NOTICE: This report is required by 49 CFR Part 195. Failure to report can result in a exceed \$100,000 for each violation for each day that such violation persists except t penalty shall not exceed \$1,000,000 as provided in 49 USC 60122.		OMB NO: 2137-0047 EXPIRATION DATE: 01/3	1/2014
periary shail not exceed \$1,000,000 as provided in 49 USC 60122.	Original Report Date:	06/10/201	1
	No.	20110181 - 1	9269
U.S Department of Transportation Pipeline and Hazardous Materials Safety Administration	NO.		
		(DOT Use On	ly)
A federal agency may not conduct or sponsor, and a person is not required to respon	TEMS		ire to comply
with a collection of information subject to the requirements of the Paperwork Reduction OMB Control Number. The OMB Control Number for this information collection is 21 to be approximately 10 hours per response (5 hours for a small release), including the completing and reviewing the collection of information. All responses to this collection burden estimate or any other aspect of this collection of information, including sugge Officer, PHMSA, Office of Pipeline Safety (PHP-30) 1200 New Jersey Avenue, SE, V INSTRUCTIONS	on Act unless that collect 37-0047. Public reportin the time for reviewing instront of information are man stions for reducing this bo	ion of information displays a or g for this collection of informa uctions, gathering the data ne datory. Send comments rega	current valid tion is estimate eded, and rding this
Important: Please read the separate instructions for completing this form before yo examples. If you do not have a copy of the instructions, you can obtain one from the <u>http://www.phmsa.dot.gov/pipeline</u> .			ovide specific
PART A - KEY REPORT INFORMATION	Original:	Supplemental:	Final:
Report Type: (select all that apply)	onginan	Yes	, man
Last Revision Date:	04/17/2014		
1. Operator's OPS-issued Operator Identification Number (OPID):	32334		
2. Name of Operator	TC OIL PIPELINE C	OPERATIONS INC	
3. Address of Operator:	1		
3a. Street Address	717 TEXAS AVE		
3b. City	HOUSTON		
3c. State	Texas		
3d. Zip Code	77002		
4. Local time (24-hr clock) and date of the Accident:	02/17/2011 15:10		
5. Location of Accident:	07.0010		
Latitude:	37.3612		
Longitude:	-97.0539		
<ol> <li>National Response Center Report Number (if applicable):</li> <li>Local time (24-hr clock) and date of initial telephonic report to the National Response Center (if applicable):</li> </ol>	968357 02/23/2011 14:43		
8. Commodity released: (select only one, based on predominant volume released)	Crude Oil		
- Specify Commodity Subtype:			
<ul> <li>If "Other" Subtype, Describe:</li> <li>If Biofuel/Alternative Fuel and Commodity Subtype is Ethanol Blend, then % Ethanol Blend:</li> </ul>			
%:			
<ul> <li>If Biofuel/Alternative Fuel and Commodity Subtype is Biodiesel, then Biodiesel Blend (e.g. B2, B20, B100):</li> </ul>			
9. Estimated volume of commodity released unintentionally (Barrels):	.24		
<ol> <li>Estimated volume of intentional and/or controlled release/blowdown (Barrels):</li> </ol>			
11. Estimated volume of commodity recovered (Barrels):	.24		
12. Were there fatalities?	No		
<ul> <li>If Yes, specify the number in each category:</li> </ul>			
12a. Operator employees			
12b. Contractor employees working for the Operator			
12c. Non-Operator emergency responders 12d. Workers working on the right-of-way, but NOT			
associated with this Operator 12e. General public			
12f. Total fatalities (sum of above)			
13. Were there injuries requiring inpatient hospitalization?	No		
- If Yes, specify the number in each category:			
13a. Operator employees			
13b. Contractor employees working for the Operator			

13b. Contractor employees working for the Operator

13c. Non-Operator emergency responders

13d. Workers working on the right-of-way, but NOT associated with this Operator         13e. General public         13f. Total injuries (sum of above)         14. Was the pipeline/facility shut down due to the Accident?         - If No, Explain:         - If Yes, complete Questions 14a and 14b: (use local time, 24-hr clock)	
13e. General public         13f. Total injuries (sum of above)         14. Was the pipeline/facility shut down due to the Accident?         - If No, Explain:	
13f. Total injuries (sum of above) 14. Was the pipeline/facility shut down due to the Accident? - If No, Explain:	
13f. Total injuries (sum of above) 14. Was the pipeline/facility shut down due to the Accident? - If No, Explain:	
<ul><li>14. Was the pipeline/facility shut down due to the Accident?</li><li>If No, Explain:</li></ul>	
- If No, Explain:	Yes
I it yos complete Luestions 145 and 14b; (use legal time 24 br cleck)	
	02/17/2011 15:10
14a. Local time and date of shutdown:	02/17/2011 15:10
14b. Local time pipeline/facility restarted:	02/18/2011 08:00
<ul> <li>Still shut down? (* Supplemental Report Required)</li> </ul>	
15. Did the commodity ignite?	No
16. Did the commodity explode?	No
17. Number of general public evacuated:	0
18. Time sequence (use local time, 24-hour clock):	
18a. Local time Operator identified Accident:	02/17/2011 15:10
18b. Local time Operator resources arrived on site:	02/17/2011 15:10
PART B - ADDITIONAL LOCATION INFORMATION	
<ol> <li>Was the origin of Accident onshore?</li> </ol>	Yes
If Yes, Complete Quest	tions (2-12)
If No, Complete Question	
- If Onshore:	. ,
2. State:	Kansas
3. Zip Code:	67146
4. City	Udall
5. County or Parish	Cowley
6. Operator-designated location:	Milepost/Valve Station
Specify:	193.4
7. Pipeline/Facility name:	Rock Pump Station
8. Segment name/ID:	Gateway
9. Was Accident on Federal land, other than the Outer Continental Shelf	
(OCS)?	No
10. Location of Accident:	Totally contained on Operator-controlled property
11. Area of Accident (as found):	Aboveground
Specify:	
- If Other, Describe:	
Depth-of-Cover (in):	
12. Did Accident occur in a crossing?	
- If Yes, specify below:	
- If Bridge crossing –	
Cased/ Uncased:	
- If Railroad crossing –	
Cased/ Uncased/ Bored/drilled	
- If Road crossing –	
Cased/ Uncased/ Bored/drilled	
- If Water crossing –	
Cased/ Uncased	
- Name of body of water, if commonly known:	
- Approx. water depth (ft) at the point of the Accident:	
- Select:	
- If Offshore:	
13. Approximate water depth (ft) at the point of the Accident:	
14. Origin of Accident:	
- In State waters - Specify:	
- State:	
- Area:	
- Block/Tract #:	
- Nearest County/Parish:	
(In the Outer Continental Shalf (OCS) Sharify	T
- On the Outer Continental Shelf (OCS) - Specify:	
- Area:	
- Area: - Block #:	
- Area:	
- Area: - Block #:	
- Area:     - Block #:  15. Area of Accident:  PART C - ADDITIONAL FACILITY INFORMATION	
- Area:     - Block #:  15. Area of Accident:  PART C - ADDITIONAL FACILITY INFORMATION  1. Is the pipeline or facility:	Interstate
- Area:     - Block #:  15. Area of Accident:  PART C - ADDITIONAL FACILITY INFORMATION  1. Is the pipeline or facility: 2. Part of system involved in Accident:	Interstate Onshore Pump/Meter Station Equipment and Piping
- Area:     - Block #:  15. Area of Accident:  PART C - ADDITIONAL FACILITY INFORMATION  1. Is the pipeline or facility: 2. Part of system involved in Accident:     - If Onshore Breakout Tank or Storage Vessel, Including Attached	
- Area:     - Block #:  15. Area of Accident:  PART C - ADDITIONAL FACILITY INFORMATION  1. Is the pipeline or facility: 2. Part of system involved in Accident:	

	1
determination for this Accident site in the Operator's	
Integrity Management Program?	
- High Population Area:	
Was this HCA identified in the "could affect"	
determination for this Accident site in the Operator's Integrity Management Program?	
- Other Populated Area	
Was this HCA identified in the "could affect" determination	
for this Accident site in the Operator's Integrity	
Management Program?	
- Unusually Sensitive Area (USA) - Drinking Water	
Was this HCA identified in the "could affect" determination	
for this Accident site in the Operator's Integrity	
Management Program?	
- Unusually Sensitive Area (USA) - Ecological	
Was this HCA identified in the "could affect" determination	
for this Accident site in the Operator's Integrity	
Management Program?	
8. Estimated Property Damage:	
8a. Estimated cost of public and non-Operator private property	
damage	\$ 0
8b. Estimated cost of commodity lost	\$ 24
8c. Estimated cost of Operator's property damage & repairs	\$ 1,500
8d. Estimated cost of Operator's emergency response	\$ 1,500
8e. Estimated cost of Operator's environmental remediation	\$ 2,500
8f. Estimated other costs	\$ 0
Describe:	Ψ Ŭ
8g. Total estimated property damage (sum of above)	\$ 5,524
	ψ 0,024
PART E - ADDITIONAL OPERATING INFORMATION	
1. Estimated pressure at the point and time of the Accident (psig):	
2. Maximum Operating Pressure (MOP) at the point and time of the	
Accident (psig):	
3. Describe the pressure on the system or facility relating to the	
Accident (psig):	
4. Not including pressure reductions required by PHMSA regulations	
(such as for repairs and pipe movement), was the system or facility	
relating to the Accident operating under an established pressure	
restriction with pressure limits below those normally allowed by the	
MOP?	
- If Yes, Complete 4.a and 4.b below:	
<ol> <li>4a. Did the pressure exceed this established pressure</li> </ol>	
restriction?	
4b. Was this pressure restriction mandated by PHMSA or the	
State?	
5. Was "Onshore Pipeline, Including Valve Sites" OR "Offshore	
Pipeline, Including Riser and Riser Bend" selected in PART C, Question	No
2?	
- If Yes - (Complete 5a. – 5e. below)	
5a. Type of upstream valve used to initially isolate release	
source:	
5b. Type of downstream valve used to initially isolate release	
source:	
5c. Length of segment isolated between valves (ft):	
5d. Is the pipeline configured to accommodate internal	
inspection tools?	
- If No, Which physical features limit tool accommodation?	(select all that apply)
- Changes in line pipe diameter	
<ul> <li>Presence of unsuitable mainline valves</li> </ul>	
- Tight or mitered pipe bends	
- Other passage restrictions (i.e. unbarred tee's,	
projecting instrumentation, etc.)	
- Extra thick pipe wall (applicable only for magnetic	
flux leakage internal inspection tools)	
- Other -	
- If Other, Describe:	
5e. For this pipeline, are there operational factors which	
significantly complicate the execution of an internal inspection tool	
run?	
- If Yes, Which operational factors complicate execution? (select all that a	oply)
<ul> <li>Excessive debris or scale, wax, or other wall buildup</li> </ul>	

- Low operating pressure(s)	
- Low flow or absence of flow	
- Incompatible commodity	
- Other -	
- If Other, Describe:	
5f. Function of pipeline system:	> 20% SMYS Regulated Trunkline/Transmission
6. Was a Supervisory Control and Data Acquisition (SCADA)-based	
system in place on the pipeline or facility involved in the Accident?	
If Yes -	
6a. Was it operating at the time of the Accident?	
6b. Was it fully functional at the time of the Accident?	
<ol><li>6c. Did SCADA-based information (such as alarm(s),</li></ol>	
alert(s), event(s), and/or volume calculations) assist with	
the detection of the Accident?	
6d. Did SCADA-based information (such as alarm(s),	
alert(s), event(s), and/or volume calculations) assist with	
the confirmation of the Accident? 7. Was a CPM leak detection system in place on the pipeline or facility	
involved in the Accident?	
- If Yes:	
7a. Was it operating at the time of the Accident?	
7b. Was it fully functional at the time of the Accident?	
7c. Did CPM leak detection system information (such as	
alarm(s), alert(s), event(s), and/or volume calculations) assist	
with the detection of the Accident?	
7d. Did CPM leak detection system information (such as	
alarm(s), alert(s), event(s), and/or volume calculations) assist	
with the confirmation of the Accident?	
8. How was the Accident initially identified for the Operator?	
- If Other, Specify:	
8a. If "Controller", "Local Operating Personnel", including	
contractors", "Air Patrol", or "Guard Patrol by Operator or its	
contractor" is selected in Question 8, specify the following:	
9. Was an investigation initiated into whether or not the controller(s) or	
control room issues were the cause of or a contributing factor to the Accident?	
- If No, the Operator did not find that an investigation of the	
controller(s) actions or control room issues was necessary due to:	
(provide an explanation for why the operator did not investigate)	
- If Yes, specify investigation result(s): (select all that apply)	
- Investigation reviewed work schedule rotations,	
continuous hours of service (while working for the	
Operator), and other factors associated with fatigue	
<ul> <li>Investigation did NOT review work schedule rotations,</li> </ul>	
continuous hours of service (while working for the	
Operator), and other factors associated with fatigue	
Provide an explanation for why not:	
Investigation identified no control room issues	
Investigation identified no controller issues	
<ul> <li>Investigation identified incorrect controller action or controller error</li> </ul>	
controller error - Investigation identified that fatigue may have affected the	
controller(s) involved or impacted the involved controller(s)	
response	
- Investigation identified incorrect procedures	
Investigation identified incorrect procedures     Investigation identified incorrect control room equipment	
operation	
- Investigation identified maintenance activities that affected	
control room operations, procedures, and/or controller	
response	
<ul> <li>Investigation identified areas other than those above:</li> </ul>	
Describe:	
PART F - DRUG & ALCOHOL TESTING INFORMATION	
1. As a result of this Accident, were any Operator employees tested	
under the post-accident drug and alcohol testing requirements of DOT's	No
Drug & Alcohol Testing regulations?	
- If Yes:	
1a. Specify how many were tested:         1b. Specify how many failed:	

	1
2. As a result of this Accident, were any Operator contractor employees	
tested under the post-accident drug and alcohol testing requirements of	No
DOT's Drug & Alcohol Testing regulations?	
- If Yes:	
2a. Specify how many were tested:	
2b. Specify how many failed:	
PART G – APPARENT CAUSE	
Output and a sector DADT O is also dad a share an left management	the the ADDADENT Office of the Assistant and ensure
Select only one box from PART G in shaded column on left represen	
the questions on the right. Describe secondary, contributing or root	causes of the Accident in the narrative (PART H).
Apparent Cause:	G6 - Equipment Failure
G1 - Corrosion Failure - only one sub-cause can be picked from shad	ded left-hand column
External Corrosion:	
Internal Corrosion:	
- If External Corrosion:	
1. Results of visual examination:	
- If Other, Describe:	
2. Type of corrosion: (select all that apply)	
- Galvanic	
- Atmospheric	
- Stray Current	
- Microbiological	
- Selective Seam	
- Other:	
- If Other, Describe:	
3. The type(s) of corrosion selected in Question 2 is based on the following	ng: (select all that apply)
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
4. Was the failed item buried under the ground?	
- If Yes :	
4a. Was failed item considered to be under cathodic	
protection at the time of the Accident?	
If Yes - Year protection started:	
4b. Was shielding, tenting, or disbonding of coating evident at	
the point of the Accident?	
4c. Has one or more Cathodic Protection Survey been	
conducted at the point of the Accident?	
If "Yes, CP Annual Survey" – Most recent year conducted:	
If "Yes, Close Interval Survey" – Most recent year conducted:	
If "Yes, Other CP Survey" – Most recent year conducted:	
- If No:	
4d. Was the failed item externally coated or painted?	
5. Was there observable damage to the coating or paint in the vicinity of	
the corrosion?	
- If Internal Corrosion:	
6. Results of visual examination:	
- Other:	
7. Type of corrosion (select all that apply): -	
- Corrosive Commodity	
- Water drop-out/Acid	
- Microbiological	
- Erosion	
- Other:	
- If Other, Describe:	
8. The cause(s) of corrosion selected in Question 7 is based on the follow	ing (select all that apply): -
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
9. Location of corrosion (select all that apply): -	
Laura a latin ala a	
- Low point in pipe	
- Low point in pipe - Elbow	

l( Others Describe	
- If Other, Describe:	
10. Was the commodity treated with corrosion inhibitors or biocides?	
11. Was the interior coated or lined with protective coating?	
12. Were cleaning/dewatering pigs (or other operations) routinely	
utilized?	
13. Were corrosion coupons routinely utilized?	
Complete the following if any Corrosion Failure sub-cause is selected AND	the "Item Involved in Accident" (from PART C,
Question 3) is Tank/Vessel.	
14. List the year of the most recent inspections:	
14a. API Std 653 Out-of-Service Inspection	
- No Out-of-Service Inspection completed	
14b. API Std 653 In-Service Inspection	
- No In-Service Inspection completed	
Complete the following if any Corrosion Failure sub-cause is selected AND Question 3) is Pipe or Weld.	the "Item Involved in Accident" (from PART C,
15. Has one or more internal inspection tool collected data at the point of the Accident?	
15a. If Yes, for each tool used, select type of internal inspection tool and	indicate most recent year run: -
<ul> <li>Magnetic Flux Leakage Tool</li> </ul>	
Most recent year:	
- Ultrasonic	
Most recent year:	
- Geometry	
Most recent year:	
- Caliper	
Most recent year:	
- Crack	
Most recent year:	
- Hard Spot	
Most recent year:	
- Combination Tool	
Most recent year:	
- Transverse Field/Triaxial	
Most recent year:	
- Other	
Most recent year:	
Describe:	
16. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
If Yes -	
Most recent year tested:	
Test pressure:	
17. Has one or more Direct Assessment been conducted on this segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident::	·
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	
18. Has one or more non-destructive examination been conducted at the	
point of the Accident since January 1, 2002?	
18a. If Yes, for each examination conducted since January 1, 2002, select typ recent year the examination was conducted:	e or non-destructive examination and indicate most
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
G2 - Natural Force Damage - only one sub-cause can be picked from sha	aded left-handed column
Natural Force Damage – Sub-Cause:	
- If Earth Movement, NOT due to Heavy Rains/Floods:	
1. Specify:	
-1 ··· J	

- If Other, Describe:	
- If Heavy Rains/Floods:	
2. Specify:	
- If Other, Describe:	
- If Lightning:	
3. Specify:	
- If Temperature:	
4. Specify:	
- If Other, Describe:	
- If High Winds:	
- If Other Natural Force Damage:	
5. Describe:	
Complete the following if any Natural Force Damage sub-cause is sele	ected.
6. Were the natural forces causing the Accident generated in	
conjunction with an extreme weather event?	
6a. If Yes, specify: (select all that apply)	1
- Hurricane	
- Tropical Storm	
- Tornado	
- Other	
- If Other, Describe:	<u> </u>
G3 - Excavation Damage - only one sub-cause can be picked from s	haded left-hand column
Excavation Damage – Sub-Cause:	
- If Excavation Damage by Operator (First Party):	
- If Excavation Damage by Operator's Contractor (Second Party):	
- If Excavation Damage by Third Party:	
- If Previous Damage due to Excavation Activity:	
Complete Questions 1-5 ONLY IF the "Item Involved in Accident" (from	PART C, Question 3) is Pipe or Weld.
1. Has one or more internal inspection tool collected data at the point of	
the Accident?	
<ol> <li>If Yes, for each tool used, select type of internal inspection tool a</li> </ol>	ind indicate most recent year run: -
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted: - Caliper	
- Callper Most recent vear conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted:	
- Combination Tool	
Most recent year conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
2. Do you have reason to believe that the internal inspection was	
completed BEFORE the damage was sustained?	
3. Has one or more hydrotest or other pressure test been conducted since	
original construction at the point of the Accident?	
- If Yes:	1
Most recent year tested:	
Test pressure (psig):	
4. Has one or more Direct Assessment been conducted on the pipeline	1
segment?	ident:
- If Yes, and an investigative dig was conducted at the point of the Acc	ident:
<ul> <li>If Yes, and an investigative dig was conducted at the point of the Acc Most recent year conducted:</li> </ul>	ident:
- If Yes, and an investigative dig was conducted at the point of the Acc	ident:

5. Has one or more non-destructive examination been conducted at the	
point of the Accident since January 1, 2002?	
5a. If Yes, for each examination, conducted since January 1, 2002,	select type of non-destructive examination and indicate most
recent year the examination was conducted: - Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
Complete the following if Excavation Damage by Third Party is select	ed as the sub-cause
<ul> <li>6. Did the operator get prior notification of the excavation activity?</li> <li>6a. If Yes, Notification received from: (select all that apply) -</li> </ul>	
- One-Call System	
- Excavator	
- Contractor	
- Landowner	
Complete the following mandaton: COA DIDT Program questions if an	· Evenuetion Domono cub course is colored
Complete the following mandatory CGA-DIRT Program questions if an	y Excavation Damage sub-cause is selected.
7. Do you want PHMSA to upload the following information to CGA-	
DIRT (www.cga-dirt.com)?	
8. Right-of-Way where event occurred: (select all that apply) -	
- Public	
- If "Public", Specify:	
- If "Private", Specify:	
- Pipeline Property/Easement	
- Power/Transmission Line	
- Railroad	
- Dedicated Public Utility Easement	
- Federal Land	
- Data not collected	
- Unknown/Other	
9. Type of excavator: 10. Type of excavation equipment:	
11. Type of work performed:	
12. Was the One-Call Center notified?	
12a. If Yes, specify ticket number:	
12b. If this is a State where more than a single One-Call Center	
exists, list the name of the One-Call Center notified:	
13. Type of Locator:	
14. Were facility locate marks visible in the area of excavation?	
15. Were facilities marked correctly?	
16. Did the damage cause an interruption in service?	
16a. If Yes, specify duration of the interruption (hours) 17. Description of the CGA-DIRT Root Cause (select only the one predor	ningent first level CCA DIPT Past Course and then where
available as a choice, the one predominant second level CGA-DIRT Root	
Root Cause:	
- If One-Call Notification Practices Not Sufficient, specify:	
<ul> <li>If Locating Practices Not Sufficient, specify:</li> </ul>	
- If Excavation Practices Not Sufficient, specify:	
- If Other/None of the Above, explain:	
G4 - Other Outside Force Damage - only one sub-cause can be s	elected from the shaded left-hand column
Other Outside Force Damage – Sub-Cause:	
- If Nearby Industrial, Man-made, or Other Fire/Explosion as Primary	Cause of Incident:
- If Damage by Car, Truck, or Other Motorized Vehicle/Equipment NO	I Engaged in Excavation:
1. Vehicle/Equipment operated by:	 nont or Voccolo Sot Adrift or Which Hous Otherwise Last
- If Damage by Boats, Barges, Drilling Rigs, or Other Maritime Equipr Their Mooring:	ment of vessels set Adnit of which have Otherwise LOSt
mon moorning.	

