEX	**27.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**94.3 %**
	1,4-difluorobenzene	**104 %**
	Bromochlorobenzene	**97.4 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NM- NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	10-07-11
Laboratory Number:	59730	Date Sampled:	09-21-11
Chain of Custody:	9952	Date Received:	09-22-11
Sample Matrix:	Soil	Date Analyzed:	09-27-11
Preservative:	Cool	Date Extracted:	09-27-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**2.1**	**1.2**
o-Xylene	**2.2**	**0.9**
Total BTEX	**4.3**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**86.5 %**
	1,4-difluorobenzene	**91.1 %**
	Bromochlorobenzene	**92.8 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NM- NMI-9 Background**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	0927BBLK QA/QC	Date Reported:	09-28-11
Laboratory Number:	59698	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-27-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.4675E+006	3.4744E+006	0.2%	ND	0.1
Toluene	3.5462E+006	3.5533E+006	0.2%	ND	0.1
Ethylbenzene	3.1438E+006	3.1501E+006	0.2%	ND	0.1
p,m-Xylene	8.5492E+006	8.5664E+006	0.2%	ND	0.1
o-Xylene	2.9831E+006	2.9891E+006	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	474	94.8%	39 - 150
Toluene	ND	500	472	94.4%	46 - 148
Ethylbenzene	ND	500	457	91.4%	32 - 160
p,m-Xylene	ND	1000	939	93.9%	46 - 148
o-Xylene	ND	500	474	94.7%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 59698-59701, 59742, 59726, 59727-59730, 59637-59642

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	10/12/11
Laboratory Number:	59728	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**8.25**	s.u.		
Conductivity @ 25° C	**538**	umhos/cm		
Total Dissolved Solids @ 180C	**530**	mg/L		
Total Dissolved Solids (Calc)	**500**	mg/L		
SAR	**9.40**	ratio		
Total Alkalinity as CaCO3	**84.0**	mg/L		
Total Hardness as CaCO3	**55.0**	mg/L		
Bicarbonate as CaCO3	**84.0**	mg/L	1.4	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.080**	mg/L	0.001	meq/L
Nitrite Nitrogen	**3.50**	mg/L	0.076	meq/L
Chloride	**110**	mg/L	3	meq/L
Fluoride	**3.40**	mg/L	0.179	meq/L
Phosphate	**45.0**	mg/L	1.422	meq/L
Sulfate	**100**	mg/L	2.08	meq/L
Iron	**0.105**	mg/L	0.004	meq/L
Calcium	**11.5**	mg/L	1	meq/L
Magnesium	**6.40**	mg/L	1	meq/L
Potassium	**5.53**	mg/L	0.1	meq/L
Sodium	**160**	mg/L	7	meq/L
Cations			8	meq/L
Anions			8	meq/L
Cation/Anion Difference			**0.53%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farm NM-NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	10/12/11
Laboratory Number:	59729	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**8.08**	s.u.		
Conductivity @ 25° C	**1,610**	umhos/cm		
Total Dissolved Solids @ 180C	**1,370**	mg/L		
Total Dissolved Solids (Calc)	**1,550**	mg/L		
SAR	**14.8**	ratio		
Total Alkalinity as CaCO3	**66.0**	mg/L		
Total Hardness as CaCO3	**206**	mg/L		
Bicarbonate as CaCO3	**66.0**	mg/L	1.1	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**< 0.01**	mg/L	0.000	meq/L
Nitrite Nitrogen	**2.00**	mg/L	0.043	meq/L
Chloride	**630**	mg/L	18	meq/L
Fluoride	**3.20**	mg/L	0.168	meq/L
Phosphate	**2.00**	mg/L	0.063	meq/L
Sulfate	**310**	mg/L	6.45	meq/L
Iron	**0.100**	mg/L	0.004	meq/L
Calcium	**30.5**	mg/L	2	meq/L
Magnesium	**31.8**	mg/L	3	meq/L
Potassium	**5.92**	mg/L	0.2	meq/L
Sodium	**490**	mg/L	21	meq/L
Cations			26	meq/L
Anions			26	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farm NM-NMI-9 Background**

Analyst

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5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	10/12/11
Laboratory Number:	59730	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil Extract	Date Analyzed:	10/10/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**8.14**	s.u.		
Conductivity @ 25° C	**411**	umhos/cm		
Total Dissolved Solids @ 180C	**360**	mg/L		
Total Dissolved Solids (Calc)	**410**	mg/L		
SAR	**6.10**	ratio		
Total Alkalinity as CaCO3	**81.0**	mg/L		
Total Hardness as CaCO3	**72.6**	mg/L		
Bicarbonate as CaCO3	**81.0**	mg/L	1.3	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.080**	mg/L	0.001	meq/L
Nitrite Nitrogen	**1.88**	mg/L	0.041	meq/L
Chloride	**120**	mg/L	3	meq/L
Fluoride	**1.80**	mg/L	0.095	meq/L
Phosphate	**25.0**	mg/L	0.790	meq/L
Sulfate	**57.5**	mg/L	1.20	meq/L
Iron	**0.058**	mg/L	0.002	meq/L
Calcium	**18.0**	mg/L	1	meq/L
Magnesium	**6.75**	mg/L	1	meq/L
Potassium	**6.38**	mg/L	0.2	meq/L
Sodium	**120**	mg/L	5	meq/L
Cations			7	meq/L
Anions			7	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farm NM-NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	09/26/11
Laboratory Number:	59728	Date Sampled:	09/21/11
Chain of Custody No:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Extracted:	09/26/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**66.9**	**33.5**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farm Nm-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	09/26/11
Laboratory Number:	59729	Date Sampled:	09/21/11
Chain of Custody No:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Extracted:	09/26/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**40.2**	**33.5**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farm Nm-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	09/26/11
Laboratory Number:	59730	Date Sampled:	09/21/11
Chain of Custody No:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Extracted:	09/26/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**46.9**	**33.5**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farm Nm-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	09/26/11
Laboratory Number:	09-26-TPH.QA/QC 59742	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	09/26/11
Preservative:	N/A	Date Extracted:	09/26/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	08/23/11	09/26/11	1,674	1,670	0.3%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	33.5

