1R- 124

REPORTS

DATE:

10-5-11

IR-124

TALON LPE

AMARILLO
921 North Bivins
Amarillo, Texas 79107
Phone 806.467.0607
Fax 806.467.0622

AUSTIN
3003 Tom Gary Cove
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Round Rock, Texas 78664
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MIDLAND
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SAN ANTONIO
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Tyler, Texas 75702
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MOBILE DUAL PHASE EXTRACTION REPORT
TNM MONUMENT 18 PIPELINE RELEASE
MONUMENT, LEA COUNTY, NEW MEXICO
SRS # TNM MONUMENT 18
TALON/LPE PROJECT # 700376.083.02

PREPARED FOR:

PLAINS MARKETING, L.P.
333 CLAY STREET
SUITE 1600
HOUSTON, TEXAS 77002

PREPARED BY:

TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

DISTRIBUTION:

COPY 1 - PLAINS MARKETING, L.P. - MIDLAND
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October 5, 2011

PLAINS
PIPELINE, L.P.

RECEIVED OCD

2011 DEC -6 A 10:43

December 2, 2011

Mr. Edward Hansen
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Plains Pipeline, L.P.
Reports for MDPE Events at Seven (7) Remediation Sites in Lea County, NM

Dear Mr. Hansen:

Plains Pipeline, L.P. is pleased to submit the attached reports which provide details regarding the Mobile Dual Phase Extraction (MDPE) events that were conducted at the following sites during September 2011:

HDO 90-23	NMOCD Reference #AP-009
SPS-11	NMOCD Reference #GW-140
Livingston Ridge to Hugh P. Sims	NMOCD Reference #1R-0398
Monument 10	NMOCD Reference #1R-0119
Monument 18	NMOCD Reference #1R-0124
DCP Plant to Lea Station 6-inch #2	NMOCD Reference #1R-2136
DCP Plant to Lea Station 6-inch Sec. 31	NMOCD Reference #1R-2166

Should you have any questions or comments, please contact me at (575) 441-1099.

Sincerely,

Jason Henry
Remediation Coordinator
Plains Pipeline, L.P.

Enclosure

TABLE OF CONTENTS

Section Page

Attachments:

I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted from September 12, 2011 to September 13, 2011 at the TNM Monument 18 Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed. MW-3 & 4 for 12 hours.

Prior to and immediately following the event, the groundwater wells were gauged for groundwater elevation and PSH. Depth to groundwater ranges were measured in feet below the top of casing. Refer to Attachment 1 for a summary of data collected during the MDPE event.

The volume of PSH removed during the MDPE event is shown to reflect the portions of PSH in the liquid phase and as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the MDPE unit. PSH recovery and air flow data has been detailed and is contained in Table 1. Three influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. All three influent samples were tested for Total-Gas Analysis (Hydrocarbon Composition) by ASTM method D 1945. Laboratory analytical results can be found in Attachment 2.

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **40.17 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **37 gallons of PSH (liquid phase)** and approximately **3.17 gallons as off-gas vapor**.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the recovery wells averaged 40.74 SCFM** during the event.

A portion of the extracted air flow rates measured is attributable to compressed air, which was "injected" into the extraction wells. This "injected" air is introduced into the extraction wells for the purpose of enhancing liquid recovery rates.

B. Air Quality

Three influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum concentration in air influent was recorded as 19,794 ppmv for Hydrocarbon Composition.

C. Waste Management and Disposition

A cumulative total of 3,131 gallons of fluid were generated during this event. The fluids were transferred to an on-site storage tank.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C\_ppmv x Mol. wt. in mg(estimated) x 0.000001}}{\text{0.0821 x Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{\text{(C\_mg/l) x 2.2 x (Flowrate) x 60 x 28.32}}{\text{1,000,000}}$$

$$\text{Recovery (lbs)} = \text{(lbs/hr) x (hrs)}$$

$$\text{Correction Factor (CF)} = \frac{\text{FID Reading(ppmv)}}{\text{FID Reading at Time of Laboratory Analysis}}$$