2. Select one or more of the following IF an extreme weather event was a	factor
- Hurricane	
- Tropical Storm	
- Tornado	
- Heavy Rains/Flood	
- Other	
- If Other, Describe:	
- If Routine or Normal Fishing or Other Maritime Activity NOT Engage	ed in Excavation:
- If Electrical Arcing from Other Equipment or Facility:	
- If Previous Mechanical Damage NOT Related to Excavation:	
	m DADT C. Question 2) is Dine on World
Complete Questions 3-7 ONLY IF the "Item Involved in Accident" (fro	m PART C, Question 3) is Pipe or Weld.
3. Has one or more internal inspection tool collected data at the point of the Accident?	
3a. If Yes, for each tool used, select type of internal inspection tool and ir - Magnetic Flux Leakage	dicate most recent year run:
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted: - Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted: - Combination Tool	
Most recent year conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
4. Do you have reason to believe that the internal inspection was	
completed BEFORE the damage was sustained?	
5. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
- If Yes:	r
Most recent year tested:	
Test pressure (psig): 6. Has one or more Direct Assessment been conducted on the pipeline	
segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted: 7. Has one or more non-destructive examination been conducted at the	
point of the Accident since January 1, 2002?	
7a. If Yes, for each examination conducted since January 1, 2002, s recent year the examination was conducted:	elect type of non-destructive examination and indicate most
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool Most recent year conducted:	
Most recent year conducted: - Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
- If Intentional Damage:	
8. Specify: - If Other, Describe:	
- If Other Outside Force Damage:	
9. Describe:	
	1

# G5 - Material Failure of Pipe or Weld - only one sub-cause can be selected from the shaded left-hand column

Use this section to report material failures ONLY IF the "Item Involved "Weld."	d in Accident" (from PART C, Question 3) is "Pipe" or
Material Failure of Pipe or Weld – Sub-Cause:	
1. The sub-cause selected below is based on the following: (select all that	t apply)
- Field Examination	
- Determined by Metallurgical Analysis	
- Other Analysis	
<ul> <li>If "Other Analysis", Describe:</li> <li>Sub-cause is Tentative or Suspected; Still Under Investigation</li> </ul>	
(Supplemental Report required)	
- If Construction, Installation, or Fabrication-related:	
2. List contributing factors: (select all that apply)	
- Fatigue or Vibration-related	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Other - If Other, Describe:	
- If Other, Describe: - If Original Manufacturing-related (NOT girth weld or other welds for	med in the field):
2. List contributing factors: (select all that apply)	neu in the held).
- Fatigue or Vibration-related:	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Other	
- If Other, Describe:	
- If Environmental Cracking-related:	
3. Specify: - Other - Describe:	
Complete the following if any Material Failure of Pipe or Weld sub-cau	se is selected.
4. Additional factors: (select all that apply):     - Dent	
- Gouge	
- Pipe Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	
- Wrinkle	
- Misalignment - Burnt Steel	
- Other:	
- If Other, Describe:	
5. Has one or more internal inspection tool collected data at the point of	
the Accident?	
5a. If Yes, for each tool used, select type of internal inspection tool a	nd indicate most recent year run:
- Magnetic Flux Leakage	
Most recent year run:	
- Ultrasonic Most recent year rup:	
Most recent year run: - Geometry	
Most recent year run:	
- Caliper	
Most recent year run:	
- Crack	
Most recent year run:	
- Hard Spot	
Most recent year run:	
- Combination Tool	
Most recent year run:	
- Transverse Field/Triaxial	
Most recent year run:	
- Other	
Most recent year run:	

Describe:	
6. Has one or more hydrotest or other pressure test been conducted since	
original construction at the point of the Accident?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
7. Has one or more Direct Assessment been conducted on the pipeline	
segment?	
	dent
- If Yes, and an investigative dig was conducted at the point of the Acci	dent -
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site -	
Most recent year conducted:	
8. Has one or more non-destructive examination(s) been conducted at the	
point of the Accident since January 1, 2002?	
8a. If Yes, for each examination conducted since January 1, 2002, so	elect type of non-destructive examination and indicate most
recent year the examination was conducted: -	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
G6 - Equipment Failure - only one sub-cause can be selected from t	he shaded left-hand column
Equipment Failure – Sub-Cause:	Non-threaded Connection Failure
- If Malfunction of Control/Relief Equipment:	
1. Specify: (select all that apply) -	
- Control Valve	
- Instrumentation	
- SCADA	
- Communications	
- Block Valve	
- Check Valve	
- Relief Valve	
- Relief Valve - Power Failure	
- Relief Valve - Power Failure - Stopple/Control Fitting	
- Relief Valve - Power Failure	
- Relief Valve - Power Failure - Stopple/Control Fitting	
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other     If Other – Describe:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other     If Other – Describe:     If Pump or Pump-related Equipment:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other     If Other – Describe:     If Pump or Pump-related Equipment:     Specify:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other     If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:	
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:     - If Pump or Pump-related Equipment:     2. Specify:         - If Other – Describe:         - If Other – Descr	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:	
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:     - If Other – Descr	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:     - If Pump or Pump-related Equipment:     2. Specify:         - If Other – Describe:     - If Other	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:	aterial:
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:     - If Pump or Pump-related Equipment:     2. Specify:         - If Other – Describe:     - If Other	aterial:
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:     If Threaded Connection/Coupling Failure:     Specify:         If Other – Describe:     If Non-threaded Connection Failure:     If Non-threaded Connection Failure:     If Other – Describe:     If Non-threaded Connection Failure:     If Other – Describe:     If	aterial:
- Relief Valve     - Power Failure     - Stopple/Control Fitting     - ESD System Failure     - Other     - If Other – Describe:     - If Pump or Pump-related Equipment:     2. Specify:         - If Other – Describe:     - If Other	aterial:
<ul> <li>Relief Valve</li> <li>Power Failure</li> <li>Stopple/Control Fitting</li> <li>ESD System Failure</li> <li>Other</li> <li>If Other – Describe:</li> <li>If Pump or Pump-related Equipment:</li> <li>2. Specify: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Threaded Connection/Coupling Failure: <ul> <li>3. Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>A. Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Defective or Loose Tubing or Fitting: <ul> <li>If Coher – Describe:</li> </ul> </li> <li>If Failure of Equipment Body (except Pump), Tank Plate, or other M</li> <li>If Other Equipment Failure:</li> <li>Describe:</li> </ul>	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:     If Threaded Connection/Coupling Failure:     Specify:         If Other – Describe:     If Non-threaded Connection Failure:     If Non-threaded Connection Failure:     If Other – Describe:     If Non-threaded Connection Failure:     If Other – Describe:     If	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:         Complete the following if any Equipment Failure sub-cause is selected	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:     If Threaded Connection/Coupling Failure:     Specify:         If Other – Describe:     If Non-threaded Connection Failure:     If Non-threaded Connection Failure:     If Other – Describe:     If Defective or Loose Tubing or Fitting:     If Failure of Equipment Body (except Pump), Tank Plate, or other M     If Other Equipment Failure:     Some failure:     Some failure:     If Other Equipment Failure:     Some failure:     Additional factors that contributed to the equipment failure:     (select all the failure:	
<ul> <li>Relief Valve</li> <li>Power Failure</li> <li>Stopple/Control Fitting</li> <li>ESD System Failure</li> <li>Other</li> <li>If Other – Describe:</li> <li>If Pump or Pump-related Equipment:</li> <li>2. Specify: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Threaded Connection/Coupling Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Defective or Loose Tubing or Fitting: <ul> <li>If Other Equipment Body (except Pump), Tank Plate, or other M</li> <li>If Other Equipment Failure:</li> <li>Describe:</li> </ul> </li> <li>Complete the following if any Equipment Failure sub-cause is selected of. Additional factors that contributed to the equipment failure: (select all the second cause vibration)</li> </ul>	
Relief Valve     Power Failure     Stopple/Control Fitting     ESD System Failure     Other         If Other – Describe:     If Pump or Pump-related Equipment:     Specify:         If Other – Describe:     If Threaded Connection/Coupling Failure:     Specify:         If Other – Describe:     If Non-threaded Connection Failure:     If Non-threaded Connection Failure:     If Other – Describe:     If Defective or Loose Tubing or Fitting:     If Failure of Equipment Body (except Pump), Tank Plate, or other M     If Other Equipment Failure:     Some failure:     Some failure:     If Other Equipment Failure:     Some failure:     Additional factors that contributed to the equipment failure:     (select all the failure:	
<ul> <li>Relief Valve</li> <li>Power Failure</li> <li>Stopple/Control Fitting</li> <li>ESD System Failure</li> <li>Other</li> <li>If Other – Describe:</li> <li>If Pump or Pump-related Equipment:</li> <li>Specify: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Threaded Connection/Coupling Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Other – Describe: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Defective or Loose Tubing or Fitting: <ul> <li>If Failure of Equipment Body (except Pump), Tank Plate, or other M</li> </ul> </li> <li>If Other Equipment Failure: <ul> <li>Describe:</li> </ul> </li> <li>Complete the following if any Equipment Failure sub-cause is selected</li> <li>Additional factors that contributed to the equipment failure: (select all the select all</li></ul>	
<ul> <li>Relief Valve</li> <li>Power Failure</li> <li>Stopple/Control Fitting</li> <li>ESD System Failure</li> <li>Other</li> <li>If Other – Describe:</li> <li>If Pump or Pump-related Equipment:</li> <li>2. Specify: <ul> <li>If Other – Describe:</li> </ul> </li> <li>If Threaded Connection/Coupling Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Non-threaded Connection Failure: <ul> <li>Specify:</li> <li>If Other – Describe:</li> </ul> </li> <li>If Defective or Loose Tubing or Fitting: <ul> <li>If Cother Equipment Body (except Pump), Tank Plate, or other M</li> <li>If Other Equipment Failure:</li> <li>Describe:</li> </ul> </li> <li>Complete the following if any Equipment Failure sub-cause is selected</li> <li>Additional factors that contributed to the equipment failure: (select all the second of the second</li></ul>	

- Loss of electricity	
- Improper installation	
- Mismatched items (different manufacturer for tubing and tubing	
fittings)	
- Dissimilar metals	
- Breakdown of soft goods due to compatibility issues with	
transported commodity	
- Valve vault or valve can contributed to the release	
- Alarm/status failure	
- Misalignment	
- Thermal stress	
- Other	
- Other, Describe:	
G7 - Incorrect Operation - only one sub-cause can be selected from	the shaded left-hand column
Incorrect Operation – Sub-Cause:	
Damage by Operator or Operator's Contractor NOT Related to	
Excavation and NOT due to Motorized Vehicle/Equipment Damage	
Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or	
Overflow	
1. Specify:	
- If Other, Describe:	
Valve Left or Placed in Wrong Position, but NOT Resulting in a Tank, Vessel, or Sump/Separator Overflow or Facility Overpressure	
Pipeline or Equipment Overpressured	
Equipment Not Installed Properly	
Wrong Equipment Specified or Installed	
Other Incorrect Operation	
2. Describe:	
Complete the following if any Incorrect Operation sub-cause is selected	ad.
3. Was this Accident related to (select all that apply): -	
- Inadequate procedure	
- No procedure established	
- Failure to follow procedure	
- Other:	
- If Other, Describe:	
<ol> <li>What category type was the activity that caused the Accident?</li> <li>Was the task(s) that led to the Accident identified as a covered task</li> </ol>	
in your Operator Qualification Program?	<u> </u>
5a. If Yes, were the individuals performing the task(s) qualified for the task(s)?	
G8 - Other Accident Cause - only one sub-cause can be selected from	om the shaded left-hand column
Other Accident Cause – Sub-Cause:	
- If Miscellaneous:	
1. Describe:	
- If Unknown:	
2. Specify:	
PART H - NARRATIVE DESCRIPTION OF THE ACCIDEN	т
A 3¿ flanged drain valve located between the discharge and suction piping of Pump body o-ring. The cause of the release was due to the bolted ball assembly mid valve	

File Full Name

#### PART I - PREPARER AND AUTHORIZED SIGNATURE

Preparer's Name	Daniel C Cerkoney
Preparer's Title	Compliance Engineer
Preparer's Telephone Number	701-483-1434
Preparer's E-mail Address	dan_cerkoney@transcanada.com
Preparer's Facsimile Number	701-483-1431
Authorized Signature's Name	Daniel C Cerkoney
Authorized Signature Title	Compliance Engineer
Authorized Signature Telephone Number	701-290-1176
Authorized Signature Email	dan_cerkoney@transcanada.com
Date	04/17/2014

# URS

June 7, 2011

Mr. Kyle Parker South Central District Office Kansas Department of Health and Environment 130 South Market Street, 6<sup>th</sup> Floor Wichita, KS 67202-3802

Re: Crude Oil Release at TransCanada Rock Pump Station 6347 82<sup>nd</sup> Street Udall, Kansas

The purpose of this letter report is to provide you with the details of the cleanup activities that took place in response to a crude oil release at the above referenced property. The spill was reported by Mr. Robert Baumgartner, Environmental Program Manager of TransCanada Keystone US Operations to The Kansas Department of Health and Environment (KDHE) South Central District Office in Wichita, Kansas on February 23, 2011. Spill response activities began immediately by TransCanada personnel and TransCanada spill response contractors. Seneca Waste Solutions provided soil excavation, waste collection and site restoration services. URS Corporation (URS) provided technical oversight for sampling and health and safety monitoring during the portion of the cleanup process that URS was on-site.

As previously noted, the location of the release is a pump station owned and operated by TransCanada Keystone Pipeline, LP (TransCanada). The pump station is in a rural area located at 6347 82<sup>nd</sup> Street, Udall, Kansas (Figure 1). The site is approximately 3.75 miles southeast of Udall, Kansas. The nearest residence is approximately 0.5 miles from the Site. The release of petroleum was entirely contained on TransCanada property.

The release occurred from the failure of a gasket on a 6 inch flange of a valve on the pipeline drainage system. A total of 30 gallons of crude oil was released. The oil stained surface gravel in a circular area approximately 3 feet in diameter and followed the sand backfill of the pipeline drain system that is used when there are maintenance needs at the Site.

When the release was discovered, TransCanada personnel immediately isolated the leaking valve, removed the faulty gasket and sealed the pipe against further leaks. Due to the relatively small area of stained gravel on the surface, TransCanada personnel began to manually excavate the stained gravel. Once it was determined that the release impacted a larger area than the area stained on the surface, Seneca Waste Solutions was mobilized to the site. A vac truck, skid-steer loader, hydrovac, and other equipment were mobilized to the site on March 4, 2011.

URS Corporation 8300 College Boulevard, Suite 200 Overland Park, KS 66210-2603 Tel: 913.344.1000 Fax: 913.344.1011 www.urscorp.com



Soil excavation and oil recovery operations were conducted from February 24 to March 11, 2011. During excavation activities, rainfall would accumulate in the excavation. The area of the spill was de-watered to prevent the spread of product along the ground surface. Collected free product and water was pumped from the excavation and approximately 30 gallons of oil was recovered during response operations. Collected product was transferred to an on-site tank. Oily water was collected via vacuum truck and stored on-site for later transport to a permitted treatment and disposal facility. Approximately 1,625 gallons of oily water was recovered from the excavation area.

Residual oil had accumulated around the drain line backfill sand, electrical conduits, pipeline foundations and other structures (Figure 2). Visually stained soils were excavated around the structures using a hydrovac truck, mini excavator or manual excavation. Impacted soil/gravel was placed in roll-off containers for later transfer to an approved landfill facility. The excavation ranged in thickness from a few inches to eight feet where the drain line entered a sump tank. Groundwater was not encountered during excavation activities.

Soils were screened using a photoionization detector (PID) with 10.6 eV lamp after excavation activities to determine the required limits of excavation. In addition, scraped areas of the surface yard were screened using the PID. The soil samples were collected from native clay soil. A small hole was dug approximately 4 inches into the native soil to collect post-excavation confirmation samples. Confirmation soil samples were collected at 14 locations after excavation was completed. Sampling and PID screening locations and excavation areas are shown in Figures 2.

The field PID screening and laboratory analytical results for benzene, toluene, ethylbenzene, xylenes (BTEX) and diesel range organics (DRO) are summarized on Table 1. Waste soil samples were collected from the roll off containers and analyzed. Laboratory analysis results for waste soils samples are shown in Table 2.

Based on field observations, measurements, and analytical data, the response excavation efforts have mitigated impacts to the surface and subsurface soils to below Kansas Tier 2 Risk Based Screening Levels (RBSL's) for BTEX and DRO. The excavated areas have been backfilled with clean material and no additional work is planned.

A total of 1,625 gallons of oily water was transported on March 25, 2011 by Safety-Kleen Systems for disposal. A total of approximately 165 cubic yards of impacted soil was stockpiled in eleven roll-off containers and was disposed of at Waste Management's Rolling Meadows landfill. Waste manifests and landfill tickets will be sent to KDHE when available from Waste Management.

Laboratory analytical reports and associated chain of custody forms are provided as attachments to this letter report.



Please feel free to contact Robert Baumgartner at 832-320-5538 or myself at 913-344-1023 if you have any questions.