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	214	201	6.3%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	214	2,000	2,340	106%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 59742, 59716-59720 and 59728-59730.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	09/28/11
Lab ID#:	59728	Date Sampled:	09/21/11
Sample Matrix:	Soil	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Concentration (mg/Kg)
Total Chloride	**80**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983. Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	09/28/11
Lab ID#:	59729	Date Sampled:	09/21/11
Sample Matrix:	Soil	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Concentration (mg/Kg)
Total Chloride	**430**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Chloride

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	09/28/11
Lab ID#:	59730	Date Sampled:	09/21/11
Sample Matrix:	Soil	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Concentration (mg/Kg)
Total Chloride	**20**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	10/17/11
Laboratory Number:	59728	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Analyzed:	10/04/11
Preservative:	Cool	Date Digested:	09/29/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.15**	**0.01**
Aluminum	**5700**	**0.01**
Barium	**86.9**	**0.01**
Cadmium	**0.01**	**0.01**
Chromium	**4.09**	**0.01**
Cobalt	**3.25**	**0.01**
Copper	**9.84**	**0.01**
Iron	**4880**	**0.01**
Lead	**4.59**	**0.01**
Manganese	**138**	**0.01**
Molybdenum	**0.04**	**0.01**
Mercury	**0.01**	**0.01**
Nickel	**5.87**	**0.01**
Selenium	**0.11**	**0.01**
Silver	**1.17**	**0.01**
Zinc	**22.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farm NM-NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	10/17/11
Laboratory Number:	59729	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Analyzed:	10/04/11
Preservative:	Cool	Date Digested:	09/29/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.92**	**0.01**
Aluminum	**3080**	**0.01**
Barium	**113**	**0.01**
Cadmium	**0.03**	**0.01**
Chromium	**1.88**	**0.01**
Cobalt	**1.77**	**0.01**
Copper	**5.59**	**0.01**
Iron	**2770**	**0.01**
Lead	**2.60**	**0.01**
Manganese	**72.9**	**0.01**
Molybdenum	**0.07**	**0.01**
Mercury	**0.11**	**0.01**
Nickel	**2.88**	**0.01**
Selenium	**ND**	**0.01**
Silver	**2.15**	**0.01**
Zinc	**12.7**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farm NM-NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	10/17/11
Laboratory Number:	59730	Date Sampled:	09/21/11
Chain of Custody:	9952	Date Received:	09/22/11
Sample Matrix:	Soil	Date Analyzed:	10/04/11
Preservative:	Cool	Date Digested:	09/29/11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.70**	**0.01**
Aluminum	**4690**	**0.01**
Barium	**124**	**0.01**
Cadmium	**0.02**	**0.01**
Chromium	**3.45**	**0.01**
Cobalt	**2.65**	**0.01**
Copper	**7.83**	**0.01**
Iron	**3930**	**0.01**
Lead	**4.37**	**0.01**
Manganese	**130**	**0.01**
Molybdenum	**0.02**	**0.01**
Mercury	**0.03**	**0.01**
Nickel	**4.79**	**0.01**
Selenium	**0.06**	**0.01**
Silver	**1.27**	**0.01**
Zinc	**19.0**	**0.01**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farm NM-NMI-9 Background**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	10-04-TM QA/QC	Date Reported:	10/17/11
Laboratory Number:	59727	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	10/04/11
Condition:	N/A	Date Digested:	09/29/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	2.73	2.71	0.40%	0% - 30%
Aluminum	ND	ND	0.01	2390	2350	1.96%	0% - 30%
Barium	ND	ND	0.01	57.2	55.9	2.19%	0% - 30%
Cadmium	ND	ND	0.01	0.36	0.35	1.26%	0% - 30%
Chromium	ND	ND	0.01	2.75	2.70	1.83%	0% - 30%
Cobalt	ND	ND	0.01	1.61	1.61	0.00%	0% - 30%
Copper	ND	ND	0.01	8.71	8.69	0.16%	0% - 30%
Iron	ND	ND	0.01	3230	3230	0.00%	0% - 30%
Lead	ND	ND	0.01	3.15	3.14	0.41%	0% - 30%
Manganese	ND	ND	0.01	128	126	1.87%	0% - 30%
Molybdenum	ND	ND	0.01	0.25	0.25	0.00%	0% - 30%
Mercury	ND	ND	0.01	6.02	5.97	0.81%	0% - 30%
Nickel	ND	ND	0.01	1.96	1.95	0.31%	0% - 30%
Selenium	ND	ND	0.01	0.09	0.07	17.4%	0% - 30%
Silver	ND	ND	0.01	0.85	0.88	4.12%	0% - 30%
Zinc	ND	ND	0.01	56.7	56.4	0.49%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.50	2.73	4.77	91.2%	80% - 120%
Aluminum	2.50	2,390	2,190	91.4%	80% - 120%
Barium	5.00	57.2	55.5	89.3%	80% - 120%
Cadmium	2.50	0.36	2.47	86.6%	80% - 120%
Chromium	5.00	2.75	6.43	82.9%	80% - 120%
Cobalt	2.50	1.61	3.57	86.8%	80% - 120%
Copper	5.00	8.71	12.4	90.2%	80% - 120%
Iron	2.50	3,230	3,020	93.5%	80% - 120%
Lead	5.00	3.15	6.71	82.3%	80% - 120%
Manganese	2.50	128	118	90.6%	80% - 120%
Molybdenum	1.00	0.25	1.04	83.0%	80% - 120%
Mercury	1.00	6.02	6.53	93.1%	80% - 120%
Nickel	5.00	1.96	5.85	84.0%	80% - 120%
Selenium	1.00	0.09	0.95	87.6%	80% - 120%
Silver	1.00	0.85	1.65	89.2%	80% - 120%
Zinc	5.00	56.7	58.3	94.5%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59727, 59683, 59703-59704, 59728-59730, 59838, 59658**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-S	Date Reported:	09/23/11
Laboratory Number:	59728	Date Sampled:	09/21/11
Sample Matrix:	Soil Extract	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NW	Date Reported:	09/23/11
Laboratory Number:	59729	Date Sampled:	09/21/11
Sample Matrix:	Soil Extract	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	BG-NE	Date Reported:	09/23/11
Laboratory Number:	59730	Date Sampled:	09/21/11
Sample Matrix:	Soil Extract	Date Received:	09/22/11
Preservative:	Cool	Date Analyzed:	09/23/11
Condition:	Intact	Chain of Custody:	9952