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times \text{0.845 average specific gravity of light crude (estimated)} = \frac{\text{7.047 lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	FID Readings (ppmv)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
13:30	0.5	100	21	285.79	2.2	27.58	50000	-	19794.00	1.00	19794	20.64	2.13	1.06	1.06
14:00	0.5	106	20	272.18	2.4	30.21	50000	19794.00	19794.00	1.00	19794	20.42	2.31	1.15	2.22
15:00	1	104	20	272.18	2.4	30.27	50000	-	19794.00	1.00	19794	20.49	2.32	2.32	4.53
16:00	1	102	20	272.18	2.8	32.75	50000	-	19794.00	1.00	19794	20.56	2.52	2.52	7.05
17:00	1	100	20	272.18	2.4	30.37	50000	-	9335.00	1.00	9335	8.93	1.01	1.01	8.07
18:00	1	92	19	258.57	2.6	33.40	50000	-	9335.00	1.00	9335	9.06	1.13	1.13	9.20
19:00	1	88	19	258.57	4.2	42.61	50000	9335.00	9335.00	1.00	9335	9.12	1.45	1.45	10.65
20:00	1	84	19	258.57	5	46.66	50000	-	9335.00	1.00	9335	9.19	1.60	1.60	12.25
21:00	1	80	18	244.96	4.8	47.93	50000	-	9335.00	1.00	9335	9.26	1.66	1.66	13.91
22:00	1	80	17	231.35	5.4	52.92	50000	-	10475.00	1.00	10475	10.75	2.13	2.13	16.04
23:00	1	78	17	231.35	4.1	46.20	50000	-	10475.00	1.00	10475	10.79	1.86	1.86	17.90
0:00	1	76	17	231.35	5.2	52.13	50000	10475.00	10475.00	1.00	10475	10.83	2.11	2.11	20.01
1:00	1	74	17	231.35	6.1	56.57	50000	-	10475.00	1.00	10475	10.87	2.30	2.30	22.31
Averages:		89.54	18.77	255.43	3.82	40.74	50000.00						Total	22.31	

PSH Mass Recovered in Vapor Phase = 3.17 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 1)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(C_ppmv)	(Grams)	(atm)	(atm liter/K mole)	(F)	(K)	(C_mg/l)
19794	26.59942255	1	0.0821	100	310.7777778	20.63538901

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Liquid-phase Hydrocarbon Recovery

(assumes gasoline product)

$\Pi * r^2 * h$ = volume

Gallons removed determined at time of pick up

PSH Volume in Gallons=	37
PSH Mass in Pounds=	260.739

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	22.31	lbs
	3.17	gallons
PSH Mass Recovered in Liquid Phase =	260.74	lbs
	37.00	galons
TOTAL =	**283.05**	**lbs**
	40.17	**gallons**

% Total Hydrocarbon to mg/m³ to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% total	=	ppmv
Methane (CH4)	16.04	1.5283		15283.00
Ethane (C2H6)	30.07	0.0471		471.00
Propane (C3H8)	44.10	0.0661		661.00
Iso-Butane (C4H10)	58.12	0.0315		315.00
N-Butane (C4H10)	58.12	0.0845		845.00
Iso-Pentane (C4H12)	72.15	0.0892		892.00
N-Pentane (C5H12)	72.15	0.0576		576.00
Hexane+ (C6H14)	86.18	0.0751		751.00
			Total	**19794.00**

Molecular Weight Calculations

Total Hydrocarbon %=	1.9794
g of Methane (CH4) =	12.38452662
g of Ethane (C2H6) =	0.715518339
g of Propane (C3H8) =	1.472673537
g of Iso-Butane (C4H10) =	0.924916641
g of N-Butane (C4H10) =	2.481125594
g of Iso-Pentane (C4H12) =	3.251379206
g of N-Pentane (C5H12) =	2.099545317
g of Hexane+ (C6H14) =	3.269737294
Calculated MW (Grams)	**26.59942255**