Sincerely,

Rick O. Horner, RG Senior Project Manager

cc: Robert Baumgartner, TransCanada Steve McManamon, URS

# **Tables**

Table 1 – Laboratory Analysis Soil Verification Table 2 – Laboratory Analysis Soil Data for Disposal

# **Figures**

Figure 1 – Site Location Map Figure 2 – Site Plan

# **Attachments**

Laboratory Data

Table 1 -- Laboratory Analysis Soil Verification TransCanada Keystone Pipeline

Kansas	
Udall,	
Station;	
5 dund	
Hock	

Location	Units	E S E S E	E.SW	CHUC						
				0110	M-MO	SW-N	CM-1	CM.CO		
Sample Uate		3/1/11	2/44/44					20-10	ZN-MC	
	No. of the second s		3/11/1		3/1/11	3/1/11	3/11/11	214 144		
Lithology			ć				11/10	3/11/11	3/1/11	
		Cidy	VIay	Clay	Clav	Clav	100	Č		I I I I I I I I I I I I I I I I I I I
Depth	(foot)	c	4				CIEV	Clay	Clav	Level**
	licery	0	3	r	~	2	Ċ			5
DPD	(nnm)*	0				-	0	9	~	
	lindy	0.0	0.0	0.0	00	0	0			
Chemical of Concern						0.0	0.0	0.0	0.0	
C	And Barrier Control of	Constant of the second s								
Denzene	ma/ka	0.614		4 7 7						
-			20070	21.1	0.17	0.343	10.0200			
loluene	malka	2 17				2222	8/00/0	<0.062	<0.0616	28.2
	R. A.	2.0	100.0	37.52 1	0.515	1.68	20102			
Ethylbenzene	rna/ka	0 826	0440			3	\$0.130	<0.124	<0.123	29.800
		200.2	0/1/0	0.498	0.143	0.392	<0.0670			
rotal Aylenes	ma/ka	40.6	1 20					20,.02	<0.0616	145
	2.2		871	0.4	1.09	3.97	~0 340			
Lutesel Components	ma/ka	1002	2007	2.00			212.22	<0.010	<0.308	1.410
			2.02	<23.2	<22.9	224 224	- 22	0001		
01ES: mg/kg = Milligrams per kilogram, equivalent to narts nor milion /	echivalent to ne	the ner million /o						<u> </u>	<13.2	20.000

NOTE

Provide a munityrarity per kilogram, equivalent to parts per million (ppm) dry weight µg/kg = Micrograms per kilogram dry weight <x = Not detected to reporting limits of x</p>

\*=Total organic vapors (ppm as benzene) \*\* = Tier 2 Non Residential Soil Pathway Action Level COMP = Composite of three samples < 3 = less than three feet of excavation

# Table 1 – Laboratory Analysis Soil Verification TransCanada Keystone Pipeline Rock Pump Station; Udall, Kansas

Location	Units	F9.F	5	i		
Samulo Date	Statistics and a second second		52-22	F2-W	F2-W2	
	-	3/11/11	3/11/11	3/11/11		
Lithology				1315	11/11/8	Tior 9 Anti-
<i>RC</i>		Clay	Clay	Clav	, ici	
Depth	(feet)	۵		7	Viay	Level
G		•	ø	œ	œ	
ли	*(mqq)	0.0	00		,	
Chemical of Concern			2.2	0.0	0.0	
Remond						
Aliazion	ma/ka	~0 0567	1 1000			
Toliano		1000.00	<0.0034	<0.0645	<0.0666	000
	ma/ka	<0113	50 × 0 ×		2020	707
Ethybenzana		21.7	<0.12/	<0.129	<0.133	29 800
	mg/kg	<0.0567	<0.0634	A DEAF		20012-
Total Xylenes	2		10000	chou.us	<0.0666	145
	бибш	0.284	<0.317	<0.322		
Ulesel Components	malla				<0.333	1,410
mg/kg = Milliorams ner kilonrem scinic 1.11 222.3 <24.0		522.3	<24.9	<23.5	/0E 7	00,000
	alent to parts per	(maa) (million (nom) d	n' wainht		1177	20,000

NOTES:

Here winity faits per kilogram, equivalent to parts per million (ppm) dry weight μg/kg = Micrograms per kilogram dry weight <x = Not detected to reporting limits of x

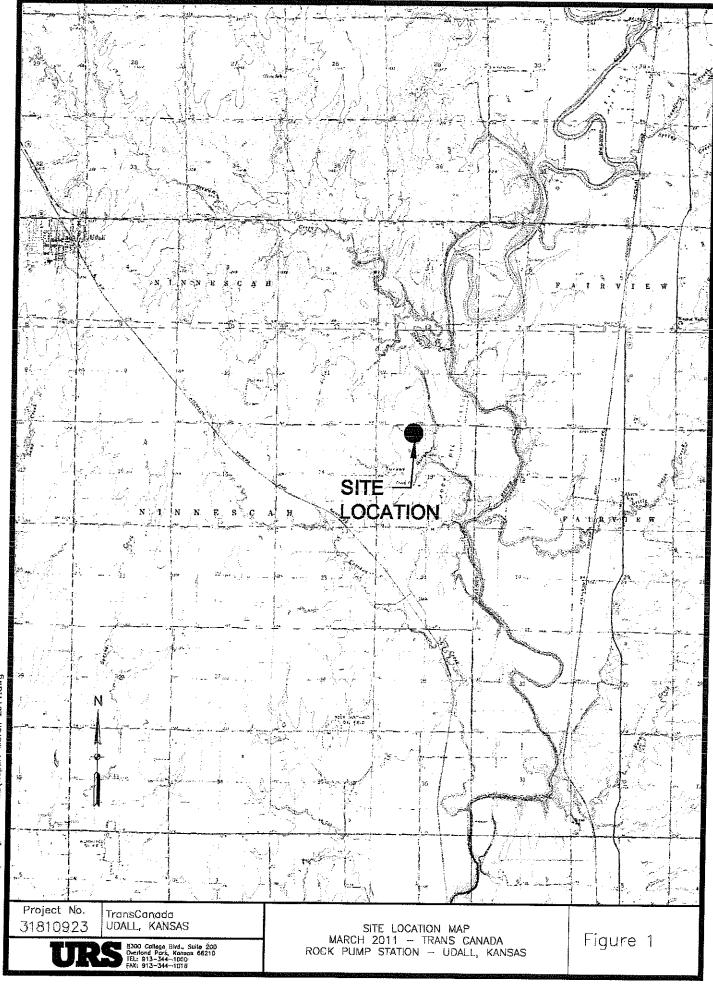
\*=Total organic vapors (ppm as isobutylene) \*\* = Tier 2 Non Residential Soil Pathway Action Level

-

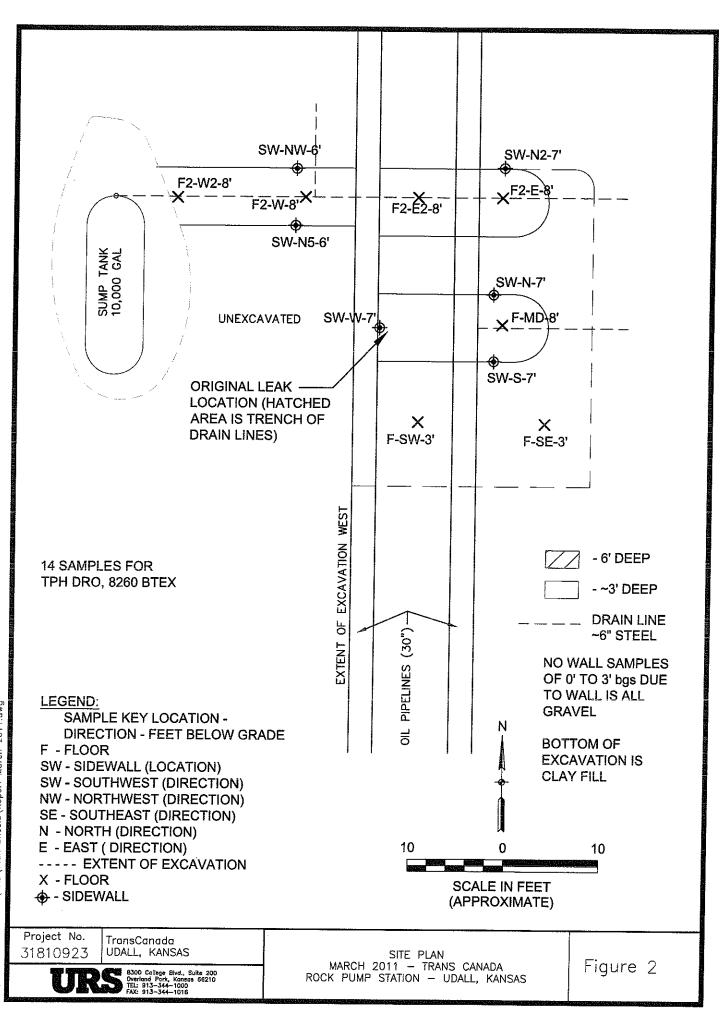
Table 2 - Laboratory Analysis Soil Data for Disposal	TransCanada Keystone Pipeline	Rock Pump Station; Udall, Kansas
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Location	Units	RO-795757	RO-247980	RO-494957	R0-79332	B0-7440
Sample Date		3/10/11	3/10/11	3/10/11	3/11/11	3/11/1
Lithology		Gravel	Gravel	Gravel	Gravel	Gravel
QId	*(mqq)	0:00	0.00	0.00	0.00	0000
Chemical of Concern						2222
Benzene	mg/kg	0.467	<0.0626	1.57	0.158	0.0878
Toluene	mg/kg	3.12	0.205	5.84	0.54	0.445
Ethylbenzene	mg/kg	0.829	<0.125	1.04	0.18	<0.117
Xylenes	mg/kg	9.24	0.592	10.3	P6 6	1 21
Arsenic - TCLP	mg/L	<0.5	<0.5	<u>205</u>	0 E E	12
Barium- TCLP	ma/L	25	20 E	200	20.0	C.U.S
Cadmium- TCLP	mg/L	<0.05	<0.05	2002	300	2.22
Chromium-TCLP	mg/L	<u>6.1</u>	¢01	201	60'04	cn'ny
Lead-TCLP	mg/L	<0.5	<0.5	<0.5		- 0. 7 H
Selenium-TCLP	mg/L	<0.5	<0.5	<0.5	20 F	
Silver-TCLP	mg/L	<0.1	<b>6</b> .1	<0.1	401 A01	
Mercury-TCLP	µg/L	\$	\$	\$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

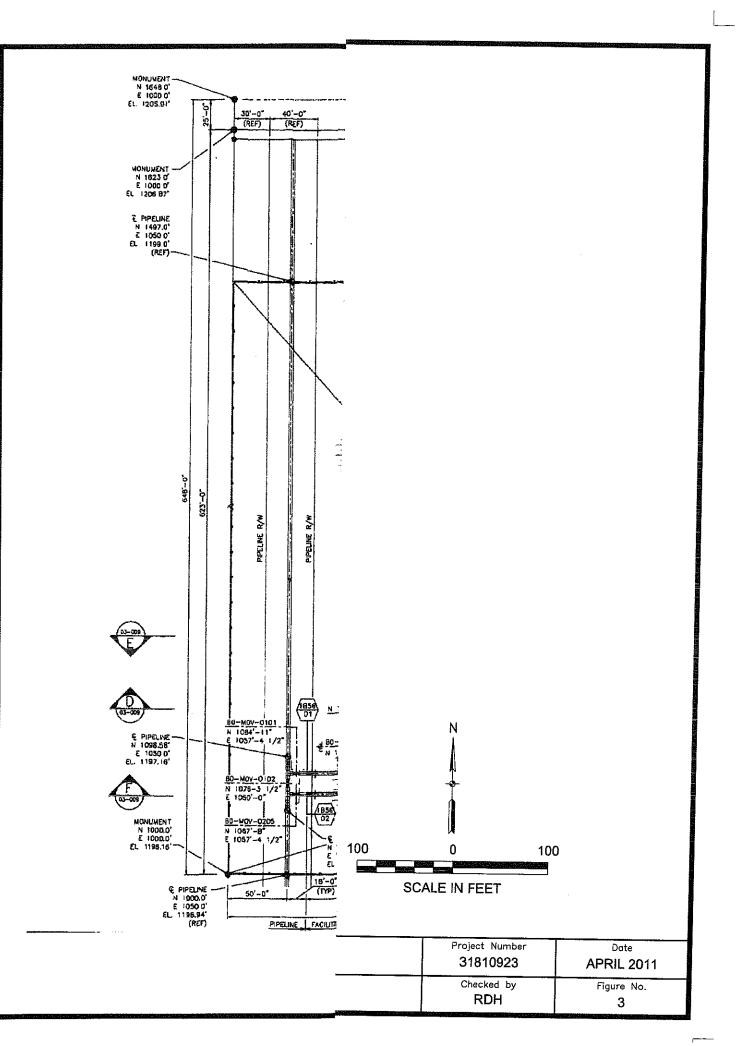
NOTES: mg/kg = Milligrams per kilogram, equivalent to parts per million (ppm) dry weight µg/kg = Micrograms per kilogram dry weight <x = Not detected to reporting limits of x \*= Total organic vapors (ppm as isobutylene)



June 7, 2011 2:24.37 pm (cro) J:\JransCanada Udai\CAD\Pian Sheets\Report March 2011.dwg



une 7, 2011 2:21.30 pm (cra) :\TransCanada Udai\\CAD\Plan Sheets\Report March 2011.dwg



June 7, 2011 2:21.57 pm (cra) J:\TransCanada Udall\CAD\Plan Sheeis\Report March 2011.dwg



Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

March 28, 2011

Rick Horner URS Corporation 8300 College Blvd. Overland Park, KS 66210

RE: Project: UDALL, KS Pace Project No.: 6095222

Dear Rick Horner:

Enclosed are the analytical results for sample(s) received by the laboratory on March 12, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shemi que

Sherri Guess

sherri.guess@pacelabs.com Project Manager

Enclosures

#### REPORT OF LABORATORY ANALYSIS

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#### CERTIFICATIONS

Project: UDALL, KS Pace Project No.: 6095222

Kansas Certification IDs 9608 Loiret Boulevard, Lenexa, KS 66219 A2LA Certification #: 2456.01 Arkansas Certification #: 05-008-0 Illinois Certification #: 001191 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407-08-TX Utah Certification #: 9135995665

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# SAMPLE SUMMARY

Project: UDALL, KS Pace Project No.: 6095222

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6095222001	F-SE-3'	Solid	03/11/11 09:15	03/12/11 08:43
6095222002	F-SW-3'	Solid	03/11/11 09:25	03/12/11 08:43
6095222003	SW-S-7'	Solid	03/11/11 09:35	03/12/11 08:43
6095222004	SW-W-7'	Solid	03/11/11 09:45	03/12/11 08:43
6095222005	SW-N-7'	Solid	03/11/11 09:55	03/12/11 08:43
6095222006	F-MD-8'	Solid	03/11/11 10:05	03/12/11 08:43
6095222007	SW-S2-6'	Solid	03/11/11 10:35	03/12/11 08:43
6095222008	SW-N2-7'	Solid	03/11/11 10:45	03/12/11 08:43
6095222009	F2-E-8'	Solid	03/11/11 10:55	03/12/11 08:43
6095222010	F2-E2-8'	Solid	03/11/11 11:10	03/12/11 08:43
6095222011	SW-NS-6'	Solid	03/11/11 11:20	03/12/11 08:43
6095222012	F2-W-8'	Solid	03/11/11 11:40	03/12/11 08:43
6095222013	F2-W2-8'	Solid	03/11/11 12:05	03/12/11 08:43
6095222014	TRIP BLANK	Solid	03/11/11 00:00	03/12/11 08:43
6095222015	SWNN-6'	Solid	03/11/11 11:30	03/12/11 08:43