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farm NM-NMI-9 Background.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

09952

Client:	Project Name / Location:
KEY ENERGY	KEY FARM NM-NM1-9 BACK GROUND
Client Address:	**Sampler Name:** WAYNE PRICE
5651 HWY 64- FARM NM 87401	
Client Phone No.:	**Client No.:**
505-715-2809	98065-0013

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative: Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	WQCC METALS RCRA 8 + Cu			Sample Cool	Sample Intact
BG-S	9/21/11	3:30pm	59728	(Soil) Solid Sludge Aqueous	2-4oz JAR			X	X	X			X				X	X	X			✓	✓
				Soil Solid Sludge Aqueous																			
BG-NW	11	5:30pm	59729	(Soil) Solid Sludge Aqueous	2-4oz JAR			X	X	X			X				X	X	X			✓	✓
				Soil Solid Sludge Aqueous																			
BG-NE	11	4:35pm	59730	(Soil) Solid Sludge Aqueous	2-4oz JAR			X	X	X			X				X	X	X			✓	✓
				Soil Solid Sludge Aqueous															Cu, Fe, Zn, Mn, Mo, Ni + Al, Cu, Cr RCRA 8				
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature) WAYNE PRICE	Date 9/22/11	Time 10:25 AM	Received by: (Signature)	Date 9/22/11	Time 1025
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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TRACE ANALYSIS, INC.

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: September 28, 2011

Work Order: 11092602

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

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
278270	BG-5	soil	2011-09-21	15:30	2011-09-24
278271	BG-NW	soil	2011-09-21	17:30	2011-09-24
278272	BG-NE	soil	2011-09-21	16:35	2011-09-24
278273	2N-VZ-6	soil	2011-09-22	12:35	2011-09-24
278274	25-VZ-7	soil	2011-09-22	11:30	2011-09-24
278275	Cell #1-TZ Comp.	soil	2011-09-22	16:30	2011-09-24
278276	Cell #1-VZ	soil	2011-09-23	14:20	2011-09-24
278277	2N-VZ-8	soil	2011-09-21	14:10	2011-09-24
278278	2N-VZ-5	soil	2011-09-23	15:30	2011-09-24
278279	2N-TZ-A	soil	2011-09-23	11:00	2011-09-24
278280	2N-TZ-B	soil	2011-09-23	13:45	2011-09-24
278281	25-TZ-C	soil	2011-09-23	11:20	2011-09-24
278282	25-TZ-D	soil	2011-09-23	11:05	2011-09-24

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 15 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 NM1-9 Landfarm were received by TraceAnalysis, Inc. on 2011-09-24 and assigned to work order 11092602. Samples for work order 11092602 were received intact at a temperature of 6.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TX1005 Extended to C40 - NEW	TX1005	72240	2011-09-27 at 13:00	85073	2011-09-28 at 04:00

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 11092602 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: 278270 - BG-5

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	$Q_{s,U}$	1	<50.0	mg/Kg	1	50.0
>C35-C40	$Q_{s,U}$	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			72.3	mg/Kg	1	100	72	68.8 - 145
n-Octane			73.3	mg/Kg	1	100	73	55.1 - 140
n-Tricosane			69.4	mg/Kg	1	100	69	65.2 - 142

Sample: 278271 - BG-NW

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
>C28-C35	$Q_{s,U}$	1	<50.0	mg/Kg	1	50.0
>C35-C40	$Q_{s,U}$	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			68.9	mg/Kg	1	100	69	68.8 - 145
n-Octane			66.7	mg/Kg	1	100	67	55.1 - 140
n-Tricosane			66.3	mg/Kg	1	100	66	65.2 - 142

Sample: 278272 - BG-NE

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Q*,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q*,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			111	mg/Kg	1	100	111	68.8 - 145
n-Octane			110	mg/Kg	1	100	110	55.1 - 140
n-Tricosane			109	mg/Kg	1	100	109	65.2 - 142

Sample: 278273 - 2N-VZ-6

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
>C28-C35	Q*,U	1	<50.0	mg/Kg	1	50.0
>C35-C40	Q*,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			69.3	mg/Kg	1	100	69	68.8 - 145
n-Octane			69.6	mg/Kg	1	100	70	55.1 - 140
n-Tricosane	Q*r		64.3	mg/Kg	1	100	64	65.2 - 142

Sample: 278274 - 25-VZ-7

Laboratory:	Lubbock				
Analysis:	TX1005 Extended to C40 - NEW	Analytical Method:	TX1005	Prep Method:	N/A
QC Batch:	85073	Date Analyzed:	2011-09-28	Analyzed By:	BP
Prep Batch:	72240	Sample Preparation:	2011-09-27	Prepared By:	BP

LAB Order ID # [redacted]1112602 CC# [redacted]0714-11 Page 1 of [redacted]

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: KEY ENERGY Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE RIO RANCHO Fax #: 87124

Contact Person: WAYNE PRICE E-mail: WAYNEPRICE77@EARTHLINK.NET

Invoice to: (If different from above) YES

Project #: NMI-9 Project Name: LANDFARM

Project Location (including state): FARMINGTON NM Sampler Signature: Wayne Price

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~~ ERO	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
278270	BG-5	1	4oz		X							X		9/21/11	3:30pm				X																	
271	BG-NW	1	"		X							X		"	5:30pm				X																	
272	BG-NE	1	"		X							X		"	4:35pm				X																	
273	2N-VZ-6	1	"		X							X		9/22/11	12:35pm				X																	
274	2N-VZ-7	1	"		X							X		"	11:30am				X																	
	~~CELL 2N TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40p~~				~~X~~																	
	~~CELL 2S TZ COMPOSITE~~	~~1~~	~~"~~		~~X~~							~~X~~		~~"~~	~~4:40p~~				~~X~~																	
275	CELL #1-TZ-COMP	1	"		X							X		9/22/11	4:30pm				X																	
276	CELL #1-VZ	1	"		X							X		9/23/11	2:20PM				X																	
277	2N-VZ-8	1	"		X							X		9-22-11	2:10PM				X																	
278	2N-VZ-5	1	"		X							X		9-23-11	3:30pm				X																	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:		
WAYNE PRICE	KEY	9/23/11	4:30pm	[signature]	TA	9/24/11	9:45	INST 1R; OBS 5.8 °C; COR 6.0 °C	
								INST; OBS °C; COR °C	
								INST; OBS °C; COR °C	