% Total Hydrocarbon to mg/m³ to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% total	=	ppmv
Methane (CH4)	16.04	0.7787		7787.00
Ethane (C2H6)	30.07	0.0053		53.00
Propane (C3H8)	44.10	0.0107		107.00
Iso-Butane (C4H10)	58.12	0.0113		113.00
N-Butane (C4H10)	58.12	0.0322		322.00
Iso-Pentane (C4H12)	72.15	0.0544		544.00
N-Pentane (C5H12)	72.15	0.0226		226.00
Hexane+ (C6H14)	86.18	0.0183		183.00
			Total	**9335.00**

Molecular Weight Calculations

Total Hydrocarbon %=	0.9335
g of Methane (CH4) =	13.38012641
g of Ethane (C2H6) =	0.170724156
g of Propane (C3H8) =	0.505484735
g of Iso-Butane (C4H10) =	0.70354151
g of N-Butane (C4H10) =	2.004782003
g of Iso-Pentane (C4H12) =	4.204563471
g of N-Pentane (C5H12) =	1.746748795
g of Hexane+ (C6H14) =	1.689441885
Calculated MW (Grams)	**24.40541296**

% Total Hydrocarbon to mg/m³ to ppmv - Influent 3

Compound	Molecular Weight (g/mol)	% total	=	ppmv
Methane (CH4)	16.04	0.8797		8797.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.0033		33.00
Iso-Butane (C4H10)	58.12	0.0075		75.00
N-Butane (C4H10)	58.12	0.0278		278.00
Iso-Pentane (C4H12)	72.15	0.054		540.00
N-Pentane (C5H12)	72.15	0.0169		169.00
Hexane+ (C6H14)	86.18	0.0583		583.00
			Total	**10475.00**

Molecular Weight Calculations

Total Hydrocarbon %=	1.0475
g of Methane (CH4) =	13.47053747
g of Ethane (C2H6) =	0
g of Propane (C3H8) =	0.138930788
g of Iso-Butane (C4H10) =	0.416133652
g of N-Butane (C4H10) =	1.542468735
g of Iso-Pentane (C4H12) =	3.719427208
g of N-Pentane (C5H12) =	1.164042959
g of Hexane+ (C6H14) =	4.796462053
Calculated MW (Grams)	**25.24800286**

ATTACHMENT 1

MDPE Field Logs

MDPE FIELD NOTES					
Site Name:	TNM Monument #18			Event #:	2
Location:	Lea County, NM			Arrive at site:	9/12/2011 12:45
Date:	9/12-13/2011				
Job#:	700376.083.02	SRS#:	TNM Monument #18	Start Vac:	9/12/2011 13:00
Phase:	MDPE2	Unit:	1107	Stop Vac:	9/13/2011 1:00
Onsite Personnel:	M.L.Coggins L.C.Jaquez			Leave Site:	9/13/2011 2:00

GAUGING DATA

WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
MW1	-	32.62	-	-	32.70	-	
MW9	-	33.99	-	-	34.01	-	
MW5	-	34.14	-	-	34.16	-	
MW10	-	31.95	-	-	32.00	-	
MW6	-	31.41	-	-	31.49	-	
MW3	32.33	33.07	0.74	-	32.43	-	Stinger @ 33'
MW7	-	32.31	-	-	32.39	-	
MW8	-	33.23	-	-	33.29	-	
MW4	31.66	33.70	2.04	-	31.97	-	Stinger @ 34'
WASTE:	H2O:	3094		PSH:	37		TOTAL (GAL): 3131

Sample Name	Analysis	Date:	Time:	Comments:
INFLUENT	ASTM D 1945	9/12/2011	14:00	
INFLUENT	ASTM D 1945	9/12/2011	19:00	
INFLUENT	ASTM D 1945	9/13/2011	0:00	
EFFLUENT				

Notes:	