**REPORT OF LABORATORY ANALYSIS** 

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# SAMPLE ANALYTE COUNT

Project: UDALL, KS Pace Project No.: 6095222

EPA 6260JDM8609522202F-SW-3'OWC1609522203F-SW-3'OA2SDR9609522203SW-8-7'OA2SDR9609522204SW-8-7'OA2SDR9609522204SW-W-7'OA2SDR9609522204SW-W-7'OA2SDR9609522206SW-N-7'OA2SDR9609522206SW-N-7'OA2SDR9609522206SW-N-7'OA2SDR9609522207SW-N-7'OA2SDR9609522206F-MD-8'OA2SDR9609522207SW-N-7'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR9609522207SW-S2-6'OA2SDR<	Lab ID	F-SW-3' SW-S-7' SW-W-7' SW-N-7' F-MD-8' SW-S2-6' SW-N2-7' F2-E-8'	Method	Analysts	Analytes Reported
ASTM D2974-87         DWC         1           6095222002         F-SW-3'         OA2         SDR         9           6095222003         SW-S-7'         OA2         SDR         9           6095222003         SW-S-7'         OA2         SDR         9           6095222004         SW-W-7'         OA2         SDR         9           6095222005         SW-W-7'         OA2         SDR         9           6095222005         SW-W-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222005         F-MD-8'         OA2         SDR         9           6095222005         F-MD-8'         OA2         SDR         9           6095222006         F-MD-8'         OA2         SDR         9           6095222007         SW-S2-8'         OA2         SDR         9           6095222003         SW-N2-7'         OA2         SDR         9           6095222004         SW-N2-7'         OA2	6095222001	F-SE-3'	SE-3'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           SW-3'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           V-3'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           V-5.7'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           V-4.7'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           V-4.7'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           MD-8'         OA2         SDR           EPA 8260         JDM           ASTM D2974-87         DWC           ASTM D2974-87         DWC <td>9</td>	9	
6095222002     F-SW-3'     OA2     SDR     9       6095222003     SW-S-7'     OA2     SDR     9       6095222004     SW-S-7'     OA2     SDR     9       6095222004     SW-W-7'     OA2     SDR     9       6095222005     SW-W-7'     OA2     SDR     9       6095222005     SW-N-7'     OA2     SDR     9       6095222005     F-MD-8'     OA2     SDR     9       6095222005     F-MD-8'     OA2     SDR     9       6095222005     F-MD-8'     OA2     SDR     9       6095222007     SW-S2-6'     OA2     SDR     9       6095222007     SW-S2-6'     OA2     SDR     9       6095222009     F2-E-8'     OA2     SDR     9       6095222009     F2-E-8'     OA2     SDR     9       6095222009     F2-E-8'     OA2     SDR			EPA 8260	JDM	8
EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222003         SW-8-7'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           8095222004         SW-W-7'         OA2         SDR         9           EPA 8260         JDM         8         8           6095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8         8         9           6095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8         8         9           6095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8         8         8         9           6095222005         F-MD-8'         OA2         SDR         9           EPA 8260         JDM         8         8         8         8           6095222005         SW-N2-7'         OA2         SDR         9           EPA 8260         JDM         8         8         8         8 </td <td></td> <td></td> <td>ASTM D2974-87</td> <td>DWC</td> <td>1</td>			ASTM D2974-87	DWC	1
6095222003SW-8-7'DWC16095222004SW-W-7'OA2SDR96095222004SW-W-7'OA2SDR96095222005SW-W-7'OA2SDR96095222005SW-N-7'OA2SDR96095222006SW-N-7'OA2SDR96095222006SW-N-7'OA2SDR96095222006F-MD-8'OA2SDR96095222007SW-S2-6'OA2SDR96095222008F-MD-8'OA2SDR96095222009F-MD-8'OA2SDR96095222007SW-S2-6'OA2SDR96095222008F-MD-8'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222010F2-E-8'OA2SDR96095222010F2-E-8'OA2SDR96095222010F2-E-8'OA2SDR96095222011SW-NS-6'OA2SDR96095222012F2-W-8'OA2SDR9605222012F2-W-8'OA2SDR9605222012F2-W-8'OA2SDR9605222012F2-W-8'OA2SDR9605222012F2-W-8'OA2SDR9605222012<	6095222002	F-SW-3'	OA2	SDR	9
6095222003SW-S-7'OA2SDR96095222004SW-W-7'OA2SDR16095222005SW-W-7'OA2SDR96095222005SW-W-7'OA2SDR96095222005SW-N-7'OA2SDR96095222005SW-N-7'OA2SDR96095222005SW-N-7'OA2SDR96095222005F-MD-8'OA2SDR96095222005F-MD-8'OA2SDR96095222005F-MD-8'OA2SDR96095222007SW-S2-6'OA2SDR96095222007F-MD-8'OA2SDR96095222007F-MD-8'OMC16095222007SW-S2-6'OA2SDR96095222007SW-S2-6'OA2SDR96095222007SW-S2-6'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222019F2-E-8'OA2SDR96095222010F2-E-8'OA2SDR96095222011SW-NS-6'OA2SDR96095222012F2-W-8'OA2SDR96095222012F2-W-8'OA2SDR9609522012F2-W-8'OA2SDR9609522012F2-W-8'OA2SDR9609522012F2-W-8'OA2SDR9609522014 <td></td> <td></td> <td>EPA 8260</td> <td>JDM</td> <td>8</td>			EPA 8260	JDM	8
EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222004         SW-W-7'         OA2         SDR         9           EPA 8260         JDM         8         8         5095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9         9           6095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222006         F-MD-8'         OA2         SDR         9           6095222007         SW-S2-6'         OA2         SDR         9           6095222017         SW-S2-6'         OA2         SDR         9           6095222019         F2-E-8'         OA2         SDR         9           609522201			ASTM D2974-87	DWC	1
ASTM D2974-87         DWC         1           6095222004         SW-W-7'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222005         SW-N-7'         OA2         SDR         9           6095222006         F-MD-8'         OA2         SDR         9           6095222007         SW-S2-6'         OA2         SDR         9           6095222008         SW-N2-7'         OA2         SDR         9           6095222009         F2-E-8'         OA2         SDR         9           6095222019         F2-E-8'         OA2         SDR         9           6095222010	6095222003	SW-S-7'	OA2	SDR	9
S095222004SW-W-7'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC16095222005SW-N-7'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC16095222005F-MD-8'OA2SDR96095222007F-MD-8'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222007SW-82-6'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222009F2-E-8'OA2SDR96095222010F2-E2-8'OA2SDR96095222010F2-E2-8'OA2SDR96095222011SW-NS-5'OA2SDR96095222012F2-W-8'OA2SDR96095222012F2-W-8'OA2SDR96095222012F2-W-8'OA2SDR96095222014F2-W-8'OA2SDR9609522015F2-W-8'OA2SDR9609522016F2-W-8'			EPA 8260	JDM	8
EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8         8         9         1           6095222005         SW-N-7'         OA2         SDR         9         9           EPA 8260         JDM         8         8         9         1         8           6095222005         F-MD-9'         OA2         SDR         9         9         1         8         9         1			ASTM D2974-87	DWC	1
ASTM D2974-87         DWC         1           6095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222005         F-MD-8'         OA2         SDR         9           6095222007         F-MD-8'         OA2         SDR         9           6095222007         SW-S2-6'         OA2         SDR         9           6095222007         SW-N2-7'         OA2         SDR         9           6095222008         F2-E-8'         OA2         SDR         9           6095222009         F2-E-8'         OA2         SDR         9           6095222010         F2-E-8'         OA2         SDR         9           6095222010         F2-E2-8'         OA2         SDR         9           6095222010	6095222004	SW-W-7'	OA2	SDR	9
5095222005         SW-N-7'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222006         F-MD-8'         OA2         SDR         9           6095222007         F-MD-8'         OA2         SDR         9           609522007         SW-S2-6'         OA2         SDR         9           609522007         SW-S2-6'         OA2         SDR         9           609522008         SW-S2-6'         OA2         SDR         9           609522009         SW-S2-6'         OA2         SDR         9           609522008         SW-N2-7'         OA2         SDR         9           609522009         F2-E-8'         OA2         SDR         9           609522009         F2-E-8'         OA2         SDR         9           609522010         F2-E-8'         OA2         SDR         9			EPA 8260	JDM	8
EPA 8260         JDM         8           ASTM D2974-87         DWC         1           6095222006         F-MD-8'         OA2         SDR         9           EPA 8260         JDM         8         8           6095222007         SW-S2-6'         OA2         SDR         9           EPA 8260         JDM         8         8           6095222007         SW-S2-6'         OA2         SDR         9           EPA 8260         JDM         8         8         9           509522007         SW-S2-6'         OA2         SDR         9           EPA 8260         JDM         8         8         9         9           5095222009         F2-E-8'         OA2         SDR         9           6095222009         F2-E-8'         OA2         SDR         9           6095222010         F2-E-8'			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 6095222006 F-MD-8' DWC 1 8095222007 SW-S2-6' OA2 SDR 9 EPA 8260 JDM 8 8095222007 SW-S2-6' OA2 SDR 9 EPA 8260 JDM 8 5095222008 SW-N2-7' OA2 SDR 9 EPA 8260 JDM 8 5095222009 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 15095222009 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 15095222010 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 15095222010 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 15095222010 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 15095222010 SU-NS-6' OA2 SDR 9 EPA 8260 JDM 8 15095222010 SU-NS-6' OA2 SDR 9 1509522010 SU-NS-6' OA2 SDR 9 150952200 SU-NS-6' OA2 SDR 9 150952200 SU-NS-6' OA2 SDR 9 150952200 SU-NS-6' OA2 SDR 9 15095200 SU-NS-6' OA2 SDR 9 1509500 SU-NS-6' OA2 SDR 9 15000 SU-NS-6' OA2 SDR 9 150	6095222005	SW-N-7'	OA2	SDR	9
8095222006F-MD-8'OA2SDR9EPA 8260JDM88095222007SW-S2-6'OA2SDR98095222007SW-S2-6'OA2SDR9EPA 8260JDM88095222008SW-N2-7'OA2SDR98095222009SW-N2-7'OA2SDR98095222009F2-E-8'OA2SDR98095222009F2-E-8'OA2SDR98095222010F2-E-8'OA2SDR98095222011F2-E-8'OA2SDR98095222011F2-E-8'OA2SDR98095222012F2-E-8'OA2SDR98095222013F2-E-8'OA2SDR98095222014F2-E-8'OA2SDR98095222015F2-W-8'OA2SDR98095222017F2-W-8'OA2SDR98095222017F2-W-8'OA2SDR98095222017F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR98095222012F2-W-8'OA2SDR9809522012F2-W-8'OA2SDR9809522013F2-W-8'OA2SDR9			EPA 8260	JDM	8
EPA 8260       JDM       8         ASTM D2974-87       DWC       1         6095222007       SW-S2-6'       OA2       SDR       9         EPA 8260       JDM       8         S095222008       SW-N2-7'       OA2       SDR       9         S095222009       SW-N2-7'       OA2       SDR       9         S095222009       SW-N2-7'       OA2       SDR       9         S095222009       F2-E-8'       OA2       SDR       9         S095222010       F2-E-8'       OA2       SDR       9         S095222010       F2-E2-8'       OA2       SDR       9         S095222010       F2-E2-8'       OA2       SDR       9         S095222011       SW-NS-6'       OA2       SDR       9         S095222012       F2-W-8'       OA2       SDR       9         S095222012       F2-W-8'       OA2       SDR       9         S095222012       F2-W-8'			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 0A2 SDR 9 EPA 8260 JDM 8 S095222008 SW-N2-7' 0A2 SDR 9 EPA 8260 JDM 8 S095222009 F2-E-8' 0A2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 EPA 8260 JDM 8 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 EPA 8260 JDM 8 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 EPA 8260 JDM 8 EPA 8 EPA 8 EPA 8 EPA 8 EPA 8 EPA 8 EPA 8 EPA	6095222006	F-MD-8'	OA2	SDR	9
S095222007SW-S2-6'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222008SW-N2-7'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222009F2-E-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222010F2-E-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222011SW-NS-6'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM8ASTM D2974-87DWC1S095222012F2-W-8'OA2SDR9EPA 8260JDM88ASTM D2974-87DWC18ASTM D2974-87DWC1 <td></td> <td></td> <td>EPA 8260</td> <td>JDM</td> <td>8</td>			EPA 8260	JDM	8
EPA 8260         JDM         8           ASTM D2974.87         DWC         1           5095222008         SW-N2-7'         OA2         SDR         9           EPA 8260         JDM         8         8         8           5095222009         F2-E-8'         OA2         SDR         9           5095222010         F2-E-8'         OA2         SDR         9           6095222010         F2-E-8'         OA2         SDR         9           6095222011         SW-NS-6'         OA2         SDR         9           6095222011         SW-NS-6'         OA2         SDR         9           6095222011         SW-NS-6'         OA2         SDR         9           6095222012         F2-W-8'         OA2         SDR         9           6095222012         F2-W-8'         OA2         SDR         9           6095222012         F2-W-8'         OA2         SDR         9			ASTM D2974-87	DWC	1
ASTM D2974-87       DWC       1         S095222008       SW-N2-7'       OA2       SDR       9         EPA 8260       JDM       8         ASTM D2974-87       DWC       1         S095222009       F2-E-8'       OA2       SDR       9         S095222010       F2-E-8'       OA2       SDR       9         S095222010       F2-E2-8'       OA2       SDR       9         S095222011       SW-NS-6'       OA2       SDR       9         S095222012       F2-W-8'       OA2       SDR       9         S095222012       F2-W-8'       OA2       SDR       9         S095222012       F2-W-8'       OA2       SDR       9         S095       SDR <t< td=""><td>6095222007</td><td>SW-S2-6'</td><td>OA2</td><td>SDR</td><td>9</td></t<>	6095222007	SW-S2-6'	OA2	SDR	9
S095222008         SW-N2-7'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           S095222009         F2-E-8'         OA2         SDR         9           EPA 8260         JDM         8         8           ASTM D2974-87         DWC         1           S095222019         F2-E-8'         OA2         SDR         9           EPA 8260         JDM         8         8           ASTM D2974-87         DWC         1           S095222010         F2-E2-8'         OA2         SDR         9           EPA 8260         JDM         8         8         8           ASTM D2974-87         DWC         1         9           EPA 8260         JDM			EPA 8260	JDM	8
EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222009 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222010 F2-E2-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222011 SW-NS-6' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0055222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 5095222009 F2-E-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222010 F2-E2-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 5095222011 SW-NS-6' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 ASTM D2974-87 DWC 1 6095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222012 F2-W-8' OA2 SDR 9 6095222012 F2-W-8' OA2 SDR 9 6004 SDR 9	6095222008	SW-N2-7'	OA2	SDR	9
S095222009         F2-E-8'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           S095222010         F2-E2-8'         OA2         SDR         9           S095222010         F2-E2-8'         OA2         SDR         9           S095222010         F2-E2-8'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           S095222011         SW-NS-6'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           S095222012         F2-W-8'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           O95222012         F2-W-8'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           ASTM D2974-87         DWC         1			EPA 8260	JDM	8
EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222010 F2-E2-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222011 SW-NS-6' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 6095222012 DWC 1 609522012 DWC 1 6095222012 DWC 1 609522012 DWC 1 60952200 DWC 1 6095200 DWC 1			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 0095222010 F2-E2-8' DWC 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 0095222011 SW-NS-6' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 095222012 F2-W-8' DWC 1 ASTM D2974-87 DWC 1 ASTM D2974-87 DWC 1 ASTM D2974-87 DWC 1	5095222009	F2-E-8'	OA2	SDR	9
5095222010         F2-E2-8'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           095222011         SW-NS-6'         OA2         SDR         9           095222011         SW-NS-6'         OA2         SDR         9           095222011         SW-NS-6'         OA2         SDR         9           095222012         F2-W-8'         OWC         1           095222012         F2-W-8'         OA2         SDR         9           EPA 8260         JDM         8         8         9         9           CPA 8260         JDM         8         9         9         9         9           EPA 8260         JDM         8         8         8         9         1         9			EPA 8260	JDM	8
EPA 8260       JDM       8         ASTM D2974-87       DWC       1         095222011       SW-NS-6'       OA2       SDR       9         EPA 8260       JDM       8         ASTM D2974-87       DWC       1         095222012       F2-W-8'       OA2       SDR       9         EPA 8260       JDM       8         ASTM D2974-87       DWC       1         095222012       F2-W-8'       OA2       SDR       9         EPA 8260       JDM       8         ASTM D2974-87       DWC       1         ASTM D2974-87       DWC       1			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 095222011 SW-NS-6' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1 095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1	6095222010	F2-E2-8'	OA2	SDR	9
095222011         SW-NS-6'         OA2         SDR         9           EPA 8260         JDM         8           ASTM D2974-87         DWC         1           095222012         F2-W-8'         OA2         SDR         9           EPA 8260         JDM         8         8           ASTM D2974-87         DWC         1           ASTM D2974-87         DWC         1           ASTM D2974-87         DWC         1			EPA 8260	JDM	8
EPA 8260 JDM 8 ASTM D2974-87 DWC 1 095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1 095222012 F2-W-8' DWC 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1	095222011	SW-NS-6'	OA2	SDR	9
095222012 F2-W-8' OA2 SDR 9 EPA 8260 JDM 8 ASTM D2974-87 DWC 1			EPA 8260	JDM	8
EPA 8260 JDM 8 ASTM D2974-87 DWC 1			ASTM D2974-87	DWC	1
ASTM D2974-87 DWC 1	095222012	F2-W-8'	OA2	SDR	9
			EPA 8260	JDM	8
095222013 F2-W2-8' OA2 SDR 9			ASTM D2974-87	DWC	1
	095222013	F2-W2-8'	OA2	SDR	9

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# SAMPLE ANALYTE COUNT

Project: UDALL, KS Pace Project No.: 6095222

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		EPA 8260	JDM	8
		ASTM D2974-87	DWC	1
6095222014	TRIP BLANK	EPA 8260	JDM	8
6095222015	SWNN-6'	OA2	SDR	9
		EPA 8260	JDM	8
		ASTM D2974-87	DWC	1

# **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: F-SE-3'	Lab ID: 60	95222001	Collected: 03/11/	11 09:15	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Me	thod: OA2 P	reparation Method: (	DA2				
Diesel Fuel	ND π	ng/kg	22.1	1	03/15/11 00:00	03/23/11 19:17	68334-30-5	
Fuel Oil	ND m	ng/kg	22.1	1	03/15/11 00:00	03/23/11 19:17	68553-00-4	
Jet Fuel	ND m		22.1	1	03/15/11 00:00			
Kerosene	ND m		22.1	1	03/15/11 00:00	03/23/11 19:17	8008-20-6	
Mineral Spirits	ND m	ıg/kg	22.1	1	03/15/11 00:00	03/23/11 19:17	8030-30-6	
Motor Oil	ND m	ig/kg	22.1	1	03/15/11 00:00	03/23/11 19:17	64742-65-0	
Total Petroleum Hydrocarbons	ND m	ig/kg	22.1	1	03/15/11 00:00	03/23/11 19:17	,	
n-Tetracosane (S)	82 %	5	50-137	1	03/15/11 00:00	03/23/11 19:17	646-31-1	
p-Terphenyl (S)	69 %	<b>b</b>	41-129	1	03/15/11 00:00	03/23/11 19:17	92-94-4	
8260 MSV UST 5030 Med Level	Analytical Met	hod: EPA 82	60 Preparation Meth	nod: EPA	5035/5030B			
Benzene	614 ug	g/kg	60.7	1	03/17/11 00:00	03/21/11 21:37	71-43-2	
Ethylbenzene	836 ug	g/kg	60.7	1	03/17/11 00:00	03/21/11 21:37		
Toluene	<b>3170</b> ug	j/kg	121	1	03/17/11 00:00	03/21/11 21:37	108-88-3	
Xylene (Total)	10800 ug	j/kg	304	1	03/17/11 00:00	03/21/11 21:37	1330-20-7	
Dibromofluoromethane (S)	100 %		85-113	1	03/17/11 00:00	03/21/11 21:37	1868-53-7	
1,2-Dichloroethane-d4 (S)	90 %		75-121	1	03/17/11 00:00	03/21/11 21:37	17060-07-0	
4-Bromofluorobenzene (S)	101 %		79-119			03/21/11 21:37		
Toluene-d8 (S)	107 %		86-119	1	03/17/11 00:00	03/21/11 21:37	2037-26-5	
Percent Moisture	Analytical Meti	hod: ASTM E	2974-87					
Percent Moisture	18.3 %		0.50	1		03/21/11 00:00		

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Project: UDALL, KS Pace Project No.: 6095222

Sample: F-SW-3'	Lab ID: 609	5222002	Collected: 03	/11/11	09:25	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weigh	t" basis								
Parameters	Results	Units	Report Lir	nit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Meth	od: OA2 P	reparation Meth	od: OA	2				
Diesel Fuel	ND mg	/kg	2	3.6	1	03/15/11 00:00	03/23/11 19:26	6 68334-30-5	
Fuel Oil	ND mg	/kg	2	3.6	1	03/15/11 00:00	03/23/11 19:26		
Jet Fuel	ND mg	/kg	2	3.6	1	03/15/11 00:00	03/23/11 19:26	94114-58-6	
Kerosene	ND mg	/kg	2	3.6	1	03/15/11 00:00	03/23/11 19:26		
Mineral Spirits	ND mg	/kg	2	3.6	1	03/15/11 00:00			
Motor Oil	ND mg	/kg	2	3.6	1	03/15/11 00:00	03/23/11 19:26		
Total Petroleum Hydrocarbons	ND mg	/kg	2	3.6	1	03/15/11 00:00			
n-Tetracosane (S)	82 %		50-1	37	1	03/15/11 00:00	03/23/11 19:26	646-31-1	
p-Terphenyl (S)	68 %		41-1	29	1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical Metho	od: EPA 82	60 Preparation	Method	: EPA	5035/5030B			
Benzene	ND ug/I	g	63	2.6	1	03/17/11 00:00	03/21/11 22:22	71-43-2	
Ethylbenzene	176 ug/	g	62	2.6	1	03/17/11 00:00	03/21/11 22:22	100-41-4	
Toluene	507 ug/ł		1	25	1	03/17/11 00:00	03/21/11 22:22	108-88-3	
Xylene (Total)	1290 ug/i	g	3	13	1	03/17/11 00:00	03/21/11 22:22		
Dibromofluoromethane (S)	96 %		85-1	13	1	03/17/11 00:00	03/21/11 22:22	1868-53-7	
1,2-Dichloroethane-d4 (S)	91 %		75-1	21	1	03/17/11 00:00	03/21/11 22:22	17060-07-0	
4-Bromofluorobenzene (S)	98 %		79-1	19			03/21/11 22:22		
Toluene-d8 (S)	100 %		86-1	19 :	1 (	03/17/11 00:00	03/21/11 22:22	2037-26-5	
Percent Moisture	Analytical Metho	d: ASTM D	2974-87						
Percent Moisture	20.9 %		0.4	50 1	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

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Project: UDALL, KS Pace Project No.: 6095222

Sample: SW-S-7'	Lab ID: 6	095222003	Collected: 03/1	1/11 09:3	35 Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weigh	t" basis							
Parameters	Results	Units	Report Limi	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical M	ethod: OA2 P	reparation Method	I: OA2				
Diesel Fuel	ND	mg/kg	23.	2 1	03/15/11 00:00	03/23/11 19:35	68334-30-5	
Fuel Oil	ND	mg/kg	23.	2 1	03/15/11 00:00	03/23/11 19:35	68553-00-4	
Jet Fuel	ND	mg/kg	23.	2 1		03/23/11 19:35		
Kerosene	ND	mg/kg	23.	2 1		03/23/11 19:35		
Mineral Spirits	ND	mg/kg	23.	21	03/15/11 00:00			
Motor Oil	ND	mg/kg	23.	21	03/15/11 00:00	03/23/11 19:35		
Total Petroleum Hydrocarbons	ND	mg/kg	23.	2 1	03/15/11 00:00			
n-Tetracosane (S)	82 1	%	50-13	7 1	03/15/11 00:00	03/23/11 19:35	646-31-1	
p-Terphenyl (S)	68 '	%	41-12	€ 1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical Me	ethod: EPA 820	60 Preparation M	ethod: El	PA 5035/5030B			
Benzene	1120 (	ıg/kg	61.1	3 1	03/17/11 00:00	03/21/11 22:37	71-43-2	
Ethylbenzene	498 เ		61.6	3 1	03/17/11 00:00	03/21/11 22:37	100-41-4	
Toluene	3250 1	ıg/kg	124	1	03/17/11 00:00	03/21/11 22:37		
Xylene (Total)	6400 t	ig/kg	309	1	03/17/11 00:00	03/21/11 22:37		
Dibromofluoromethane (S)	97 9	6	85-113	1	03/17/11 00:00	03/21/11 22:37	1868-53-7	
1,2-Dichloroethane-d4 (S)	93 9	6	75-121	1	03/17/11 00:00	03/21/11 22:37		
4-Bromofluorobenzene (S)	102 %	6	79-119	1	03/17/11 00:00	03/21/11 22:37	460-00-4	
Toiuene-d8 (S)	106 %	6	86-119	1	03/17/11 00:00	03/21/11 22:37		
Percent Moisture	Analytical Me	thod: ASTM D	2974-87					
Percent Moisture	19.9 %	6	0.50	1		03/21/11 00:00		