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

REMARKS:
BG = BACKGROUND
TZ = TREATMENT ZONE
COMP = COMPOSITE SAMPLE

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

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

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LAB Order ID # 11M600L

Page 1 of 2

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

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

Company Name: KEY ENERGY
Phone #: 505-715-2809
Address: (Street, City, Zip) 312 ENCHANTED RIDGE Ct NE
Fax #:
Contact Person: WAYNE PRICE
E-mail:
Invoice to: (If different from above) YES
Project #: UMI-9
Project Name: LANDFARM
Project Location (including state):
Sampler Signature:

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / DHC ERO	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
278279	2N-TZ-A	1	4oz		X							X		9/23/14	11:00 AM				X																				
280	2N-TZ-B	1	1		X							X		"	1:45 PM				X																				
281	25-TZ-C	1	"		X							X		"	11:30 AM				X																				
282	25-TZ-D	1	1		X							X		1	11:45 AM				X																				

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
WAYNE PRICE		9/23/14	4:30 PM					INST ___ °C OBS ___ °C COR ___ °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST 1.2 °C OBS 1.8 °C COR 0.6 °C
						9/24/14	9:45	
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST ___ °C OBS ___ °C COR ___ °C

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

REMARKS:
TZ - TREATMENT ZONE
LANDFARM CELL #2

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

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

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Appendix VIII- 2011 Cell #1 Sampling

- Sampling Results
- 8015D ORO/TX1005 ERO results included.
- COC's
- Field Reports and Selected Photos

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Analytical Laboratory

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-TZ-C	Date Reported:	09/29/11
Laboratory Number:	59748	Date Sampled:	09/22/11
Chain of Custody No:	12057	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**28,600**	**97.6**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Lanfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-VZ	Date Reported:	09/29/11
Laboratory Number:	59749	Date Sampled:	09/23/11
Chain of Custody No:	12057	Date Received:	09/23/11
Sample Matrix:	Soil	Date Extracted:	09/29/11
Preservative:	Cool	Date Analyzed:	09/29/11
Condition:	Intact	Analysis Needed:	TPH-418.1

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**139**	**9.8**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Key Farmington NMI-9 Lanfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	QA/QC	Date Reported:	09/29/11
Laboratory Number:	09-29-TPH.QA/QC 59749	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	09/29/11
Preservative:	N/A	Date Extracted:	09/29/11
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	09/29/11	09/29/11	1,741	1,720	1.2%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	9.8

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	139	139	0.0%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	139	2,000	1,950	91.1%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Samples 59748-59757.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	CELL #1-TZ-C	Date Reported:	10-12-11
Laboratory Number:	59748	Date Sampled:	09-22-11
Chain of Custody:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-03-11
Preservative:	Cool	Date Extracted:	10-03-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**2.3**	**0.9**
Toluene	**87.3**	**1.0**
Ethylbenzene	**43.4**	**1.0**
p,m-Xylene	**392**	**1.2**
o-Xylene	**93.3**	**0.9**
Total BTEX	**618**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**89.5 %**
	1,4-difluorobenzene	**92.7 %**
	Bromochlorobenzene	**87.7 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	CELL #1-VZ	Date Reported:	10-12-11
Laboratory Number:	59749	Date Sampled:	09-23-11
Chain of Custody:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-03-11
Preservative:	Cool	Date Extracted:	10-03-11
Condition:	Intact	Analysis Requested:	BTEX
		Dilution:	10

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**5.9**	**1.0**
Ethylbenzene	**2.2**	**1.0**
p,m-Xylene	**20.6**	**1.2**
o-Xylene	**6.1**	**0.9**
Total BTEX	**34.8**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**94.6 %**
	1,4-difluorobenzene	**102 %**
	Bromochlorobenzene	**98.2 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	1003BBLK QA/QC	Date Reported:	10-03-11
Laboratory Number:	59816	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-03-11
Condition:	N/A	Analysis:	BTEX
		Dilution:	10

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.9127E+006	3.9206E+006	0.2%	ND	0.1
Toluene	4.0370E+006	4.0451E+006	0.2%	ND	0.1
Ethylbenzene	3.6051E+006	3.6123E+006	0.2%	ND	0.1
p,m-Xylene	1.0076E+007	1.0096E+007	0.2%	ND	0.1
o-Xylene	3.3635E+006	3.3702E+006	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	500	456	91.3%	39 - 150
Toluene	ND	500	453	90.6%	46 - 148
Ethylbenzene	ND	500	451	90.2%	32 - 160
p,m-Xylene	ND	1000	910	91.0%	46 - 148
o-Xylene	ND	500	451	90.1%	46 - 148

ND - Parameter not detected at the stated detection limit.

Dilution: Spike and spiked sample concentration represent a dilution proportional to sample dilution.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for Samples 59703-59704, 59748-59749, 59764, 59774, 59777, 59816

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-TZ-C	Date Reported:	10-19-11
Laboratory Number:	59748	Date Sampled:	09-22-11
Chain of Custody:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**2.01**	**0.001**
Aluminum	**2460**	**0.001**
Barium	**970**	**0.001**
Boron	**2.82**	**0.001**
Cadmium	**0.192**	**0.001**
Chromium	**7.88**	**0.001**
Cobalt	**3.34**	**0.001**
Copper	**20.5**	**0.001**
Iron	**6820**	**0.001**
Lead	**21.9**	**0.001**
Manganese	**208**	**0.001**
Molybdenum	**0.243**	**0.001**
Mercury	**0.755**	**0.001**
Nickel	**16.5**	**0.001**
Selenium	**0.257**	**0.001**
Silver	**0.001**	**0.001**
Zinc	**62.2**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