Start Date: 9/12/2011

MDPE FIELD DATA

		Total Flow			Well Flow						Well Data									
TIME	SAMPLE TAKEN *	Inflent temp. (°f)	Diff. Pressure (INH20) 6" Pitot	Pressure (In. h2O)	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	FID Composite (PPM)	Propane Tank (%-size) 250 Gal.	EXHAUST TEMP F	COMMENTS:									
											MW3		MW4							
											VAC (INH2O)	PPM	VAC (INH2O)	PPM	VAC (INH2O)	PPM	VAC (INH2O)	PPM	VAC (INH2O)	PPM
13:30		110	3.2	1.1	100	2.2	21	>50K	72	1414	All Recovery from									
14:00	*	116	1.9	0.25	106	2.4	20	>50K	70	1413										
15:00		118	0.8	0.25	104	2.4	20	>50K	68	1412										
16:00		118	0.4	0.25	102	2.8	20	>50K	65	1414										
17:00		116	0.4	0.25	100	2.4	20	>50K	61	1410										
18:00		120	0.4	0.2	92	2.6	19	>50K	59	1408										
19:00	*	118	0.4	0.2	88	4.2	19	>50K	57	1407	Stinger. No Data									
20:00		114	0.4	0.25	84	5	19	>50K	55	1410										
21:00		108	0.3	0.25	80	4.8	18	>50K	51	1409										
22:00		106	0.3	0.25	80	5.4	17	>50K	46	1411										
23:00		104	0.3	0.25	78	4.1	17	>50K	41	1412										
0:00	*	102	0.3	0.25	76	5.2	17	>50K	40	1409										
1:00		100	0.4	0.25	74	6.1	17	>50K	38	1411	Collected									

Soil Vacuum Influence

Observation Well	MW1
Extraction Well (EW)	MW3
Distance (ft) to EW	62.5
Time:	In.H2O
15:00	0.05
20:00	0.14
1:00	0.27

ATTACHMENT 2

Laboratory Analytical Results

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Simon Walshe
Talon LPE-Amarillo
921 North Bivins
Amarillo, TX, 79107

Report Date: September 29, 2011

Work Order: 11091429

Project Location: Mounument New Mexico
Project Name: TNM Monument #18
Project Number: 700376.083.02
SRS #:

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
277135	Influent Air #1	air	2011-09-12	14:00	2011-09-14

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 5 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project TNM Monument #18 were received by TraceAnalysis, Inc. on 2011-09-14 and assigned to work order 11091429. Samples for work order 11091429 were received intact at a temperature of 22.3 C.

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

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 11091429 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Appendix

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

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

Attachments

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

LAB Order ID # 1109429

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

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

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

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

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

Company Name: TALON/LPE 106 PLAINS ALL AMERICAN
Phone #: 806 467 0607
Address: (Street, City, Zip) 921 N. BIVINS AMARILLO TX 79107
Fax #: 806 467 0622
Contact Person: SIMON WALSHE
E-mail: S.WALSHE@TALONLPE.COM
Invoice to: (If different from above) JASON HENRY / PLAINS SRS# TNM MONUMENT #18
Project #: SRS# TNM MONUMENT #18 700376.083.02
Project Name: TNM MONUMENT # 18
Project Location (including state): MONUMENT NEW MEXICO
Sampler Signature:

ANALYSIS REQUEST

(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
277135	INF AIR # 1	1	1 LTR			X							X	9.12.2011	14:00
136	INF AIR # 2	1	1 LTR			X							X	9.12.2011	19:00
137	INF AIR #3	1	1 LTR			X							X	9.13.2011	00:00

MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, Fl, S04, NO3, NO2, Alkalinity	Na, Ca, Mg, K, TDS, EC	SRS# TNM MONUMENT# 18	Turn Around Time if different from standard	Hold
																		X	X ASTM D 1945		
																		X			

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
	TALON/LPE	9.13.11	14:45		JH	9/14/11	10:45	INST 0.2 °C OBS °C COR °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST °C OBS °C COR °C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST °C OBS °C COR °C

LAB USE ONLY

Intact Y / N
Headspace Y / N / NA
Log-In-Review

REMARKS:

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

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

Carrier # UPS: 1201 7A5 711 9

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

The following analytical results were produced using the strictest quality control and most current methods:

COC #: N/A

Lab #: 6866-6868

Quality Control #: 1671

Approved by:

Neil Ray

Neil Ray

Date: 9/26/11

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #1
Trace: 277135-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 9/12/11 Time: 2:00 pm
Sampled By: N/A
Analysis Date: 9/23/11
Analysis By: Neil Ray