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Project: UDALL, KS Pace Project No.: 6095222

Fave	FIU	jeci no.:	0090
	_		
A		A144 144	

Sample: SW-W-7'	Lab ID:	6095222004	Collected: 03/11/	11 09:45	Received: (	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical I	Viethod: OA2 Pr	eparation Method: (	DA2				
Diesel Fuel	ND	mg/kg	22.9	1	03/15/11 00:00	) 03/23/11 19:4	5 68334_30_5	
Fuel Oil		mg/kg	22.9	1	03/15/11 00:00			
Jet Fuel		mg/kg	22.9	1	03/15/11 00:00			
Kerosene		mg/kg	22.9	1	03/15/11 00:00			
Mineral Spirits		mg/kg	22,9	1	03/15/11 00:00			
Motor Oil		mg/kg	22.9	1		03/23/11 19:45		
Total Petroleum Hydrocarbons		mg/kg	22.9	1		03/23/11 19:45		
n-Tetracosane (S)	82	%	50-137	1		03/23/11 19:45		
p-Terphenyl (S)	68	%	41-129	1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical N	lethod: EPA 826	D Preparation Meth	od: EPA	5035/5030B			
Benzene	170	ug/kg	62.9	1	03/17/11 00:00	03/21/11 22:52	71_43_2	
Ethylbenzene		ug/kg	62.9	1	03/17/11 00:00			
Toluene		ug/kg	126	1		03/21/11 22:52		
Xylene (Total)		ug/kg	315	1		03/21/11 22:52		
Dibromofluoromethane (S)	98		85-113	1		03/21/11 22:52		
1,2-Dichloroethane-d4 (S)	90	%	75-121		03/17/11 00:00			
4-Bromofluorobenzene (S)	102	%	79-119			03/21/11 22:52		
Toluene-d8 (S)	100	%	86-119			03/21/11 22:52		
Percent Moisture	Analytical M	ethod: ASTM D2	974-87					
Percent Moisture	20.7	%	0.50	1		03/21/11 00:00		

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Project: UDALL, KS Pace Project No.: 6095222

Sample: SW-N-7'	Lab ID: 60	95222005	Collected: 03/11/1	1 09:5	5 Received: 0	3/12/11 08:43	Matrix: Solid	<u> </u>
Results reported on a "dry-weigh	t" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Met	hod: OA2 Pre	paration Method: (	DA2				
Diesel Fuel	ND m	g/kg	22.4	1	03/15/11 00:00	03/23/11 19:54	68334-30-5	
Fuel Oil	ND m		22.4	1	03/15/11 00:00			
Jet Fuel	ND m		22.4	1		03/23/11 19:54		
Kerosene	ND m	g/kg	22.4	1		03/23/11 19:54		
Mineral Spirits	ND m	g/kg	22.4	1		03/23/11 19:54		
Motor Oil	ND m		22.4	1		03/23/11 19:54		
Total Petroleum Hydrocarbons	ND m	g/kg	22.4	1		03/23/11 19:54		
n-Tetracosane (S)	77 %		50-137	1	03/15/11 00:00		646-31-1	
p-Terphenyl (S)	62 %		41-129	1	03/15/11 00:00	03/23/11 19:54		
8260 MSV UST 5030 Med Level	Analytical Meth	nod: EPA 8260	Preparation Meth	od: EP	A 5035/5030B			
Benzene	343 ug	/kg	62.6	1	03/17/11 00:00	03/21/11 23:07	71-43-2	
Ethylbenzene	392 ug		62.6	1		03/21/11 23:07		
Toluene	1 <b>680</b> ug	/kg	125	1	03/17/11 00:00		108-88-3	
Xylene (Total)	3970 ug	/kg	313	1	03/17/11 00:00	03/21/11 23:07	1330-20-7	
Dibromofluoromethane (S)	98 %		85-113	1	03/17/11 00:00	03/21/11 23:07		
1,2-Dichloroethane-d4 (S)	91 %		75-121	1		03/21/11 23:07	17060-07-0	
4-Bromofluorobenzene (S)	106 %		79-119	1			460-00-4	
Toluene-d8 (S)	104 %		86-119	1		03/21/11 23:07		
Percent Moisture	Analytical Meth	od: ASTM D2	974-87					
Percent Moisture	21.0 %		0.50	1		03/21/11 00:00		

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Project: UDALL, KS Pace Project No.: 6095222

Sample: E-MD-8'

Sample: F-MD-8'	Lab ID:	6095222006	Collected: 03/11/	11 10:05	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight"	' basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical	Method: OA2 P	reparation Method: (	DA2				
Diesel Fuel	N	D mg/kg	27.1	1	03/15/11 00:00	03/23/11 20:03	8 68334-30-5	
Fuel Oil	NE	D mg/kg	27.1	1	03/15/11 00:00			
Jet Fuel	NE	D mg/kg	27.1	1	03/15/11 00:00			
Kerosene	NE	) mg/kg	27.1	1	03/15/11 00:00			
Mineral Spirits		) mg/kg	27.1	1	03/15/11 00:00			
Motor Oil	NE	) mg/kg	27.1	1	03/15/11 00:00	03/23/11 20:03		
Total Petroleum Hydrocarbons	NE	) mg/kg	27.1	1	03/15/11 00:00			
n-Tetracosane (S)	82	2 %	50-137	1	03/15/11 00:00		646-31-1	
p-Terphenyl (S)	68	3 %	41-129	1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical f	Vethod: EPA 820	60 Preparation Meth	od: EPA	5035/5030B			
Benzene	ND	ug/kg	67.9	1	03/17/11 00:00	03/21/11 23:22	71-43-2	
Ethylbenzene		ug/kg	67.9	1	03/17/11 00:00			
Toluene	NÐ	ug/kg	136	1	03/17/11 00:00			
Xylene (Total)	ND	ug/kg	340	1	03/17/11 00:00			
Dibromofluoromethane (S)	100	%	85-113		03/17/11 00:00			
1,2-Dichloroethane-d4 (S)	91	%	75-121		03/17/11 00:00			
4-Bromofluorobenzene (S)	98	%	79-119			03/21/11 23:22		
Toluene-d8 (S)	96	%	86-119			03/21/11 23:22		
Percent Moisture	Analytical N	lethod: ASTM D	2974-87					
Percent Moisture	26.4	%	0.50	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

# **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No .: 6095222

Sample: SW-S2-6'	Lab ID: 609	5222007	Collected: 03/1	1/11 10:3	35 Received:	03/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis							
Parameters	Results	Units	Report Limi	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Meth	iod: OA2 Pi	reparation Method	i: 0A2				
Diesel Fue!	ND mg	i/kg	22.	3 1	03/15/11 00:00	0 03/23/11 20:1:	3 68334-30-5	
Fuel Oil	ND mg		22.		03/15/11 00:00			
Jet Fuel	ND mg		22.	- · ·	03/15/11 00:00			
Kerosene	ND mg	-	22.	3 1	03/15/11 00:00			
Mineral Spirits	ND mg	/kg	22.	3 1	03/15/11 00:00			
Motor Oil	ND mg		22.3	31		03/23/11 20:13		
Total Petroleum Hydrocarbons	ND mg		22.3	3 1	03/15/11 00:00			
n-Tetracosane (S)	82 %		50-13	7 1		03/23/11 20:13	-	
p-Terphenyl (S)	68 %		41-12	€ 1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical Meth	od: EPA 826	0 Preparation M	ethod: EF	PA 5035/5030B			
Benzene	ND ug/	kg	62.0	) 1	03/17/11 00:00	03/21/11 23:37	71-43-2	
Ethylbenzene	ND ug/		62.0	) 1	03/17/11 00:00	03/21/11 23:37		
Toluene	ND ug/l	g	124	1	03/17/11 00:00			
Xylene (Total)	ND ug/i		310	1		03/21/11 23:37		
Dibromofluoromethane (S)	98 %		85-113	1		03/21/11 23:37		
1,2-Dichloroethane-d4 (S)	95 %		75-121	1		03/21/11 23:37		
4-Bromofluorobenzene (S)	99 %		79-119	1	03/17/11 00:00			
Toluene-d8 (S)	97 %		86-119	1	03/17/11 00:00			
Percent Moisture	Analytical Metho	d: ASTM D2	2974-87					
Percent Moisture	<b>19.7</b> %		0.50	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

# **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: SW-N2-7'	Lab ID: 60952220	08 Collected: 03/11/	11 10:4	5 Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis						
Parameters	Results U	nits Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: C	A2 Preparation Method:	OA2				
Diesel Fuel	ND mg/kg	23.0	1	03/15/11 00:00	03/23/11 20:22	2 68334-30-5	
Fuel Oil	ND mg/kg	23.0	1	03/15/11 00:00			
Jet Fuel	ND mg/kg	23.0	1	03/15/11 00:00	03/23/11 20:22	2 94114-58-6	
Kerosene	ND mg/kg	23.0	1	03/15/11 00:00			
Mineral Spirits	ND mg/kg	23.0	1	03/15/11 00:00	03/23/11 20:22	8030-30-6	
Motor Oil	ND mg/kg	23.0	1	03/15/11 00:00	03/23/11 20:22	64742-65-0	
Total Petroleum Hydrocarbons	ND mg/kg	23.0	1	03/15/11 00:00			
n-Tetracosane (S)	85 %	50-137	1	03/15/11 00:00			
p-Terphenyl (S)	69 %	41-129	1	03/15/11 00:00	03/23/11 20:22		
8260 MSV UST 5030 Med Level	Analytical Method: El	PA 8260 Preparation Met	hod: EP	A 5035/5030B			
Benzene	ND ug/kg	61.6	1	03/17/11 00:00	03/21/11 23:52	71-43-2	
Ethylbenzene	ND ug/kg	61.6	1	03/17/11 00:00	03/21/11 23:52	100-41-4	
Toluene	ND ug/kg	123	1	03/17/11 00:00	03/21/11 23:52	108-88-3	
Xylene (Total)	ND ug/kg	308	1	03/17/11 00:00	03/21/11 23:52	1330-20-7	
Dibromofluoromethane (S)	96 %	85-113	1	03/17/11 00:00	03/21/11 23:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	92 %	75-121	1	03/17/11 00:00	03/21/11 23:52	17060-07-0	
4-Bromofluorobenzene (S)	101 %	79-119	1	03/17/11 00:00	03/21/11 23:52	460-00-4	
Toluene-d8 (S)	96 %	86-119	1	03/17/11 00:00	03/21/11 23:52	2037-26-5	
Percent Moisture	Analytical Method: AS	STM D2974-87					
Percent Moisture	19.6 %	0.50	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

#### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: F2-E-8'	Lab ID: 60	95222009	Collected: 03/11/	/11 10:55	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weigh	t" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Met	hod: OA2 P	reparation Method:	OA2				
Diesel Fuel	ND m	g/kg	22.3	1	03/15/11 00:00	03/23/11 20:32	2 68334-30-5	
Fuel Oil	ND m	g/kg	22.3	1	03/15/11 00:00	03/23/11 20:32		
Jet Fuel	ND m		22.3	1	03/15/11 00:00			
Kerosene	ND m	g/kg	22.3	1	03/15/11 00:00			
Mineral Spirits	ND m		22.3	1	03/15/11 00:00			
Motor Oil	ND m		22.3	1	03/15/11 00:00			
Total Petroleum Hydrocarbons	ND m	g/kg	22.3	1	03/15/11 00:00			
n-Tetracosane (S)	81 %		50-137	1	03/15/11 00:00			
p-Terphenyl (S)	66 %		41-129	1	03/15/11 00:00			
8260 MSV UST 5030 Med Level	Analytical Meti	hod: EPA 82	60 Preparation Met	hod: EP/	A 5035/5030B			
Benzene	ND ug	/kg	56.7	1	03/17/11 00:00	03/22/11 00:07	71-43-2	
Ethylbenzene	ND ug	/kg	56.7	1	03/17/11 00:00	03/22/11 00:07	100-41-4	
Toluene	ND ug	/kg	113	1	03/17/11 00:00	03/22/11 00:07		
Xylene (Total)	ND ug	/kg	284	1	03/17/11 00:00	03/22/11 00:07	1330-20-7	
Dibromofluoromethane (S)	95 %		85-113	1	03/17/11 00:00	03/22/11 00:07	1868-53-7	
1,2-Dichloroethane-d4 (S)	89 %		75-121	1	03/17/11 00:00	03/22/11 00:07	17060-07-0	
4-Bromofluorobenzene (S)	99 %		79-119	1		03/22/11 00:07		
Toluene-d8 (S)	97 %		86-119	1	03/17/11 00:00	03/22/11 00:07		
Percent Moisture	Analytical Meth	od: ASTM D	2974-87					
Percent Moisture	11.8 %		0.50	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: F2-E2-8'	Lab ID: 609	5222010	Collected: 0	3/11/11	11:10	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight"	" basis								
Parameters	Results	Units	Report L	mit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Met	hod: OA2 P	reparation Met	nod: O	A2				
Diesel Fue!	ND mg	g/kg		24.9	1	03/15/11 00:00	03/23/11 20:41	68334-30-5	
Fuel Oil	ND mg	g/kg	:	24.9	1	03/15/11 00:00			
Jet Fuel	ND mg			24.9	1	03/15/11 00:00			
Kerosene	ND mg		:	24.9	1	03/15/11 00:00			
Mineral Spirits	ND mg			24.9	1	03/15/11 00:00			
Motor Oil	ND mg		:	24.9	1		03/23/11 20:41		
Total Petroleum Hydrocarbons	ND mg	g/kg		24.9	1	03/15/11 00:00		- // /2 00 0	
n-Tetracosane (S)	83 %		50-	137	1	03/15/11 00:00		646-31-1	
p-Terphenyl (S)	70 %		41-	129	1	03/15/11 00:00	03/23/11 20:41		
8260 MSV UST 5030 Med Level	Analytical Meth	od: EPA 826	60 Preparation	Metho	d: EPA	5035/5030B			
Benzene	ND ug/	/kg	e	3.4	1	03/17/11 00:00	03/22/11 00:22	71-43-2	
Ethylbenzene	ND ug/		6	3.4	1	03/17/11 00:00	03/22/11 00:22	100-41-4	
Toluene	ND ug/	-		127	1	03/17/11 00:00			
Xylene (Total)	ND ug/	'kg	:	317	1	03/17/11 00:00	03/22/11 00:22	1330-20-7	
Dibromofluoromethane (S)	96 %		85-	113	1	03/17/11 00:00	03/22/11 00:22	1868-53-7	
1,2-Dichloroethane-d4 (S)	92 %		75-1	21	1	03/17/11 00:00	03/22/11 00:22	17060-07-0	
4-Bromofluorobenzene (S)	100 %		79-	119	1	03/17/11 00:00	03/22/11 00:22		
Toluene-d8 (S)	97 %		86-	19		03/17/11 00:00	03/22/11 00:22	2037-26-5	
Percent Moisture	Analytical Meth	od: ASTM D	2974-87						
Percent Moisture	21.1 %		0	50	1		03/21/11 00:00		

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Project: UDALL, KS Pace Project No.: 6095222

Sample: SW-NS-6' Lab ID: 6095222011 Collected: 03/11/11 11:20 Received: 03/12/11 08:43 Matrix: Solid Results reported on a "dry-weight" basis Parameters Results Units Report Limit DF Prepared Analyzed CAS No. Qual OA2 GCS Analytical Method: OA2 Preparation Method: OA2 **Diesel Fuel** ND mg/kg 24.9 1 03/15/11 00:00 03/23/11 20:50 68334-30-5 Fuel Oil ND mg/kg 24.9 1 03/15/11 00:00 03/23/11 20:50 68553-00-4 Jet Fuel ND mg/kg 24.9 1 03/15/11 00:00 03/23/11 20:50 94114-58-6 Kerosene ND mg/kg 24.9 1 03/15/11 00:00 03/23/11 20:50 8008-20-6 Mineral Spirits ND mg/kg 24.9 03/15/11 00:00 03/23/11 20:50 8030-30-6 1 Motor Oil ND mg/kg 24.9 03/15/11 00:00 03/23/11 20:50 64742-65-0 1 Total Petroleum Hydrocarbons ND mg/kg 24.9 03/15/11 00:00 03/23/11 20:50 1 n-Tetracosane (S) 81 % 03/15/11 00:00 03/23/11 20:50 646-31-1 50-137 1 p-Terphenyl (S) 67 % 41-129 03/15/11 00:00 03/23/11 20:50 92-94-4 1 8260 MSV UST 5030 Med Level Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Benzene ND ug/kg 62.8 1 03/17/11 00:00 03/22/11 00:37 71-43-2 Ethylbenzene ND ug/kg 62.8 03/17/11 00:00 03/22/11 00:37 1 100-41-4 Toluene ND ug/kg 126 1 03/17/11 00:00 03/22/11 00:37 108-88-3 Xylene (Total) ND ug/kg 314 1 03/17/11 00:00 03/22/11 00:37 1330-20-7 Dibromofluoromethane (S) 96 % 85-113 1 03/17/11 00:00 03/22/11 00:37 1868-53-7 1,2-Dichloroethane-d4 (S) 90 % 03/17/11 00:00 03/22/11 00:37 17060-07-0 75-121 1 4-Bromofluorobenzene (S) 97 % 79-119 1 03/17/11 00:00 03/22/11 00:37 460-00-4 Toluene-d8 (S) 97 % 86-119 1 03/17/11 00:00 03/22/11 00:37 2037-26-5 **Percent Moisture** Analytical Method: ASTM D2974-87 Percent Moisture 21.2 % 0.50 1 03/21/11 00:00

Date: 03/28/2011 10:34 AM

### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: F2-W-8'	Lab ID: 60	5222012	Collected: 03/11	/11 11:4	0 Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Met	hod: OA2 P	reparation Method	OA2				
Diesel Fuel	ND m	g/kg	23.5	i 1	03/15/11 00:00	03/23/11 21:00	0 68334-30-5	
Fuel Oil	ND m	g/kg	23.5	i 1	03/15/11 00:00	03/23/11 21:00	0 68553-00-4	
Jet Fuel	ND m		23.5	1	03/15/11 00:00	03/23/11 21:00		
Kerosene	ND m		23.5	1	03/15/11 00:00	03/23/11 21:00		
Mineral Spirits	ND m	g/kg	23.6	1	03/15/11 00:00	03/23/11 21:00		
Motor Oil	ND m	g/kg	23.5	1	03/15/11 00:00	03/23/11 21:00	64742-65-0	
Total Petroleum Hydrocarbons	ND m		23.5	1	03/15/11 00:00			
n-Tetracosane (S)	83 %		50-137	1	03/15/11 00:00	03/23/11 21:00	646-31-1	
p-Terphenyl (S)	71 %		41-129	1	03/15/11 00:00	03/23/11 21:00	92-94-4	
8260 MSV UST 5030 Med Level	Analytical Metl	10d: EPA 826	30 Preparation Me	thod: EF	A 5035/5030B			
Benzene	ND ug	/kg	64.5	1	03/17/11 00:00	03/22/11 00:52	71-43-2	
Ethylbenzene	ND ug	/kg	64.5	1	03/17/11 00:00	03/22/11 00:52	100-41-4	
Toluene	ND ug	/kg	129	1	03/17/11 00:00			
Xylene (Total)	ND ug	/kg	323	1	03/17/11 00:00	03/22/11 00:52	1330-20-7	
Dibromofluoromethane (S)	97 %		85-113	1	03/17/11 00:00	03/22/11 00:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	92 %		75-121	1	03/17/11 00:00			
4-Bromofluorobenzene (S)	100 %		79-119	1	03/17/11 00:00	03/22/11 00:52	460-00-4	
Toluene-d8 (S)	97 %		86-119	1	03/17/11 00:00	03/22/11 00:52		
Percent Moisture	Analytical Meth	od: ASTM D	2974-87					
Percent Moisture	22.9 %		0.50	1		03/21/11 00:00		