TRACE METAL ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-VZ	Date Reported:	10-19-11
Laboratory Number:	59749	Date Sampled:	09-23-11
Chain of Custody:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Analyzed:	10-17-11
Preservative:	Cool	Date Digested:	10-06-11
Condition:	Intact	Analysis Needed:	Total Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	**1.42**	**0.001**
Aluminum	**2510**	**0.001**
Barium	**123**	**0.001**
Boron	**3.06**	**0.001**
Cadmium	**0.029**	**0.001**
Chromium	**1.54**	**0.001**
Cobalt	**1.52**	**0.001**
Copper	**4.80**	**0.001**
Iron	**1910**	**0.001**
Lead	**1.89**	**0.001**
Manganese	**45.9**	**0.001**
Molybdenum	**0.629**	**0.001**
Mercury	**0.167**	**0.001**
Nickel	**4.25**	**0.001**
Selenium	**0.005**	**0.001**
Silver	**0.053**	**0.001**
Zinc	**7.02**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

TRACE METAL ANALYSIS
Quality Control / Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	10-17-TM QA/QC	Date Reported:	10/18/11
Laboratory Number:	59749	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	10/17/11
Condition:	N/A	Date Digested:	10/06/11

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.01	1.42	1.41	0.21%	0% - 30%
Aluminum	ND	ND	0.01	2510	2470	1.32%	0% - 30%
Barium	ND	ND	0.01	123	122	0.89%	0% - 30%
Cadmium	ND	ND	0.01	0.03	0.03	0.00%	0% - 30%
Chromium	ND	ND	0.01	1.54	1.60	3.43%	0% - 30%
Cobalt	ND	ND	0.01	1.52	1.56	2.84%	0% - 30%
Copper	ND	ND	0.01	4.80	4.80	0.00%	0% - 30%
Iron	ND	ND	0.01	1910	1890	1.15%	0% - 30%
Lead	ND	ND	0.01	1.89	2.04	7.90%	0% - 30%
Manganese	ND	ND	0.01	45.9	45.8	0.20%	0% - 30%
Molybdenum	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Mercury	ND	ND	0.01	0.17	0.17	0.00%	0% - 30%
Nickel	ND	ND	0.01	4.25	4.30	1.10%	0% - 30%
Selenium	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.00%	0% - 30%
Zinc	ND	ND	0.01	7.02	7.05	0.33%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.500	1.42	3.61	92.2%	80% - 120%
Aluminum	2.500	2,510	2,370	94.3%	80% - 120%
Barium	5.000	123	121	94.4%	80% - 120%
Cadmium	2.500	0.03	2.07	82.0%	80% - 120%
Chromium	5.000	1.54	5.55	84.9%	80% - 120%
Cobalt	5.000	1.52	3.51	53.9%	80% - 120%
Copper	5.000	4.80	7.88	80.4%	80% - 120%
Iron	2.500	1,910	1,820	95.0%	80% - 120%
Lead	5.000	1.89	5.81	84.3%	80% - 120%
Manganese	2.500	45.9	46.8	96.7%	80% - 120%
Molybdenum	1.000	ND	0.84	84.0%	80% - 120%
Mercury	1.000	0.17	0.95	81.2%	80% - 120%
Nickel	5.000	4.25	7.69	83.1%	80% - 120%
Selenium	1.000	ND	0.84	83.6%	80% - 120%
Silver	1.000	ND	0.84	84.0%	80% - 120%
Zinc	5.000	7.02	11.1	92.2%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.
Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59748-59757, 59888, 59847.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-TZ-C	Date Reported:	10/03/11
Laboratory Number:	59748	Date Sampled:	09/22/11
Chain of Custody:	12057	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	09/30/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.08**	s.u.		
Conductivity @ 25° C	**1,200**	umhos/cm		
Total Dissolved Solids @ 180C	**1,530**	mg/L		
Total Dissolved Solids (Calc)	**1,730**	mg/L		
SAR	**0.400**	ratio		
Total Alkalinity as CaCO3	**210**	mg/L		
Total Hardness as CaCO3	**1,280**	mg/L		
Bicarbonate as CaCO3	**210**	mg/L	3.4	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**0.040**	mg/L	0.001	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.000	meq/L
Chloride	**310**	mg/L	9	meq/L
Fluoride	**1.00**	mg/L	0.053	meq/L
Phosphate	**0.180**	mg/L	0.006	meq/L
Sulfate	**753**	mg/L	15.67	meq/L
Iron	**0.035**	mg/L	0.001	meq/L
Calcium	**416**	mg/L	21	meq/L
Magnesium	**59.4**	mg/L	5	meq/L
Potassium	**25.8**	mg/L	0.7	meq/L
Sodium	**37.0**	mg/L	2	meq/L
Cations			28	meq/L
Anions			28	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-VZ	Date Reported:	10/03/11
Laboratory Number:	59749	Date Sampled:	09/23/11
Chain of Custody:	12057	Date Received:	09/23/11
Sample Matrix:	Soil Extract	Date Analyzed:	09/30/11
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.02**	s.u.		
Conductivity @ 25° C	**2,430**	umhos/cm		
Total Dissolved Solids @ 180C	**1,580**	mg/L		
Total Dissolved Solids (Calc)	**1,660**	mg/L		
SAR	**7.10**	ratio		
Total Alkalinity as CaCO3	**120**	mg/L		
Total Hardness as CaCO3	**610**	mg/L		
Bicarbonate as CaCO3	**120**	mg/L	2.0	meq/L
Carbonate as CaCO3	**< 0.01**	mg/L	0.000	meq/L
Hydroxide as CaCO3	**< 0.01**	mg/L	0.001	meq/L
Nitrate Nitrogen	**< 0.01**	mg/L	0.000	meq/L
Nitrite Nitrogen	**< 0.01**	mg/L	0.000	meq/L
Chloride	**950**	mg/L	27	meq/L
Fluoride	**3.80**	mg/L	0.200	meq/L
Phosphate	**0.030**	mg/L	0.001	meq/L
Sulfate	**38.8**	mg/L	0.81	meq/L
Iron	**< 0.01**	mg/L	0.000	meq/L
Calcium	**110**	mg/L	5	meq/L
Magnesium	**81.6**	mg/L	7	meq/L
Potassium	**4.30**	mg/L	0.1	meq/L
Sodium	**401**	mg/L	17	meq/L
Cations			30	meq/L
Anions			30	meq/L
Cation/Anion Difference			**0.00%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments **Key Farmington NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-TZ-C	Date Reported:	10-12-11
Laboratory Number:	59748	Date Sampled:	09-22-11
Chain of Custody No:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	09-30-11
Preservative:	Cool	Date Analyzed:	09-30-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**34.9**	**0.2**
Diesel Range (C10 - C28)	**23.0**	**0.1**
Total Petroleum Hydrocarbons	**57.9**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-VZ	Date Reported:	10-12-11
Laboratory Number:	59749	Date Sampled:	09-23-11
Chain of Custody No:	12057	Date Received:	09-23-11
Sample Matrix:	Soil	Date Extracted:	09-30-11
Preservative:	Cool	Date Analyzed:	09-30-11
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Key Farm NMI-9 Landfarm**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	09-30-11 QA/QC	Date Reported:	09-30-11
Laboratory Number:	59748	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-30-11
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	40816	9.996E+02	1.000E+03	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	40816	9.980E+02	9.984E+02	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**2.8**	**0.2**
Diesel Range C10 - C28	**2.9**	**0.1**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Range
Gasoline Range C5 - C10	**34.5**	**35.5**	**3.0%**	**0 - 30%**
Diesel Range C10 - C28	**21.6**	**19.8**	**8.4%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**34.5**	**250**	**279**	**98.0%**	**75 - 125%**
Diesel Range C10 - C28	**21.6**	**250**	**279**	**103%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste,

SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 59748-59749, 59796-59799, 59800-59805.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

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Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-TZ-C	Date Reported:	09/26/11
Laboratory Number:	59748	Date Sampled:	09/22/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	12057

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst

Review

envirotech
Analytical Laboratory

Water Analysis

Client:	Key Energy	Project #:	98065-0013
Sample ID:	Cell #1-VZ	Date Reported:	09/26/11
Laboratory Number:	59749	Date Sampled:	09/23/11
Sample Matrix:	Soil Extract	Date Received:	09/23/11
Preservative:	Cool	Date Analyzed:	09/26/11
Condition:	Intact	Chain of Custody:	12057

Parameter	Analytical Result	Units
Cyanide (total)	**ND**	mg/L

Reference: U.S.E.P.A., Method 335.3 Cyanide, Total.

Comments: **Key Farmington NMI-9 Landfarm.**

Analyst Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

PAGE 2 of 2

CHAIN OF CUSTODY RECORD

09953
~~12857~~

Client:	Project Name / Location:
KEY ENERGY	KEY FARMINGTON NMI-9 LANDFARM
Client Address:	Sampler Name: WAYNE PRICE
Client Phone No.:	Client No.:

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	Preservative Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals + WQCC	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE	CN			Sample Cool	Sample Intact
CELL#1-TZ-C	9/23/11	4:30 PM		(Soil) Solid Sludge Aqueous	2-4 oz JAR				X	X		X	X				X		X				
CELL#1-VZ	9/23/11	2:20 PM		(Soil) Solid Sludge Aqueous	"				X	X		X	X				X		X				
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
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				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
PAGE 2 of 2 [signature]	9/23/11	4:40 PM	[signature]	9-23	4:40
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

TZ-C TREATMENT ZONE - COMPOSITE
VZ - VADOSE ZONE 3-5' DEEP

envirotech
Analytical Laboratory

Summary Report

Wayne Price
Key Energy-Rio Rancho
312 Encanatado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: September 28, 2011

Work Order: 11092602

COC #: KEY NM1-9-8-5-11
Project Location: Farmington, NM
Project Name: NM1-9 Landfarm
Project Number: Re-Test #1

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
278270	BG-5	soil	2011-09-21	15:30	2011-09-24
278271	BG-NW	soil	2011-09-21	17:30	2011-09-24
278272	BG-NE	soil	2011-09-21	16:35	2011-09-24
278273	2N-VZ-6	soil	2011-09-22	12:35	2011-09-24
278274	25-VZ-7	soil	2011-09-22	11:30	2011-09-24
278275	Cell #1-TZ Comp.	soil	2011-09-22	16:30	2011-09-24
278276	Cell #1-VZ	soil	2011-09-23	14:20	2011-09-24
278277	2N-VZ-8	soil	2011-09-21	14:10	2011-09-24
278278	2N-VZ-5	soil	2011-09-23	15:30	2011-09-24
278279	2N-TZ-A	soil	2011-09-23	11:00	2011-09-24
278280	2N-TZ-B	soil	2011-09-23	13:45	2011-09-24
278281	25-TZ-C	soil	2011-09-23	11:20	2011-09-24
278282	25-TZ-D	soil	2011-09-23	11:05	2011-09-24

	TX1005 Extended to C40 - NEW	
Sample - Field Code	>C28-C35 (mg/Kg)	>C35-C40 (mg/Kg)
278270 - BG-5	<50.0	<50.0
278271 - BG-NW	<50.0	<50.0
278272 - BG-NE	<50.0	<50.0
278273 - 2N-VZ-6	<50.0	<50.0
278274 - 25-VZ-7	<50.0	<50.0
278275 - Cell #1-TZ Comp.	7400	<200
278276 - Cell #1-VZ	<50.0	<50.0
278277 - 2N-VZ-8	<50.0	<50.0
278278 - 2N-VZ-5	<50.0	<50.0
278279 - 2N-TZ-A	5940	<250
278280 - 2N-TZ-B	5250	<250

continued ...

... continued

	TX1005 Extended to C40 - NEW	
Sample - Field Code	>C28-C35 (mg/Kg)	>C35-C40 (mg/Kg)
278281 - 25-TZ-C	6180	<250
278282 - 25-TZ-D	3960	<250

LAB Order ID # 1M2602 CLK 09/14-11 Page 1 of 5

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: KEY ENERGY
Phone #: 505-715-2809
Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE RIO RANCHO
Fax #: 87124
Contact Person: WAYNE PRICE
E-mail: WAYNEPRICE77@EARTHLINK.NET
Invoice to: (If different from above) YES
Project #: NM1-9
Project Name: LANDFARM
Project Location (including state): FARMINGTON NM
Sampler Signature: Wayne Price

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
178270	BG-S	1	4oz		X							X		9/22/11	3:30 PM
271	BG-NW	1	"		X							X		"	5:30 PM
272	BG-NE	1	"		X							X		"	4:35 PM
273	2N-VZ-6	1	"		X							X		9/22/11	12:35 PM
274	2S-VZ-7	1	"		X							X		"	11:30 AM
	~~CELL 2N-TZ COMPOSITE~~	1	"		X							X		"	4:40 PM
	~~CELL 2S-TZ-COMPOSITE~~	1	"		X							X		"	4:40 PM
275	CELL #1-TZ-COMP	1	"		X							X		9/22/11	4:30 PM
276	CELL #1-VZ	1	"		X							X		9/23/11	2:20 PM
277	2N-VZ-8	1	"		X							X		9-22-11	2:10 PM
278	2N-VZ-5	1	"		X							X		9-23-11	3:30 PM

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
WAYNE PRICE	KEY	9/23/11	4:30 PM		TA	9/24/11	9:45

INST IR, OBS 5.0 °C, COR 6.0 °C

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

REMARKS:
BG = BACKGROUND
TZ = TREATMENT ZONE
COMP = COMPOSITE SAMPLE

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

Turn Around Time If different from standard
Hold

MTBE 8021 / 602 / 8260 / 624
BTEX 8021 / 602 / 8260 / 624
TPH 418.1 / TX1005 / TX1005 Ext(C35)
TPH 8015 ~~GRO / DRO / TVHC~~ ERO
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

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

Carrier # Fed ex 7946 5991 0065

ORIGINAL COPY

LAB Order ID # 11M1002

Page 1 of 2

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: KEY ENERGY

Phone #: 505-715-2809

Address: (Street, City, Zip) 312 ENCANTADO RIDGE CT NE

Fax #:

Contact Person: WAYNE PRICE

E-mail:

Invoice to: (If different from above) YES

Project #: UMI-9

Project Name: LANDFARM

Project Location (including state):

Sampler Signature:

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / DHC	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
278279	2N-TZ-A	1	4oz		X							X		9/23/14	11:00 AM				X																				
280	2N-TZ-B	1	"		X							X		"	1:45 PM				X																				
281	2S-TZ-C	1	"		X							X		"	11:30 AM				X																				
282	2S-TZ-D	1	"		X							X		"	11:05 AM				X																				

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
WAYNE PRICE		9/23/14	4:30 PM					INST ___ °C OBS ___ °C COR ___ °C
								INST NA OBS 5.8 °C COR 0.0 °C
								INST ___ °C OBS ___ °C COR ___ °C

LAB USE ONLY

Intact Y / N

Headspace Y / N / NA

Log-in-Review MM

REMARKS:

TZ - TREATMENT ZONE

LANDFARM CELL #2

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

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

Carrier # Fed ex 7966 5991 0006

ORIGINAL COPY

Key Energy Services
6 Desta Drive
Suite 4400
Midland, Texas 79705

Telephone: 432.620.0300
Facsimile: 432.571.7173
www.keyenergy.com

September 9, 2010

Mr. Daniel Sanchez
UIC Director
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

VIA EMAIL AND US MAIL.

Subject: Key Farmington-NM-01-0009 Pond and Landfarm

Dear Mr. Sanchez:

Key Energy Services, Inc. (Key) appreciates meeting with you and Oil Conservation Division (OCD) staff on August 24, 2010 in Santa Fe to discuss the operation and future activities at this facility.

Key does not believe the current status of the landfarm cells or formerly used pit pose any significant threat to human health or the environment. While Key fully intends to perform future work in accordance with the facility permits and OCD regulations, at this time Key would prefer to delay the onset of such activities until the economic and business conditions in the area improve. As we discussed in our meeting, under current market conditions this operation is not profitable. At this time, closure of this operation and plugging the well or permitting this well as a Class 2 injection well are considerations under review. While Key recognizes the need for a Class 1 injection well in the area, the volume of Class 1 materials is very low and additional expenditures at this facility exacerbate the financial position of this operation. Key previously provided OCD with graphs depicting the volumes and revenue stream from the facility operation from 1998 through 2009. A copy of these charts is attached.

Key would like to continue to work cooperatively with OCD to address the permit and regulatory requirements as well as OCD concerns. To that effect, we propose the following plan.

Landfarm Recommendation:

- Perform the 3rd quarter sampling event as scheduled.
- Perform a comprehensive sampling event in the 4th quarter. Key will continue to aggressively till and remediate the soils in the landfarm during this time.
- Key will not add any more soils for treatment at this time.

The 4th quarter sampling would consist of the following:

Treatment Zone Sampling: (Cell #2 only at this time)

Cell #2 will be quartered into quads A, B, C & D with one composite sample collected from each quad consisting of (4 discrete samples for each composite) and analyzed for TPH (Methods 418.1 & 8015 (GRO and DRO)), Chlorides, BTEX and WQCC metals.

Vadose Zone Sampling: (Cell #2 only at this time)

Cell #2 will be quartered into quads A, B, C & D, with each quad further sub-divided into 4 separate quads A1-4, B1-4, C1-4 and D1-4. A random sample will be collected from each major quad at approximately 4-5 feet below the original ground surface. Each sample will be analyzed for TPH (Methods 418.1 & 8015 (GRO and DRO)), Chlorides, BTEX and WQCC metals.

- After the 4th quarter sampling Key will meet with OCD to determine a path forward.

Pond Recommendation:

Due to the severe economic conditions in Farmington and the slowdown in business, Key would like to propose the following:

- Delay for one year, any closure activity of the pond, sumps, and previous treatment system, including the skimmer pond and concrete treatment containments. All systems will be maintained and fluids will be removed within one week of acceptance.

- Maintain the current pond rainwater removal system and remove rain or snow melt within one week of acceptance where practical. Any water that cannot be practically removed will be removed by using the automatic leak detection system pump. Key will notify OCD district office if rain or snowfall exceeds the one week.

- Semi-annual samples will be collected of the leak detection sump and will be analyzed for Chlorides and BTEX. Results will be reported to OCD.