Lab #: 6866
Quality Control Report: 1671

Analytical Results

Gas Composition				
	Mol %	**GPM**	**Vol %**	**Wt. %**
Nitrogen (N2):	87.8085	9.6110	82.1089	82.8733
Carbon Dioxide (CO2):	10.9702	1.8503	15.9118	16.2306
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**	**Wt. %**
Methane (CH4):	1.0603	0.1800	1.5283	0.5717
Ethane (C2H6):	0.0207	0.0055	0.0471	0.0209
Propane (C3H8):	0.0282	0.0077	0.0661	0.0418
Iso-Butane (C4H10):	0.0113	0.0037	0.0315	0.0221
N-Butane (C4H10):	0.0315	0.0099	0.0845	0.0615
Iso-Pentane (C5H12):	0.0287	0.0104	0.0892	0.0695
N-Pentane (C5H12):	0.0187	0.0067	0.0576	0.0453
Hexane+ (C6H14):	0.0220	0.0095	0.0751	0.0633
Totals	100.0000	11.6948	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft^3):	16.2	Z-Comp. Factor-dry:	0.99943
BTU -water vapor sat.(BTU/ft^3):	16.9	Z-Comp. Factor-water vapor sat.:	0.99390
Specific Gravity -dry:	1.0255	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	1.0241		

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806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #2
Trace: 277136-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 9/12/11 Time: 7:00 pm
Sampled By: N/A
Analysis Date: 9/23/11
Analysis By: Neil Ray

Lab #: 6867
Quality Control Report: 1671

Analytical Results

Gas Composition				
	Mol %	**GPM**	**Vol %**	**Wt. %**
Nitrogen (N2):	91.8336	10.0506	87.8144	88.1762
Carbon Dioxide (CO2):	7.5861	1.2794	11.2521	11.4185
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**	**Wt. %**
Methane (CH4):	0.5283	0.0897	0.7787	0.2898
Ethane (C2H6):	0.0023	0.0006	0.0053	0.0024
Propane (C3H8):	0.0045	0.0012	0.0107	0.0067
Iso-Butane (C4H10):	0.0040	0.0013	0.0113	0.0079
N-Butane (C4H10):	0.0118	0.0037	0.0322	0.0234
Iso-Pentane (C5H12):	0.0171	0.0062	0.0544	0.0422
N-Pentane (C5H12):	0.0072	0.0026	0.0226	0.0177
Hexane+ (C6H14):	0.0052	0.0023	0.0183	0.0154
Totals	100.0000	11.4375	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft^3):	7.2	Z-Comp. Factor-dry:	0.99954
BTU -water vapor sat.(BTU/ft^3):	8.0	Z-Comp. Factor-water vapor sat.:	0.99449
Specific Gravity -dry:	1.0077	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	1.0061		

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Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

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Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #3
Trace: 277137-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 9/13/11 Time: 12:00 am
Sampled By: N/A
Analysis Date: 9/23/11
Analysis By: Neil Ray

Lab #: 6868
Quality Control Report: 1671

Analytical Results

Gas Composition				
	Mol %	GPM	Vol %	Wt. %
Nitrogen (N2):	89.5981	9.8064	84.6693	85.0425
Carbon Dioxide (CO2):	9.7442	1.6434	14.2832	14.4986
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**	**Wt. %**
Methane (CH4):	0.6039	0.1025	0.8797	0.3275
Ethane (C2H6):	0.0000	0.0000	0.0000	0.0000
Propane (C3H8):	0.0014	0.0004	0.0033	0.0021
Iso-Butane (C4H10):	0.0027	0.0009	0.0075	0.0052
N-Butane (C4H10):	0.0102	0.0032	0.0278	0.0201
Iso-Pentane (C5H12):	0.0172	0.0063	0.0540	0.0419
N-Pentane (C5H12):	0.0054	0.0020	0.0169	0.0133
Hexane+ (C6H14):	0.0169	0.0073	0.0583	0.0489
Totals	100.0000	11.5723	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft^3):	8.3	Z-Comp. Factor-dry:	0.99948
BTU -water vapor sat.(BTU/ft^3):	9.1	Z-Comp. Factor-water vapor sat.:	0.99416
Specific Gravity -dry:	1.0196	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	1.0180		