Date: 03/28/2011 10:34 AM

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Project: UDALL, KS

Pace Project No.: 6095222

Sample: F2-W2-8'	Lab ID:	6095222013	Collected:	03/11/1	1 12:05	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weight	t" basis								
Parameters	Results	Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical N	Method: OA2 P	reparation Me	ethod: O	A2		-		
Diesel Fuel	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09	68334-30-5	
Fuel Oil	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09	68553-00-4	
Jet Fuel	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09	94114-58-6	
Kerosene	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09	8008-20-6	
Mineral Spirits		mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09		
Motor Oil	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09	64742-65-0	
Total Petroleum Hydrocarbons	ND	mg/kg		25.7	1	03/15/11 00:00	03/23/11 21:09		
n-Tetracosane (S)	88	%	5	0-137	1	03/15/11 00:00	03/23/11 21:09	646-31-1	
p-Terphenyl (S)	74	%	4	1-129	1	03/15/11 00:00	03/23/11 21:09	92-94-4	
8260 MSV UST 5030 Med Level	Analytical M	lethod: EPA 82	60 Preparatio	on Metho	d: EPA	5035/5030B			
Benzene	ND	ug/kg		66.6	1	03/17/11 00:00	03/22/11 01:07	71-43-2	
Ethylbenzene		ug/kg		66.6	1	03/17/11 00:00	03/22/11 01:07	100-41-4	
Toluene	ND	ug/kg		133	1	03/17/11 00:00	03/22/11 01:07	108-88-3	
Xylene (Total)	ND	ug/kg		333	1		03/22/11 01:07		
Dibromofluoromethane (S)	97	%	8	5-113	1	03/17/11 00:00	03/22/11 01:07	1868-53-7	
1,2-Dichloroethane-d4 (S)	93	%	75	5-121	1	03/17/11 00:00	03/22/11 01:07	17060-07-0	
4-Bromofluorobenzene (S)	98	%	79	9-119	1	03/17/11 00:00	03/22/11 01:07	460-00-4	
Toluene-d8 (S)	96	%	86	5-119	1	03/17/11 00:00	03/22/11 01:07	2037-26-5	
Percent Moisture	Analytical M	ethod: ASTM D	2974-87						
Percent Moisture	25.0	%		0.50	1		03/21/11 00:00		

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### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS Pace Project No.: 6095222

Sample: TRIP BLANK	Lab ID: 60	95222014	Collected: 03/1	1/11 00:00	0 Received:	03/12/11 08:43	Matrix: Solid	
Results reported on a "wet-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST 5030 Med Level	Analytical Me	thod: EPA 82	60 Preparation M	ethod: EF	A 5035/5030B			
Benzene	ND u	g/kg	50.	) 1	03/17/11 00:0	0 03/22/11 01:22	2 71-43-2	
Ethylbenzene	ND u	g/kg	50.	) 1	03/17/11 00:0	0 03/22/11 01:22		
Toluene	ND u	g/kg	10	) 1	03/17/11 00:0	0 03/22/11 01:22	2 108-88-3	
Kylene (Total)	ND u	g/kg	250	) 1	03/17/11 00:0	0 03/22/11 01:22	2 1330-20-7	
Dibromofluoromethane (S)	95 %		85-11	3 1	03/17/11 00:0	0 03/22/11 01:22	2 1868-53-7	
I,2-Dichloroethane-d4 (S)	92 %		75-12	1	03/17/11 00:0	0 03/22/11 01:22	2 17060-07-0	
I-Bromofluorobenzene (S)	96 %	,	79-119	) 1	03/17/11 00:0	0 03/22/11 01:22	460-00-4	
Toluene-d8 (S)	98 %	•	86-119	) 1	03/17/11 00:0	0 03/22/11 01:22		

Date: 03/28/2011 10:34 AM

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Project: UDALL, KS Pace Project No.: 6095222

Sample: SWNN-6 Lab ID: 6095222015 Collected: 03/11/11 11:30 Received: 03/12/11 08:43 Matrix: Solid Results reported on a "dry-weight" basis Parameters Results Analyzed Units Report Limit DF Prepared CAS No. Qual OA2 GCS Analytical Method: OA2 Preparation Method: OA2 **Diesel Fuel** ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 68334-30-5 Fuel Oil ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 68553-00-4 Jet Fuel ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 94114-58-6 Kerosene ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 8008-20-6 **Mineral Spirits** ND mg/kg 25.0 03/15/11 00:00 03/23/11 21:19 8030-30-6 1 Motor Oil ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 64742-65-0 Total Petroleum Hydrocarbons ND mg/kg 25.0 1 03/15/11 00:00 03/23/11 21:19 n-Tetracosane (S) 86 % 50-137 1 03/15/11 00:00 03/23/11 21:19 646-31-1 p-Terphenyl (S) 70 % 41-129 1 03/15/11 00:00 03/23/11 21:19 92-94-4 8260 MSV UST 5030 Med Level Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Benzene ND ug/kg 64.6 1 03/17/11 00:00 03/22/11 01:37 71-43-2 Ethylbenzene ND ug/kg 64.6 1 03/17/11 00:00 03/22/11 01:37 100-41-4 Toluene ND ug/kg 129 1 03/17/11 00:00 03/22/11 01:37 108-88-3 Xviene (Total) ND ug/kg 323 1 03/17/11 00:00 03/22/11 01:37 1330-20-7 Dibromofluoromethane (S) 96 % 85-113 1 03/17/11 00:00 03/22/11 01:37 1868-53-7 1,2-Dichloroethane-d4 (S) 03/17/11 00:00 03/22/11 01:37 17060-07-0 90 % 75-121 1 4-Bromofluorobenzene (S) 98 % 79-119 03/17/11 00:00 03/22/11 01:37 460-00-4 1 Toluene-d8 (S) 98 % 86-119 1 03/17/11 00:00 03/22/11 01:37 2037-26-5 Percent Moisture Analytical Method: ASTM D2974-87 Percent Moisture 22.8 % 0.50 1 03/21/11 00:00

Date: 03/28/2011 10:34 AM

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Project:	UDALL, KS											
Pace Project No.:	6095222											
QC Batch:	OEXT/27794		Analy	sis Metho	d: C	DA2						
QC Batch Method:	OA2		Analy	sis Descri	ption: C	DA2 GCS						
Associated Lab San	nples: 609522 609522	22001, 60952220 22009, 60952220	02, 609522200 110, 609522201	3, 609522 1, 609522	2004, 60952 2012, 60952	22005, 609 22013, 609	95222006, 95222015	6095222	007, 60952;	22008,	I	
METHOD BLANK:	784139	<u></u>		Matrix: So	olíd	<u> </u>						
Associated Lab San	nples: 609522 609522	22001, 60952220 22009, 60952220	02, 609522200 10, 609522201 Blan	1,6095222	2004, 60952 2012, 60952 Reporting	22005, 609 22013, 609	95222006, 95222015	60952220	007, 609522	22008,		
Paran	neter	Units	Resu	ılt	Limit	Analy	zed	Qualifie	rs			
Diesel Fuel		mg/kg		ND	20.0	03/18/11	02:50					
Fuel Oil		mg/kg		ND	20.0							
Jet Fuel		mg/kg		ND	20.0							
Kerosene		mg/kg		ND	20.0	03/18/11	02:50					
Mineral Spirits		mg/kg		ND	20.0							
Motor Oil		mg/kg		ND	20.0	03/18/11	02:50					
Total Petroleum Hyd	rocarbons	mg/kg		ND	20.0	03/18/11	02:50					
n-Tetracosane (S)		%		74	50-137	03/18/11	02:50					
s-Ternhonyl (S)		0/		66	44 400	00140144	00.20					
o-Terphenyl (S)		%		66	41-129	03/18/11	02:50					
	TROL SAMPLE			66	41-129	03/18/11	02:50					<u> </u>
ABORATORY CON		784140	Spike	66 		03/18/11 LCS	02:50 % Red					
			Spike Conc.					-	Qualifiers			
LABORATORY CON Param		784140	•	LCS Rest		LCS	% Red Limits	-	Qualifiers			<u> </u>
ABORATORY CON Param Diesel Fuel I-Tetracosane (S)		784140 Units	Conc.	LCS Rest	S ult S	LCS % Rec	% Red Limits	- 	Qualifiers			
p-Terphenyl (S) LABORATORY CON Param Diesel Fuel 1-Tetracosane (S) p-Terphenyl (S)		784140 Units mg/kg	Conc.	LCS Rest	S ult S	LCS % Rec 108	% Red Limits 66 50	5-138	Qualifiers			<u> </u>
LABORATORY CON Param Diesel Fuel 1-Tetracosane (S)	eter	784140 Units mg/kg % %	Conc.	LCS Rest	3 uit 525	LCS % Rec 108 79	% Red Limits 66 50	5-138 0-137	Qualifiers			
LABORATORY CON Param Diesel Fuel n-Tetracosane (S) p-Terphenyl (S)	eter	784140 Units mg/kg % %	Conc. 486 4141	LCS Rest	S ult S	LCS % Rec 108 79	% Red Limits 66 50	5-138 0-137	Qualifiers			
ABORATORY CON Param Diesel Fuel I-Tetracosane (S) I-Terphenyl (S)	eter	784140 Units mg/kg % %	Conc. 486 4141 MS	LCS Resu MSD	5 525 784142	LCS % Rec 108 79 79	% Red Limits 66 50 41	3-138 0-137 1-129			May	
LABORATORY CON Param Diesel Fuel h-Tetracosane (S) h-Terphenyl (S)	eter ATRIX SPIKE DL	784140 Units mg/kg % % UPLICATE: 784	Conc. 486 4141 MS 42 Spike	LCS Rest	3 uit 525	LCS % Rec 108 79	% Red Limits 66 50	5-138 0-137	% Rec	RPD	Max RPD	
LABORATORY CON Param Diesel Fuel n-Tetracosane (S) n-Terphenyl (S) MATRIX SPIKE & MA Paramete Diesel Fuel	eter ATRIX SPIKE DL r mg	784140 Units mg/kg % % JPLICATE: 784 609504904 Units Resul	Conc. 486 4141 MS 42 Spike t Conc.	LCS Resu MSD Spike	S ult 525 784142 MS	LCS % Rec 108 79 79 79 MSD	% Red Limits 66 50 41 MS	5-138 0-137 1-129 MSD	% Rec Limits	RPD 3	RPD	
LABORATORY CON Param Diesel Fuel n-Tetracosane (S) p-Terphenyl (S) MATRIX SPIKE & MA	eter ATRIX SPIKE DL	784140 Units mg/kg % % JPLICATE: 784 609504904 Units Resul	Conc. 486 4141 MS 42 Spike t Conc.	LCS Resu MSD Spike Conc.	S Jit 525 784142 MS Result	LCS % Rec 108 79 79 79 MSD Result	% Red Limits 66 50 41 MS % Rec	-138 -137 -129 MSD % Rec	% Rec Limits 1 56-154			Qu M3

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## **REPORT OF LABORATORY ANALYSIS**

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Project: UDAI	LL, KS											
Pace Project No.: 6095	222											
QC Batch: MS	V/35774		Analy	sis Metho	d: E	PA 8260				,	<u></u>	
QC Batch Method: EPA	5035/5030B		Anai	sis Descr	iption: 8	260 MSV	5030 Med					
Associated Lab Samples:	6095222001, 6 6095222009, 6	095222002 095222010	, 609522200 , 609522201	3, 609522 1, 609522	2004. 60952	22005.60	95222006	, 6095222 , 6095222	2007, 6095 2015	222008	8,	
METHOD BLANK: 78583	33			Matrix: S	olid							
Associated Lab Samples:	6095222001, 60 6095222009, 60	095222002, 095222010,	, 609522200 , 609522201 Blan	1, 609522	2004, 60952 2012, 60952 Reporting	22005, 60 22013, 60	95222006 95222014	, 6095222 , 6095222	2007, 60952 015	222008	3,	
Parameter		Units	Resu	lt	Limit	Analy	/zed	Qualifie	ers			
Benzene		 I		ND	50.0	03/21/1	21:07					
Ethylbenzene	ug/kg			ND	50.0							
Toluene	ug/kg			ND	100							
Kylene (Total)	ug/kg	l		ND	250							
(2-Dichloroethane-d4 (S)	%			92	75-121	03/21/11	21:07					
I-Bromofluorobenzene (S)	%			97	79-119	03/21/11	21:07					
Dibromofluoromethane (S) Toluene-d8 (S)	%			100 96	85-113		21:07					
· ·	-				86-119	03/21/11	21.01					
ABORATORY CONTROL	SAMPLE: 7858	34										
<b>.</b> .			Spike	LC	-	LCS	% R	ec				
Parameter		Units	Conc.	Res	ult ·	% Rec	Limi	ts	Qualifiers			
lenzene	ug/kg		2000		2240	112	7	70-128				
thylbenzene	ug/kg		2000		2130	106	7	8-121				
oluene	ug/kg		2000		2120	106	6	8-128				
ylene (Total)	ug/kg		6000		6520	109		6-124				
,2-Dichloroethane-d4 (S) -Bromofluorobenzene (S)	%					93		5-121				
bibromofluoromethane (S)	%					97		9-119				
oluene-d8 (S)	%					98 99		15-113 16-119				
ATRIX SPIKE & MATRIX S	SPIKE DUPLICATE	E: 78583	5		785836	· · · · · · · · · · · · · · · · · · ·						
			MS	MSD								
Parameter	60 Units	95222001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPN	Max RPD	Qual
	ua/ka	614	2420	2420	2050	2000					·	

									60-11 C 110-04	10 0	100	Qua
Benzene	ug/kg	614	2420	2420	3050	3000	100	98	60-132	2	25	
Ethylbenzene	ug/kg	836	2420	2420	3360	3270	104	100	66-128	3	24	
Toluene	ug/kg	3170	2420	2420	5570	5400	99	92	51-136	3	27	
Xylene (Total)	ug/kg	10800	7290	7290	18100	17600	99	93	62-130	3	26	
1,2-Dichloroethane-d4 (S)	%						91	93	75-121	-		
4-Bromofluorobenzene (S)	%						101	113	79-119			
Dibromofluoromethane (S)	%						101	99	85-113			
Toluene-d8 (S)	%						109	109	86-119			

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nebc:



Project:	UDALL, KS						
Pace Project No.:	6095222						
QC Batch:	PMST/5981		Analysis Metl	hod: A	STM D2974-87		<u> </u>
QC Batch Method:	ASTM D2974-87		Analysis Des	cription: Di	ry Weight/Percent I	Moisture	
Associated Lab Sam	ples: 6095222001	, 6095222002,	6095222003, 60952	222004, 609522	22005, 609522200	6, 6095222007,	, 6095222008
METHOD BLANK:	786848	<u></u>	Matrix:	Solid	n		
Associated Lab Sam	ples: 6095222001	6095222002,	6095222003, 60952	222004, 609522	22005, 6095222006	6, 6095222007,	6095222008
			Blank	Reporting			
Param	eter	Units	Result	Limit	Analyzed	Qualifiers	
							-
Percent Moisture	%		ND	0.50	03/21/11 00:00		
			ND	0.50	03/21/11 00:00		
			ND 6095220004	0.50 	03/21/11 00:00	Max	
Percent Moisture SAMPLE DUPLICAT Parame	E: 786849	Units			03/21/11 00:00	Max RPD	Qualifiers

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Project:	UDALL, KS						
Pace Project No.:	6095222						
QC Batch:	PMST/5982		Analysis Met	hod: A	STM D2974-87		
QC Batch Method:	ASTM D2974-87		Analysis Des	cription: D	ry Weight/Percent	t Moisture	
Associated Lab Sam	ples: 609522200	9, 6095222010,	6095222011, 60952	222012, 609522	22013, 60952220	15	
METHOD BLANK:	786854		Matrix:	Solid			
Associated Lab Sam	ples: 609522200	9, 6095222010,	6095222011, 60952	22012, 609522	22013, 60952220 <sup>.</sup>	15	
			Blank	Reporting			
Param	eter	Units	Result	Limit	Analyzed	Qualifiers	
Percent Moisture	9	6	ND	0.50	03/21/11 00:00		-
SAMPLE DUPLICAT	E: 786855						
			6095222009	Dup		Max	
Parame	eter	Units	Result	Result	RPD	RPD	Qualifiers

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### QUALIFIERS

### Project: UDALL, KS Pace Project No.: 6095222

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

**RPD - Relative Percent Difference** 

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### ANALYTE QUALIFIERS

- M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.
- S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

### **REPORT OF LABORATORY ANALYSIS**





# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	UDALL, KS
Pace Project No.:	6095222

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6095222001	F-SE-3'	OA2	OEXT/27794	0A2	GCSV/1025
6095222002	F-SW-3'	OA2	OEXT/27794	OA2	GCSV/1025
6095222003	SW-S-7'	OA2	OEXT/27794	OA2	GCSV/1025
6095222004	SW-W-7*	OA2	OEXT/27794		GCSV/1025
6095222005	SW-N-7'	OA2	OEXT/27794	OA2	GCSV/1025
6095222006	F-MD-8'	OA2	OEXT/27794	OA2	GCSV/1025
6095222007	SW-S2-6'	OA2	OEXT/27794		GCSV/1025
6095222008	SW-N2-7'	OA2	OEXT/27794		GCSV/1025
6095222009	F2-E-8'	OA2	OEXT/27794	OA2	GCSV/1025
6095222010	F2-E2-8'	OA2	OEXT/27794	OA2	GCSV/1025
5095222011	SW-NS-6'	OA2	OEXT/27794	OA2	GCSV/1025
5095222012	F2-W-8'	OA2	OEXT/27794	OA2	GCSV/1025
5095222013	F2-W2-8'	OA2	OEXT/27794	OA2	GCSV/1025
6095222015	SWNN-6'	OA2	OEXT/27794	OA2	GCSV/1025
095222001	F-SE-3'	EPA 5035/5030B	MSV/35774	EPA 8260	MSV/35812
6095222002	F-SW-3'	EPA 5035/5030B	MSV/35774	EPA 8260	MSV/35812
5095222003	SW-S-7'	EPA 5035/5030B	MSV/35774	EPA 8260	MSV/35812
095222004	SW-W-7'	EPA 5035/5030B	MSV/35774	EPA 8260	MSV/35812
095222005	SW-N-7'	EPA 5035/5030B	MSV/35774	EPA 8260	MSV/35812
095222006	F-MD-8'	EPA 5035/5030B		EPA 8260	MSV/35812
095222007	SW-S2-6'	EPA 5035/5030B		EPA 8260	MSV/35812
095222008	SW-N2-7'	EPA 5035/5030B		EPA 8260	MSV/35812
095222009	F2-E-8'	EPA 5035/5030B		EPA 8260	MSV/35812
095222010	F2-E2-8'	EPA 5035/5030B		EPA 8260	MSV/35812
095222011	SW-NS-6'	EPA 5035/5030B		EPA 8260	MSV/35812
095222012	F2-W-8'	EPA 5035/5030B		EPA 8260	MSV/35812
095222013	F2-W2-8'	EPA 5035/5030B		EPA 8260	MSV/35812 MSV/35812
095222014	TRIP BLANK	EPA 5035/5030B		EPA 8260	MSV/35812 MSV/35812
095222015	SWNN-6'	EPA 5035/5030B		EPA 8260	MSV/35812 MSV/35812
095222001	F-SE-3'	ASTM D2974-87	PMST/5981		
095222002	F-SW-3'	ASTM D2974-87	PMST/5981		
095222003	SW-S-7'	ASTM D2974-87	PMST/5981		
095222004	SW-W-7'	ASTM D2974-87	PMST/5981		
096222005	SW-N-7'	ASTM D2974-87	PMST/5981		
95222006	F-MD-8'	ASTM D2974-87	PMST/5981		
95222007	SW-S2-6'	ASTM D2974-87	PMST/5981		
95222008	SW-N2-7'	ASTM D2974-87	PMST/5981		
95222009	F2-E-8'	ASTM D2974-87	PMST/5982		
95222010	F2-E2-8'	ASTM D2974-87	PMST/5982		
95222011	SW-NS-6'	ASTM D2974-87	PMST/5982		
95222012	F2-W-8'	ASTM D2974-87	PMST/5982		
95222013	F2-W2-8'	ASTM D2974-87	PMST/5982		
95222015	SWNN-6'	ASTM D2974-87	PMST/5982		