- Key will work with OCD over the next year so that by October 1, 2011 a closure plan will be prepared and ready to implement.

Key appreciates OCD time and efforts to meet with us. Please contact me at 432-571-7536 if you have questions or concerns regarding this information or Key's requests.

Sincerely,

Daniel K. Gibson, P.G.
Corporate Environmental Director

cc:

Mr. Brad Jones
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

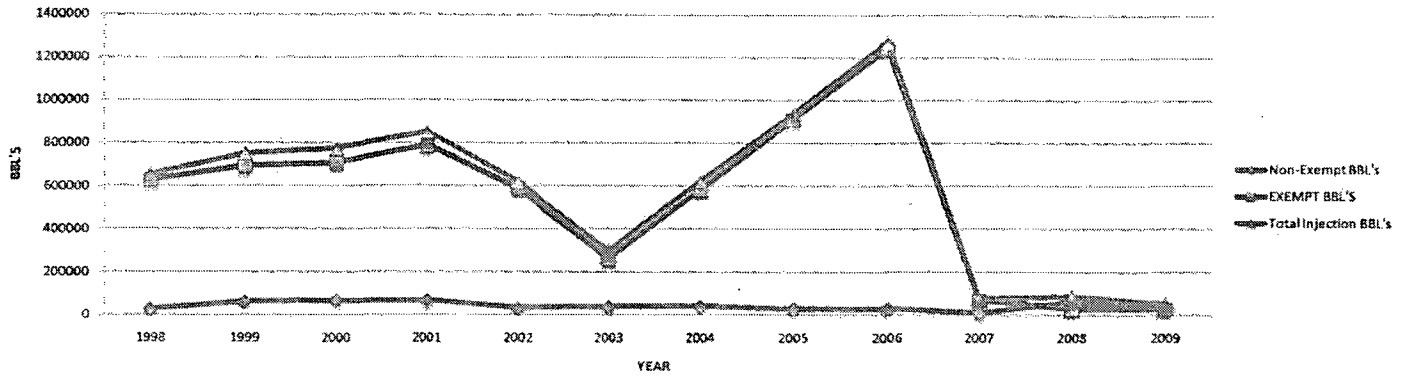
Mr. Glenn VonGonten
State of New Mexico
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Mr. Wayne Price
Price LLC
312 Encantado Ridge CT NE
Rio Rancho, New Mexico 87124

Mr. Loren Molleur

Attachments

KEY FARMINGTON CLASS I INJECTION WELL UIC-5
VOLUMES CHART BBL'S
1998-2009



NAT GAS PRICE VS TOTAL $ REVENUE
1998-2009

Chavez, Carl J, EMNRD

From: Perrin, Charlie, EMNRD
Sent: Tuesday, April 06, 2010 10:39 AM
To: Sanchez, Daniel J., EMNRD; Chavez, Carl J, EMNRD; Ezeanyim, Richard, EMNRD
Subject: FW: Key inspection Summary

Carl

Greetings;

After receiving your Key Energy information I had Kelly and Brandon conduct a full inspection of the local facility The following information is what was discovered.

Charlie

From: Powell, Brandon, EMNRD
Sent: Tuesday, April 06, 2010 10:28 AM
To: Perrin, Charlie, EMNRD
Cc: Roberts, Kelly G, EMNRD
Subject: Key inspection Summary

Charlie-

On April 5, 2010, Brandon Powell and Kelly Roberts conducted an inspection of the Key Energy Services LLC, Sunco Disposal #1, API Number 30-045-28653.

They identified the following violations:

- The pressure limiting device on the pump currently in use was set above 3000 psi
  - At the direction of Inspector Roberts Mr. Steve Wilson re-set the limiting device on the large pump to 2400 psi which is the facility's permitted maximum pressure.
  - When asked why the limiting device was not properly set Mr. Wilson stated "someone keeps turning it up". It was explained to Mr. Wilson turning up the limiting device is a violation.
  - The pressure chart at the wellhead did not indicate any pressures over 2200 psi.
- The two concrete mixing impoundments were full of a oil & produced water mixture.
  - When asked about the fluid Mr. Wilson stated that the fluid had been in the impoundments for about 2 weeks
  - Inspector Powell explained to Mr. Wilson the impoundment is for temporary use in mixing and not a long term fluids management containment.
  - Inspector Powell requested that the fluid be removed from the impoundments. Mr. Wilson stated that the fluids would be removed on April 6, 2010. Inspector Powell requested to be notified when the fluids were removed.
- The leak detection port on both of the concrete mixing impoundments did not have a cap on them and had soil in them.
  - When asked Mr. Wilson stated he had last inspected the leak detection a month or 2 ago.
  - Mr. Wilson knocked the soil that had bridged in the top of inspection port into the secondary containment on east mixing impoundment. Fluids were discovered in the secondary containment after further investigation.
  - The inspection port in the west impoundment was full of soil.
  - Mr. Powell also explained to Mr. Wilson the leak detection systems in place on the impoundments are to be maintained in proper working order. He requested that Mr. Wilson clean out the leak detection

tubes and repair them if necessary in order to adequately detect a leak. Inspector Powell required Mr. Wilson to contact him when they were going to perform the cleanout/repairs to the leak detection.

- There was a fiberglass above ground tank next to the wellhead with a small leak.
  - Mr. Wilson was told the tanks integrity was compromised and he needed to correct the issue.
- There was no containment around the produced water holding tanks.
  - Due to uncertainty at the time if the permits required secondary containment this issue was not addressed with Key at the time. However it has since been discovered permit UICI-5 and permit NM1-9 both require berms for any tanks not containing fresh water.

Key has violated the following permits;

- UICI-5
  - They did not have the pressure limiting device set at the proper injection limit.
  - The produced water holding tanks were not adequately bermed.

- NM1-9
  - They had fluids in the mixing impoundment for more than 24hrs.
  - The leak detection for the mixing impoundment is required to be inspected weekly, which was not being done.
  - The produced water holding tanks were not adequately bermed.

Thank You
Brandon Powell
Environmental Specialist
New Mexico Oil Conservation
1000 Rio Brazos Rd, Aztec NM 87410
Office: (505) 334-6178 ext. 15
E-mail: Brandon.Powell@state.nm.us