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Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

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Sample Type: Standard
Preservative: N/A
Sample Container: Industrial Cylinder

Sample Id.: DCG
Reference Std. 47366AW
Sample Temp.: 120° F
Analysis Date: 9/23/11
Analysis By: Neil Ray

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Quality Control Report#: 1671

Analytical Results

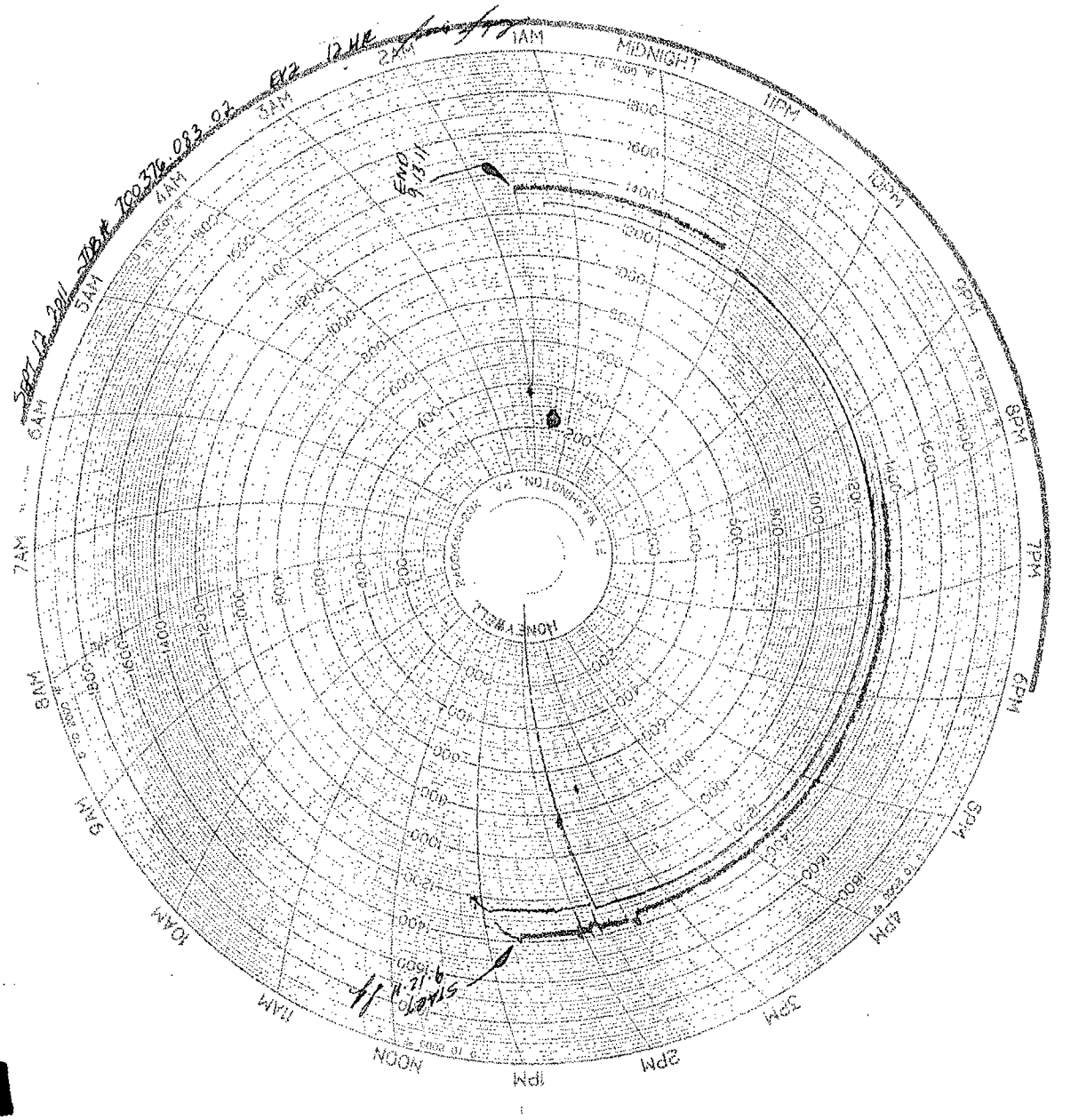
RESULTS	ACTUAL	ANALYSIS			
Gas Composition			MDL	RL	% Deviation
	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Nitrogen (N2):	4.926	5.2099	0.0010	10	94.2
Carbon Dioxide (CO2):	1.489	1.4891	0.0010	10	100.0
			MDL	RL	% Deviation
Hydrocarbon Composition	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Methane (CH4):	69.955	69.6889	0.0001	1	99.6
Ethane (C2H6):	9.138	9.1455	0.0001	1	99.9
Propane (C3H8):	5.947	5.9399	0.0001	1	99.9
Iso-Butane (C4H10):	3.018	3.0107	0.0001	1	99.8
N-Butane (C4H10):	3.021	3.0006	0.0001	1	99.3
Iso-Pentane (C5H12):	1.001	0.9921	0.0001	1	99.1
N-Pentane (C5H12):	1.007	0.9934	0.0001	1	98.6
Hexane+ (C6H14):	0.498	0.5300	0.0001	1	93.6
Totals	100.000	100.000			