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F- 3 <sup>1</sup> /2     R (5 %)     R (5 %)     R (6 %)     M (1 %)     M (1 %)       5/W - 7 - 7     14     6 %)     1     1     1     1       5/W - 7 - 7     14     6 %)     1     1     1     1     1       5/W - 7 - 7     14     6 %)     1     1     1     1     1       5/W - 7 - 7     14     1     1     2     1     1     1       5/W - 7 - 7     14     1     1     2     1     1     1       5/W - 7 - 7     14     1     1     2     1     1     1     2       5/W - 6     1     1     1     2     1     1     1     2       5/W - 5     1     1     2     1     1     2     1       5/W - 5     1     1     2     1     1     2     1       5/W - 12 - 5     1     1     1     2     1     1     2       5/W - 13     1     1     1     2     1     1     2       5/W - 13     1     1     1     2     1     1     2       5/W - 13     1     1     1     2     1     1     2		G Shill OSIC	# N S	W N N N H H H	18 19				e Project No./ Lab i.D
5W-5-71     1L     1K     K     K       5W-V-71     2.     2.     2.     2.       5W-V-17     2.     2.     2.     2.       5W-V-17     2.     2.     2.     2.       5W-V1-7     2.     2.     2.     2.       5W-V2-7     2.     2.     2.     2.       5W-V2-21     2.     2.     2.     2.       5W-V15     2.	E- 347	6 stubi							
Sw-w-71     Parket (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M-71     Parket (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M-72     Parket (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-72     Parket (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-72     Parket (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-73     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-74     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-75     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Fw-M2-76     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Parket (2)     Parket (2)     Parket (2)     Parket (2)       Automout (2)     Park	3 SW-5-7'	6 3/4/11	2						z
Wurker     Low     Low     Low     Low     Low     Low     Low     Low     Low       Function     2     2     2     2     2     2     2     2       Function     2     2     2     2     2     2     2       Function     2     2     2     2     2        Function     2 </td <td></td> <td>6 3/11/11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>&lt;500 F</td>		6 3/11/11							<500 F
T-MD-8     E     Multi Ros     E     Multi Ros     C     Multi Ros       5W - 23 - 6     1     1     2     7     1     1     1       5W - 23 - 6     1     1     1     2     7     1     1       5W - 23 - 6     1     1     1     2     7     1     1       5W - 13     1     1     1     2     1     1     2       5W - 13     1     1     1     2     1     1     2       5W - 13     4     1     1     2     1     1     2       5W - 13     4     1     1     2     1     1     2       5W - 13     5W - 14     5W     1     1     1     2       5W - 15     5     1     1     1     2     1     1       5W - 15     5     1     1     1     2     1     1       5W - 15     5     1     1     1     2     1     1       5W - 15     5     1     1     1     1     2     1       5W - 15     5     1     1     1     1     2     1       5W - 15     1     1	- N - N-	6 Walt	2						
7w - 53 - 6     1-6     1/1     0.3/1       5w - 4/2 - 7     1/2     1/2     1/2     1/2       7w - 52 - 6     1/2     1/2     1/2     1/2       7w - 52 - 6     1/2     1/2     1/2     1/2       7w - 52 - 6     1/2     1/2     1/2     1/2       7w - 51 - 6     1/2     1/2     1/2     1/2       7w - 51 - 6     1/2     1/2     1/2     1/2       7w - 51 - 6     1/2     1/2     1/2     1/2       7w - 1/2 - 7     1/2     1/2     1/2     1/2       7w - 1/2 - 7     1/2     1/2     1/2     1/2       7w - 1/2 - 7     1/2     1/2     1/2     1/2       7w - 1/2     1/2     1/2     1/2     1/2       7w - 1/2 <td>L-MD-</td> <td>6 3/u/u</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td>+</td> <td>, ( <del>,</del> , ,</td>	L-MD-	6 3/u/u	*					+	, ( <del>,</del> , ,
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SAMPLER: Brich Meyer SAMPLER: Crich Meyer SAMPLER: Crich Meyer (HMIDDM): C7/11/11 Fered of Code	DATE Signed Coder (1/M) Coder (1/M) Coder (1/M) Coder (1/M)						SAMPLE	R NAME A	IND SIGNA	TURE												U	) 99	q	
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					-			SIGNATUR								DATES (NWDD	Swig WW:	2/11	13		191 1	තෝ නෙවෙ	apten:	A Holuses	

	Sample Condition	on Upon Receipt		<u>^</u>
Pace Analytical Client Nan	ne: UP	s Corp	Project #	6095222
Courier: Fed Ex UPS USPS C Tracking #: P Custody Seal on Cooler/Box Present: Y	ace Shipping Label U		Optional ☐ No Proj. Due Proj. Nan	
Packing Material: Bubble Wrap Bubb	e Bags Foam	None Dthe		
Thermometer Used: 191 / T-194	Type of ice: W	$\gamma^{-}$		ng process has begun
Cooler Temperature: 0,5 Temperature should be above freezing to 6°C		Comments:	Date and initials of p contents:312_/	erson examining
Chain of Custody present:		A 1.	<u>Ly</u>	
Chain of Custody filled out:		A 2.		
Chain of Custody relinquished:				
Sampler name & signature on COC:	Vys DNO DNA			
Samples arrived within holding time:				
Short Hold Time analyses (<72hr):				
Rush Turn Around Time requested:		- <u>  </u>		
Sufficient volume:			<u> </u>	
Correct containers used:	-DYes ONO DN/	9.		
-Pace containers used:				
Containers intact:				
Unpreserved 5035A soils frozen w/in 48hrs?				
Filtered volume received for dissolved tests				
Sample labels match COC:				
I -Includes date/time/ID/analyses Matrix:	3L,			
All containers needing preservation have been checked.	UYes DNo BINA	14.		
All containers needing preservation are found to be in compliance with EPA recommendation.				
Exceptione: VOA, conform, TOC, O&G, WI-DRO (water), Phenotes		Initial when	Lot # of added	
Trip Blank present:		completed	preservative	
Pace Trip Blank lot # (if purchased):	Offes 100 101/A	10.		
Headspace in VOA vials ( >6mm):	DYes DNo DNVA	16.		
Project sampled in USDA Regulated Area:		17. List State: 15		
Cilent Notification/ Resolution: Copy Person Contacted:	COC to Client?	) N īme:	Field Data Required?	Y (N)
Comments/ Resolution:				·····
			Date: 3.14	<u>.</u> U

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

.....



Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

March 28, 2011

Rick Horner URS Corporation 8300 College Blvd. Overland Park, KS 66210

RE: Project: UDALL, KS Pace Project No.: 6095220

Dear Rick Horner:

Enclosed are the analytical results for sample(s) received by the laboratory on March 12, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sherri gum

Sherri Guess

sherri.guess@pacelabs.com Project Manager

Enclosures

**REPORT OF LABORATORY ANALYSIS** 

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Pace Analytical Services, Inc. 9608 Loiret Bivd. Lenexa, KS 66219 (913)599-5665

### CERTIFICATIONS

Project:UDALL, KSPace Project No.:6095220

Kansas Certification IDs 9608 Loiret Boulevard, Lenexa, KS 66219 A2LA Certification #: 2456.01 Arkansas Certification #: 05-008-0 Illinois Certification #: 001191 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407-08-TX Utah Certification #: 9135995665

### **REPORT OF LABORATORY ANALYSIS**

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### SAMPLE SUMMARY

Project: UDALL, KS Pace Project No.: 6095220

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6095220001	RO-795757	Solid	03/10/11 14:00	03/12/11 08:43
6095220002	RO-247980	Solid	03/10/11 14:25	03/12/11 08:43
6095220003	RO-494957	Solid	03/10/11 16:00	03/12/11 08:43
6095220004	RO-79332	Solid	03/11/11 12:20	03/12/11 08:43
6095220005	RO-7449	Solid	03/11/11 14:20	03/12/11 08:43

## **REPORT OF LABORATORY ANALYSIS**

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### SAMPLE ANALYTE COUNT

Project: UDALL, KS Pace Project No.: 6095220

Lab ID	Sample ID	Method	Analysts	Analytes Reported
6095220001	RO-795757	EPA 6010	JDH	7
		EPA 7470	SMW	1
		EPA 8260/OA1	JDM	8
		ASTM D2974-87	DWC	1
6095220002	RO-247980	EPA 6010	JDH	7
		EPA 7470	SMW	1
		EPA 8260/OA1	JDM	8
		ASTM D2974-87	DWC	1
6095220003	RO-494957	EPA 6010	JDH	7
		EPA 7470	SMW	1
		EPA 8260/OA1	JDM	8
		ASTM D2974-87	DWC	1
6095220004	RO-79332	EPA 6010	JDH	7
		EPA 7470	SMW	1
		EPA 8260/OA1	JDM	8
		ASTM D2974-87	DWC	1
6095220005	RO-7449	EPA 6010	JDH	7
		EPA 7470	SMW	1
		EPA 8260/OA1	JDM	8
		ASTM D2974-87	DWC	1

REPORT OF LABORATORY ANALYSIS

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Project: UDALL, KS

Pace Project No.: 6095220

Sample: RO-795757	Lab ID: 609522000	1 Collected: 03/10/1	1 14:0	0 Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weig	ıht" basis						
Parameters	Results Un	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EP	A 6010 Preparation Meth	od: El	PA 3010			
	Leachate Method/Date	EPA 1311; 03/23/11 00:	00				
Arsenic	ND mg/L	0.50	1	03/24/11 16:22	2 03/25/11 12:0	1 7440-38-2	
Barium	ND mg/L	2.5	1	03/24/11 16:22	03/25/11 12:0	1 7440-39-3	
Cadmium	ND mg/L	0.050	1	03/24/11 16:22	03/25/11 12:0	1 7440-43-9	
Chromium	ND mg/L	0.10	1	03/24/11 16:22	03/25/11 12:0	1 7440-47-3	
Lead	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:0	1 7439-92-1	
Selenium	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:0	1 7782-49-2	
Silver	ND mg/L	0.10	1	03/24/11 16:22	03/25/11 12:01	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EP/	7470 Preparation Meth	od: EF	PA 7470			
	Leachate Method/Date	: EPA 1311; 03/23/11 00:	00				
Mercury	ND ug/L	2.0	1	03/28/11 10:52	03/28/11 15:16	5 7439-97-6	
3260/OA1 UST	Analytical Method: EPA	8260/OA1 Preparation	Metho	d: EPA 8260/OA1			
Benzene	467 ug/kg	62.1	1	03/15/11 00:00	03/17/11 06:59	71-43-2	
Foluene	3120 ug/kg	124	1	03/15/11 00:00			
Ethylbenzene	829 ug/kg	124	1	03/15/11 00:00	03/17/11 06:59	100-41-4	
(ylene (Total)	9240 ug/kg	311	1	03/15/11 00:00	03/17/11 06:59	1330-20-7	
Dibromofluoromethane (S)	94 %	85-113	1	03/15/11 00:00			
ľoluene-d8 (S)	106 %	86-119	1	03/15/11 00:00			
,2-Dichloroethane-d4 (S)	94 %	75-121	1	03/15/11 00:00			
-Bromofluorobenzene (S)	105 %	79-119	1	03/15/11 00:00			
ercent Moisture	Analytical Method: AST	M D2974-87					
Percent Moisture	19.5 %	0.50	1		03/21/11 00:00		

Date: 03/28/2011 05:06 PM

### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS 6095220

Pace Project No.:

Sample: RO-247980	Lab ID: 609	95220002	Collected: 03/10	/11 14:	25 Received: C	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-wei	ight" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Met	hod: EPA 60	10 Preparation Me	thod: E	PA 3010		<u> </u>	
	Leachate Met	hod/Date: EF	A 1311; 03/23/11 0	0:00				
Arsenic	ND m	g/L	0.50	1	03/24/11 16:22	03/25/11 12:11	7440-38-2	
Barium	ND m	g/L	2.5	1		03/25/11 12:11		
Cadmium	ND m	 g/L	0.050	1		03/25/11 12:11		
Chromium	ND m	- g/L	0.10	1		03/25/11 12:11		
Lead	ND m	_ g/L	0.50	1		03/25/11 12:11		
Selenium	ND m	- g/L	0.50	1		03/25/11 12:11		
Silver	ND m		0.10	1		03/25/11 12:11		
7470 Mercury, TCLP	Analytical Met	10d: EPA 747	0 Preparation Met	hod: E	PA 7470			
	Leachate Meth	od/Date: EP	A 1311; 03/23/11 00	00:00				
Mercury	ND ug	/L	2.0	1	03/28/11 10:52	03/28/11 15:22	7439-97-6	
3260/OA1 UST	Analytical Meth	iod: EPA 826	0/OA1 Preparation	1 Metho	od: EPA 8260/OA1			
Benzene	ND ug	/kg	62.6	1	03/15/11 00:00	03/17/11 07:14	71-43-2	
foluene	205 ug	′kg	125	1	03/15/11 00:00	03/17/11 07:14	108-88-3	
Ethylbenzene	ND ug/	'kg	125	1		03/17/11 07:14		
(ylene (Total)	592 ug/	kg	313	1		03/17/11 07:14		
Dibromofluoromethane (S)	95 %		85-113	1		03/17/11 07:14		
foluene-d8 (S)	101 %		86-119	1		03/17/11 07:14		
,2-Dichloroethane-d4 (S)	95 %		75-121	1				
-Bromofluorobenzene (S)	103 %		79-119	1		03/17/11 07:14		
ercent Moisture	Analytical Meth	od: ASTM D2	2974-87					
ercent Moisture	20.6 %		0.50	1		03/21/11 00:00		

Date: 03/28/2011 05:06 PM

### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, KS

Pace Project No.: 6095220

Sample: RO-494957	Lab ID: 609522000	3 Collected: 03/10/11	16:00	Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weig	ıht" basis						
Parameters	Results Uni	s Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EP	A 6010 Preparation Metho	d: EP/	A 3010			
	Leachate Method/Date	: EPA 1311; 03/23/11 00:0	)				
Arsenic	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:20	0 7440-38-2	
Barium	3.0 mg/L	2.5	1	03/24/11 16:22	03/25/11 12:20	0 7440-39-3	
Cadmium	ND mg/L	0.050	1	03/24/11 16:22	03/25/11 12:20	0 7440-43-9	
Chromium	ND mg/L	0.10	1	03/24/11 16:22	03/25/11 12:20	7440-47-3	
Lead	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:20	7439-92-1	
Selenium	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:20	) 7782-49-2	
Silver	ND mg/L	0.10	1	03/24/11 16:22	03/25/11 12:20	) 7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA	7470 Preparation Method	I: EPA	<b>\ 7470</b>			
	Leachate Method/Date	EPA 1311; 03/23/11 00:00	I				
Mercury	ND ug/L	2.0	1	03/28/11 10:52	03/28/11 15:24	7439-97-6	
8260/OA1 UST	Analytical Method: EPA	8260/OA1 Preparation M	ethod	: EPA 8260/OA1			
Benzene	1570 ug/kg	57.5	1	03/15/11 00:00	03/17/11 07:29	71-43-2	
Toluene	5840 ug/kg	115	1	03/15/11 00:00	03/17/11 07:29	108-88-3	
Ethylbenzene	1040 ug/kg	115	1	03/15/11 00:00			
Xylene (Total)	10300 ug/kg	288	1	03/15/11 00:00	03/17/11 07:29	1330-20-7	
Dibromofluoromethane (S)	93 %	85-113	1	03/15/11 00:00	03/17/11 07:29	1868-53-7	
Toluene-d8 (S)	108 %	86-119	1	03/15/11 00:00	03/17/11 07:29	2037-26-5	
1,2-Dichloroethane-d4 (S)	94 %	75-121		03/15/11 00:00			
4-Bromofluorobenzene (S)	115 %	79-119	1	03/15/11 00:00	03/17/11 07:29	460-00-4	
Percent Moisture	Analytical Method: AST	M D2974-87					
Percent Moisture	13.3 %	0.50	ł		03/21/11 00:00		

Date: 03/28/2011 05:06 PM

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Project: UDALL, KS

Pace Project No.: 6095220

Sample: RO-79332	Lab ID: 609522000	4 Collected: 03/11/1	1 12:20	) Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-weig	ht" basis						
Parameters	Results Uni	ts Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EP	A 6010 Preparation Meth	hod: EP	A 3010			
	Leachate Method/Date	: EPA 1311; 03/23/11 00	:00				
Arsenic	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 12:2	4 7440-38-2	
Barium	ND mg/L	2.5	1	03/24/11 16:22	03/25/11 12:2	4 7440-39-3	
Cadmium	ND mg/L	0.050	1	03/24/11 16:22	03/25/11 12:2	4 7440-43-9	
Chromium	ND mg/L	0.10	1		03/25/11 12:24		
Lead	ND mg/L	0.50	1		03/25/11 12:24		
Selenium	ND mg/L	0.50	1		03/25/11 12:24		
Silver	ND mg/L	0.10	1	03/24/11 16:22	03/25/11 12:24	\$ 7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA	7470 Preparation Meth	od: EP/	A 7470			
	Leachate Method/Date	: EPA 1311; 03/23/11 00:	00				
Mercury	ND ug/L	2.0	1	03/28/11 10:52	03/28/11 15:26	5 7439-97-6	
8260/OA1 UST	Analytical Method: EPA	8260/OA1 Preparation	Method	I: EPA 8260/OA1			
Benzene	158 ug/kg	62.7	1	03/15/11 00:00	03/17/11 07:44	71-43-2	
Toluene	540 ug/kg	125	1		03/17/11 07:44		
Ethylbenzene	180 ug/kg	125	1	03/15/11 00:00			
Kylene (Total)	2240 ug/kg	314	1	03/15/11 00:00	03/17/11 07:44	1330-20-7	
Dibromofluoromethane (S)	94 %	85-113	1	03/15/11 00:00			
Toluene-d8 (S)	104 %	86-119	1	03/15/11 00:00			
1,2-Dichloroethane-d4 (S)	93 %	75-121	1	03/15/11 00:00			
-Bromofluorobenzene (S)	106 %	79-119	1	03/15/11 00:00			
Percent Moisture	Analytical Method: AST	M D2974-87					
Percent Moisture	20.8 %	0.50	1		03/21/11 00:00		

Date: 03/28/2011 05:06 PM

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Project: UDALL, KS 6095220

Pace Project No.:

Sample: RO-7449	Lab ID: 6095220	005 Collected: 03/11/	/11 14:2	0 Received: 0	3/12/11 08:43	Matrix: Solid	
Results reported on a "dry-wei	ght" basis						
Parameters	Results	Inits Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: I	EPA 6010 Preparation Me	thod: E	PA 3010			
	Leachate Method/D	ate: EPA 1311; 03/23/11 0	0:00				
Arsenic	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 11:1:	3 7440-38-2	
Barium	ND mg/L	2.5	1	03/24/11 16:22	03/25/11 11:1:	3 7440-39-3	
Cadmium	ND mg/L	0.050	1		03/25/11 11:1:		
Chromium	ND mg/L	0.10	1		03/25/11 11:13		
Lead	ND mg/L	0.50	1		03/25/11 11:13		
Selenium	ND mg/L	0.50	1	03/24/11 16:22	03/25/11 11:13	3 7782-49-2	
Silver	ND mg/L	0.10	1		03/25/11 11:13		
7470 Mercury, TCLP	Analytical Method: E	PA 7470 Preparation Met	hod: Ef	PA 7470			
	Leachate Method/Da	ate: EPA 1311; 03/23/11 00	00:00				
Mercury	ND ug/L	2.0	1	03/28/11 10:52	03/28/11 15:37	7439-97-6	
8260/OA1 UST	Analytical Method: E	PA 8260/OA1 Preparation	Metho	d: EPA 8260/OA1			
Benzene	87.8 ug/kg	58.7	1	03/15/11 00:00	03/17/11 07:59	71-43-2	
Toluene	445 ug/kg	117	1	03/15/11 00:00	03/17/11 07:59	108-88-3	
Ethylbenzene	ND ug/kg	117	1	03/15/11 00:00	03/17/11 07:59	100-41-4	
Kylene (Total)	1310 ug/kg	293	1	03/15/11 00:00			
Dibromofluoromethane (S)	94 %	85-113	1	03/15/11 00:00			
foluene-d8 (S)	106 %	86-119	1	03/15/11 00:00			
I,2-Dichloroethane-d4 (S)	90 %	75-121	1	03/15/11 00:00			
4-Bromofluorobenzene (S)	105 %	79-119	1	03/15/11 00:00			
Percent Moisture	Analytical Method: A	STM D2974-87					
Percent Moisture	15.0 %	0.50	1		03/21/11 00:00		

Date: 03/28/2011 05:06 PM

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Pace Project No.: 609522	L, KS 20										
QC Batch: MPR	P/13781	Analy	sis Method	d: E	PA 6010	··· <b>·</b> ································					·
QC Batch Method: EPA :	3010	-	sis Descrij		010 MET 1	CLP					
Associated Lab Samples:	6095220001, 6095220002										
METHOD BLANK: 788932	2		Matrix: Wa	ater		·····					
Associated Lab Samples:	6095220001, 6095220002	, 609522000	3, 6095220	)004							
		Blan	k F	Reporting							
Parameter	Units	Resu	ilt	Limit	Analy	zed	Qualifiers	5			
Arsenic	mg/L	······	ND	0.50	03/25/11	11:55					
Barium	mg/L		ND	2.5	03/25/11						
Cadmium	mg/L		ND	0.050	03/25/11						
Chromium	mg/L		ND	0.10							
Lead	mg/L		ND	0.50	03/25/11						
Selenium	mg/L		ND	0.50	03/25/11	11:55					
Silver	mg/L		ND	0.10	03/25/11	11:55					
LABORATORY CONTROL S Parameter	SAMPLE: 788933 Units	Spike Conc.	LCS Resu		LCS % Rec	% Re Limits		lualifiers			
Arsenic	mg/L.			0.98	98		0-120	· · ·	-		
Barium	mg/L	1		1.1	107		)-120				
Cadmium	mg/L	1			99		)-120				
	nig/L			0.99	33						
	mg/L	1		0.99 1.0	103		)-120				
Chromium ∟ead	-				-	80					
Chromium Lead Selenium	mg/L mg/L mg/L	1 1 1		1.0 1.0 0.98	103	80 80	)-120				
Chromium Lead Selenium	mg/L mg/L	1		1.0 1.0	103 105	80 80 80	)-120 )-120				
Chromium Lead	mg/L mg/L mg/L mg/L	1 1 1 .5		1.0 1.0 0.98 0.49	103 105 98	80 80 80	)-120 )-120 )-120				
Chromium .ead Selenium Silver	mg/L mg/L mg/L mg/L	1 1 1 .5	MSD	1.0 1.0 0.98	103 105 98	80 80 80	)-120 )-120 )-120				
Chromium .ead Selenium Silver	mg/L mg/L mg/L mg/L	1 1 1 .5	MSD Spike	1.0 1.0 0.98 0.49	103 105 98	80 80 80	)-120 )-120 )-120	% Rec		Мах	
Chromium ead Selenium Silver	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 7889:	1 1 .5 34 MS		1.0 1.0 0.98 0.49 788935	103 105 98 98	80 80 80 80	)-120 )-120 )-120 )-120	% Rec Limits	RPD	Max RPD	Quai
Chromium ead Selenium Silver MATRIX SPIKE & MATRIX SI	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 78893 6095220001	1 1 .5 34 MS Spike	Spike	1.0 1.0 0.98 0.49 788935 MS	103 105 98 98 	80 80 80 80 80	-120 -120 -120 -120 -120 MSD		RPD 26	RPD	••
Chromium ead Selenium Silver IATRIX SPIKE & MATRIX SI Parameter rsenic	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 7889: 6095220001 Units Result	1 1 .5 34 MS Spike Conc.	Spike Conc.	1.0 1.0 0.98 0.49 788935 MS Result	103 105 98 98 98 MSD Result	80 80 80 80 80 80 80 80 80 80 80 80 80 8	-120 -120 -120 -120 -120 MSD % Rec	Limits		RPD 20	M0, R1
Chromium ead Selenium Silver MATRIX SPIKE & MATRIX SI Parameter	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 7889: 6095220001 Units Result mg/L ND	1 1 34 MS Spike Conc. 10	Spike Conc. 10	1.0 1.0 0.98 0.49 788935 MS Result 7.9	103 105 98 98 98 MSD Result 10.2	80 80 80 80 80 80 80 80 80 80 80 80 80 8	-120 -120 -120 -120 -120 MSD % Rec 102	Limits 75-125	26	RPD 20 20	M0, R1 M0, R1
Chromium ead Selenium Silver IATRIX SPIKE & MATRIX SI Parameter rsenic arium admium	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 7889: 6095220001 Units Result mg/L ND mg/L ND	1 1 5 34 MS Spike Conc. 10 10	Spike Conc. 10 10	1.0 1.0 0.98 0.49 788935 MS Result 7.9 8.6	103 105 98 98 98 MSD Result 10.2 12.1	80 80 80 80 80 80 80 80 80 80 80 80 80 8	MSD % Rec 102 102 102 108	Limits 75-125 75-125	26 34	RPD 20 20 20	M0, R1 M0, R1 M0, R1
Chromium ead Selenium Silver MATRIX SPIKE & MATRIX SI Parameter rsenic arium	mg/L mg/L mg/L mg/L PIKE DUPLICATE: 78893 6095220001 Units Result mg/L ND mg/L ND mg/L ND	1 1 5 34 MS Spike Conc. 10 10 10	Spike Conc. 10 10 10	1.0 1.0 0.98 0.49 7889355 MS Result 7.9 8.6 8.0	103 105 98 98 98 MSD Result 10.2 12.1 10.2	80 80 80 80 80 80 80 79 73 80	MSD % Rec 102 102 102 108 102	Limits 75-125 75-125 75-125	26 34 24	RPD 20 20 20 20	Quai M0, R1 M0, R1 M0, R1 M0, R1 M0, R1

Date: 03/28/2011 05:06 PM

mg/L

ND

Silver

### **REPORT OF LABORATORY ANALYSIS**

5

5

4.0

5.1

79

75-125

101

25

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20 M0, R1

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EPA 6010

6010 MET TCLP

03/25/11 11:06

Analysis Method:

Analysis Description:

Project: UDALL, KS Pace Project No.: 6095220

QC Batch: MPRP

QC Batch: MPRP/13782 QC Batch Method: EPA 3010

Associated Lab Samples: 6095220005

METHOD BLANK: 788939 Matrix: Water Associated Lab Samples: 6095220005 Blank Reporting Parameter Units Result Limit Analyzed Qualifiers Arsenic mg/L ND 0.50 03/25/11 11:06 Barium mg/L ND 2.5 03/25/11 11:06 Cadmium mg/L ND 0.050 03/25/11 11:06 Chromium mg/L ND 0.10 03/25/11 11:06 Lead mg/L ND 0.50 03/25/11 11:06 Selenium mg/L ND 0.50 03/25/11 11:06

0.10

ND

### LABORATORY CONTROL SAMPLE: 788940

mg/L

Silver

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	1	0.96	96	80-120	
Barium	mg/L	1	1.0	103	80-120	
Cadmium	mg/L	1	0.97	97	80-120	
Chromium	mg/L	1	1.0	102	80-120	
_ead	mg/L	1	1.0	104	80-120	
Selenium	mg/L	1	0.96	96	80-120	
Silver	mg/L	.5	0.49	97	80-120	

MATRIX SPIKE & MATRIX	SPIKE DUPLICAT	'E: 78894	1		788942							
Parameter	6 Units	095220005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	10	10	10.1	10.1	101	101	75-125	0	20	
Barium	mg/L	ND	10	10	11.5	11.5	102	101	75-125	0	20	
Cadmium	mg/L	ND	10	10	9.9	9.9	99	99	75-125	Ő	20	
Chromium	mg/L	ND.	10	10	10.1	10.1	101	101	75-125	Ō	20	
Lead	mg/L	ND	10	10	9.8	9.8	98	98	75-125	0	20	
Selenium	mg/L	ND	10	10	10.2	10.1	102	101	75-125	1	20	
Silver	mg/L	ND	5	5	5.0	5.0	100	100	75-125	0	20	

### **REPORT OF LABORATORY ANALYSIS**

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Project:	UDALL, KS											
Pace Project No.:	6095220											
QC Batch:	MERP/5056		Analys	sis Method	I: E	PA 7470						
QC Batch Method:	EPA 7470		Analys	sis Descrip	otion: 7	470 Mercury	y TCLP					
Associated Lab San	nples: 6095220001,	6095220002,	6095220003	8, 6095220	004							
METHOD BLANK:	790909		1	Matrix: Wa	ater							
Associated Lab San	npies: 6095220001,	6095220002,	5095220003	6095220	004							
			Blank		Reporting							
Paran	neter	Units	Resu	it	Limit	Analyz	ed	Qualifiers				
Mercury		L		ND	2.0	03/28/11	15:14					
LABORATORY CON	ITROL SAMPLE: 79	0910										·
LABORATORY CON	ITROL SAMPLE: 79	0910	Spike	LCS	3	LCS	% Rec		<u></u>			
LABORATORY CON Param		0910 Units	Spike Conc.	LCS Resu		LCS % Rec	% Rec		ualifiers			
LABORATORY CON Paran Mercury		Units	•	Resu			Limits		ualifiers			
Param	eter	Units	Conc.	Resu	ult	% Rec	Limits	Q	ualifiers	_	<u> </u>	
Paran Mercury	eter	Units L	Conc. 5	Resu	ult	% Rec	Limits	Q	ualifiers	_		
Paran Mercury	ug/i	Units L	Conc. 5	Resu	ult 4.6	% Rec	Limits	Q	ualifiers	-		
Paran Mercury MATRIX SPIKE & M	ATRIX SPIKE DUPLIC	Units L ATE: 79091 6095220001	Conc. 5 1 MS Spike	Resu MSD Spike	ult 4.6	% Rec	Limits	Q -120 MSD	ualifiers % Rec		Мах	
Paran Mercury	ATRIX SPIKE DUPLIC	Units L ATE: 79091	Conc. 5 1 MS	MSD	ult 4.6 790912	% Rec 92	Limits 80	Q -120	<b></b>	RPD	Max RPD	Qual

Date: 03/28/2011 05:06 PM

### **REPORT OF LABORATORY ANALYSIS**

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Project: UDALL, Pace Project No.: 6095220												
QC Batch: MERP/	5057		Analy	sis Method		EPA 7470			·			
QC Batch Method: EPA 74	70		-	sis Descrip		7470 Mercur						
Associated Lab Samples: 6	095220005						,					
METHOD BLANK: 790913			· <u>·····</u>	Matrix: Wa	ater							
Associated Lab Samples: 6	095220005											
			Blanl	ন স	Reporting							
Parameter	Un	its	Resu	lt	Limit	Analy:	ed:	Qualifiers	•			
Mercury	ug/L			ND	2.0	03/28/11	15:35					
LABORATORY CONTROL SA	MPLE: 790914			<u></u>								
			Spike	LCS	5	LCS	% Rec	5				
Parameter	Uni	its	Conc.	Resu	lt	% Rec	Limits	a a	ualifiers			
Mercury	ug/L		5		4.4	89	80	-120		-		
MATRIX SPIKE & MATRIX SP	KE DUPLICATE:	790915		· • •	790916							
			MS	MSD								
	60952	20005	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units R		Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Mercury	ug/L	ND	15	15	13.0	13.6	86	90	75-125	5	19	

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Project: UDALL, KS

Pace Project No.: 6095220

QC Batch: MSV/35708 QC Batch Method: EPA 8260/OA1

Analysis Method: EPA 8260/OA1 Analysis Description: 8260/OA1 UST

6095220001, 6095220002, 6095220003, 6095220004, 6095220005 Matrix: Solid

METHOD BLANK: 784510

Associated Lab Samples:

Associated Lab Samples: 6095220001, 6095220002, 6095220003, 6095220004, 6095220005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	50.0	03/17/11 04:44	
Ethylbenzene	ug/kg	ND	100	03/17/11 04:44	
Toluene	ug/kg	ND	100	03/17/11 04:44	
Xylene (Total)	ug/kg	ND	250	03/17/11 04:44	
1,2-Dichloroethane-d4 (S)	%	97	75-121	03/17/11 04:44	
4-Bromofluorobenzene (S)	%	100	79-119	03/17/11 04:44	
Dibromofluoromethane (S)	%	98	85-113	03/17/11 04:44	
Toluene-d8 (S)	%	100	86-119	03/17/11 04:44	

### LABORATORY CONTROL SAMPLE: 784511

%

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg		2090	104	70-128	
Ethylbenzene	ug/kg	2000	2090	105	78-121	
Toluene	ug/kg	2000	2060	103	68-128	
Xylene (Total)	ug/kg	6000	6240	104	76-124	
1,2-Dichloroethane-d4 (S)	%			96	75-121	
4-Bromofluorobenzene (S)	%			99	79-119	
Dibromofluoromethane (S)	%			96	85-113	
Toluene-d8 (S)	%			101	86-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 784512 784513 MS MSD 6095043035 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Сопс. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Benzene ND ug/kg 2440 2440 2650 2600 109 106 60-132 2 25 Ethylbenzene ug/kg ND 2440 2440 2660 2650 109 108 66-128 24 0 Toluene ug/kg ND 2440 2440 2570 2500 105 102 51-136 27 3 Xylene (Total) ug/kg ND 7340 7340 7780 7610 106 104 62-130 2 26 1,2-Dichloroethane-d4 (S) % 97 95 75-121 4-Bromofluorobenzene (S) % 100 98 79-119 Dibromofluoromethane (S) % 99 97 85-113 Toluene-d8 (S)

100

99

86-119

Date: 03/28/2011 05:06 PM

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Project: Pace Project No.:	UDALL, KS 6095220							
QC Batch: QC Batch Method: Associated Lab Sam	PMST/5981 ASTM D2974-8 ples: 6095220		Analysis Met Analysis Des , 6095220003, 6095	cription: D	STM D2974-87 Iry Weight/Percent 20005	Moisture	<u></u>	·
METHOD BLANK: Associated Lab Sam	786848 ples: 6095220	001, 6095220002,	Matrix: , 6095220003, 6095;	220004, 60952;	20005			<u>,</u>
Parame	eter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers		
Percent Moisture		%	ND	0.50	03/21/11 00:00		_	
SAMPLE DUPLICATE	. 786849	<u></u>						<u> </u>
Parame	ter	Units	6095220004 Result	Dup Result	RPD	Max RPD	Qualifiers	
Percent Moisture		%	20.8	20.2	3	20		

# **REPORT OF LABORATORY ANALYSIS**

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### QUALIFIERS

Project: UDALL, KS Pace Project No .: 6095220

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate) MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

**RPD - Relative Percent Difference** 

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### ANALYTE QUALIFIERS

- Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits. MO
- R1 RPD value was outside control limits.

# **REPORT OF LABORATORY ANALYSIS**

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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	UDALL, KS
Pace Project No .:	6095220

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6095220001	RO-795757	EPA 3010	MPRP/13781	• <u></u>	
6095220002	RO-247980	EPA 3010	MPRP/13781		ICP/11972
6095220003	RO-494957	EPA 3010	MPRP/13781	EPA 6010	ICP/11972
6095220004	RO-79332	EPA 3010	MPRP/13781	EPA 6010	ICP/11972
6095220005	RO-7449	EPA 3010	MPRP/13781 MPRP/13782	EPA 6010 EPA 6010	ICP/11972
6095220001	RO-795757	EPA 7470			ICP/11971
6095220002	RO-247980	EPA 7470	MERP/5056	EPA 7470	MERC/5027
6095220003	RO-494957		MERP/5056	EPA 7470	MERC/5027
5095220004	RO-79332	EPA 7470	MERP/5056	EPA 7470	MERC/5027
	10-10002	EPA 7470	MERP/5056	EPA 7470	MERC/5027
6095220005	RO-7449	EPA 7470	MERP/5057	EPA 7470	MERC/5028
095220001	RO-795757	EPA 8260/OA1	MSV/35708		
095220002	RO-247980	EPA 8260/OA1		EPA 8260/OA1	MSV/35728
095220003	RO-494957	EPA 8260/OA1		EPA 8260/OA1	MSV/35728
095220004	RO-79332	EPA 8260/OA1		EPA 8260/OA1	MSV/35728
095220005	RO-7449	EPA 8260/OA1		EPA 8260/OA1	MSV/35728
		EFA 0200/UA 1	MSV/35708	EPA 8260/OA1	MSV/35728
095220001	RO-795757	ASTM D2974-87	PMST/5981		
095220002	RO-247980	ASTM D2974-87	PMST/5981		
095220003	RO-494957	ASTM D2974-87	PMST/5981		
095220004	RO-79332	ASTM D2974-87	PMST/5981		
095220005	RO-7449	ASTM D2974-87	PMST/5981		

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# **REPORT OF LABORATORY ANALYSIS**

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# CFAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custoty is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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	Sample Conditi	on Upon Receij	ot
Pace Analytical <sup>*</sup> Client Na	ame: URS	Lorp	Project # (0095220
Courler: Fed Ex UPS USPS Tracking #: Custody Seal on Cooler/Box Present:	Pace Shipping Label U	sed? 🗌 Yes	No Proj. Due Date: 3/2V
Packing Material: Bubble Wrap	Ibbie Bags	None Dt	her
Thermometer Used:/ 7_1 / T-194	- ···		Samples on ice, cooling process has begun
Cooler Temperature: 1.6 Temperature should be above freezing to 6°C		Comments:	Date and initials of person examining contents: 3 12 11
Chain of Custody present:		A 1.	
Chain of Custody filled out:	TYes DNO DN	A 2.	
Chain of Custody relinquished:		A 3.	
Sampler name & signature on COC:	ETYes DNO DN	A 4.	
Samples arrived within holding time:		5.	
Short Hold Time analyses (<72hr):		6.	
Rush Turn Around Time requested:		7.	
Sufficient volume:	Yes DNo DNA	8.	
Correct containers used:	Dires ONO ON/	9.	· · · · · · · · · · · · · · · · · · ·
-Pace containers used:	AYes DNO DN/		
Containers intact:	EYes ONO ON/	10.	
Inpreserved 5035A soils frozen w/in 48hrs?	Dyes Dino DARA	11.	· · · · · · · · · · · · · · · · · · ·
iltered volume received for dissolved tests	DYes DNo -2117A		
ample labels match COC:	TYes DNO DN/A	13.	
-Includes date/time/ID/analyses Matrix:	$\mathbf{S}^{r}$		
containers needing preservation have been checked.	UYes []No 17NA	14.	
I containers needing preservation are found to be in impliance with EPA recommendation.	□Yes □No 28N/A		
ceptions: VOA, coliform, TOC, O&G, WI-DRO (water), enolics	DYes ZNO	initial when completed	Lot # of added preservative
ip Blank present:	Yes Ino DATA	15.	
ace Trip Blank lot # (if purchased):	-		
eadspace in VOA vials ( >6mm):	UYes ONO DIVA	16.	
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Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

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