Comments - Additional Data

ACTUAL		ANALYSIS	
BTU -dry (BTU/ft3):	1322.3	BTU -dry (BTU/ft^3):	1319.3
BTU -water vapor sat. (BTU/ft3):	1316.6	BTU -water vapor sat. (BTU/ft^3):	1313.7
Specific Gravity -dry:	0.8337	Specific Gravity -dry:	0.8348
Specific Gravity -water vapor sat.:	0.8406	Specific Gravity -water vapor sat.:	0.8418
Z-Comp. Factor -dry:	0.99565	Z-Comp. Factor -dry:	0.99566
Z-Comp. Factor -water vapor sat.:	0.98309	Z-Comp. Factor -water vapor sat.:	0.98311

ATTACHMENT 3

Oxidizer Charts


MIDNIGHT
1AM
2AM
3AM
4AM
5AM
6AM
7AM
8AM
9AM
10AM
11AM
NOON
1PM
2PM
3PM
4PM
5PM
6PM
7PM
8PM
9PM
10PM
11PM
MONEYWELL
END 9.13.11
START 9.12.11

ATTACHMENT 4

Waste Ticket

S. C. C. 35434
ICC MC #259649

TRANSPORTS
FRAC TANKS
VAC TRUCKS
WINCH TRUCKS

PATE TRUCKING CO.

Denver City(806) 592-2772
Hobbs (575) 397-6264
Levelland(806) 897-1705
Seminole(432) 758-2166

BILL TO: PLAINS PIPE LINE

CONTRACT NUMBER:
A F E NUMBER:
P.O. OR PURCHASE ORDER NUMBER:

FIELD ORDER NUMBER: 164239
DATE: 9-13-11
ORDERED BY:

DELIVERED FROM: TNM MONUMEN #18
TO: COOPERS SWD

LOCATION: TNM MONUMEN #18
WELL OR RIG NO.:

TRUCK OR UNIT NO.	CAPACITY	AMOUNT HAULED	START TIME AM/PM	END TIME AM/PM	HOURS CHGD.
111	130	50			2.5

DESCRIPTION	○HR. ○BBL.		RATE		AMOUNT	
PROVIDED V/T.	2.5	Hrs.	82	60	205	00
DRIVE TO LOC TAKE OUT FLUIDS		Bbls				
FROM TANK ON LOC		Bbls				
HAULED FLUIDS TO COOPER'S SWD		KCL				
	50	Disp	1	10	55	00
		Disp				
		Helper				
		Tank Min				
		Day Rental				
		Chart Recorder				

TOP GAUGE BOTTOM GAUGE SET DATE RELEASE DATE

FOR OFFICE USE ONLY

TAX: 17.71

NET TOTAL: 277.71

Thank You

Pablo Martinez
OPERATOR OR DRIVER

SRS # TNM Monument #18

Jason Henry 09/22/2011
AUTHORIZED BY: