

AP - 29

STAGE 2 REPORT

Date
8-25-11



AP-29

**MOBILE DUAL PHASE EXTRACTION REPORT
KIMBROUGH SWEET 8 INCH PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # 2000-10757
TALON/LPE PROJECT # 700376.050.02**

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Amarillo, Texas 79107
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ENVIRONMENTAL CONSULTING
ENGINEERING
DRILLING
CONSTRUCTION
EMERGENCY RESPONSE
Toll Free: 866.742.0742
www.talonlpe.com

PREPARED FOR:

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

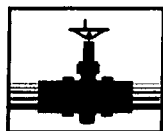
PREPARED BY:

**TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107**

DISTRIBUTION:

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COPY 3 - NMOCD - SANTA FE
COPY 4 - TALON/LPE**

August 25, 2011



PLAINS
PIPELINE, L.P.

RECEIVED OCD

September 8, 2011

2011 SEP 12 P 11:48

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 Two (2) 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 July 2011:

Red Byrd #1
Kimbrough Sweet 8-inch Sweet

NMOCD Reference #1R-0085
NMOCD Reference #AP-0029

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

Sincerely,

Jason Henry
Remediation Coordinator
Plains Pipeline, L.P.

Enclosure

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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 July 20, 2011 to July 21, 2011 at the Kimbrough Sweet 8" 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-2, 5, 6, & 7 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 **42.56 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **23 gallons of PSH (liquid phase)** and approximately **19.56 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 227.67 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 4,249.14 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 362 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being transferred to a frac tank located at the Plains 8-Inch Moore to Jal #1 remediation site (NMOCD Reference #AP-91) for disposal at a later date. A copy of the waste ticket can be found in Attachment 4.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C_mg/l)} = \frac{\text{C_ppmv} \times \text{Mol. wt. in mg(estimated)} \times 1000 \times 0.000001}{0.0821 \times \text{Temp (K)}}$$

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

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

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

$$\frac{8.34 \text{ lbs}}{\text{gallon water}} \times 0.835 \text{ average specific gravity of light crude (estimated)} = \frac{6.96 \text{ lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

| Time | Period (hours) | Influent Temp. (°f) | Vacuum (In. hg) | Vacuum (In. h2O) | Differential pressure (In. h2O) | 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) |
|-----------|----------------|---------------------|-----------------|------------------|---------------------------------|-------------|---------------------|-------------------|----------------------------|------------------------|----------------------------|----------------------------|-------------------|--------------------------|----------------------|
| 10:30 | 0 | 96 | 14 | 190.53 | 83.4 | 227.47 | 28347 | - | 4249.14 | 1.09 | 4638 | 16.48 | 14.01 | 0.00 | 0.00 |
| 11:00 | 0.5 | 100 | 14 | 190.53 | 90.2 | 235.71 | 25972 | 4249.14 | 4249.14 | 1.00 | 4249 | 14.99 | 13.21 | 6.60 | 6.60 |
| 12:00 | 1 | 100 | 14 | 190.53 | 93.1 | 239.47 | 20830 | - | 4249.14 | 0.80 | 3408 | 12.02 | 10.76 | 10.76 | 17.36 |
| 13:00 | 1 | 102 | 16 | 217.74 | 91.8 | 222.00 | 18748 | - | 4249.14 | 0.72 | 3067 | 10.78 | 8.95 | 8.95 | 26.31 |
| 14:00 | 1 | 102 | 16 | 217.74 | 95.3 | 226.19 | 21325 | - | 4249.14 | 0.82 | 3489 | 12.26 | 10.37 | 10.37 | 36.68 |
| 15:00 | 1 | 102 | 14 | 190.53 | 91.5 | 236.98 | 18745 | - | 3778.84 | 0.95 | 3587 | 12.61 | 11.17 | 11.17 | 47.85 |
| 16:00 | 1 | 102 | 14 | 190.53 | 82.3 | 224.75 | 15831 | - | 3778.84 | 0.80 | 3029 | 10.65 | 8.95 | 8.95 | 56.79 |
| 17:00 | 1 | 98 | 14 | 190.53 | 74.5 | 214.60 | 19748 | 3778.84 | 3778.84 | 1.00 | 3779 | 13.38 | 10.73 | 10.73 | 67.53 |
| 18:00 | 1 | 96 | 14 | 190.53 | 79.3 | 221.80 | 17322 | - | 3778.84 | 0.88 | 3315 | 11.78 | 9.76 | 9.76 | 77.29 |
| 19:00 | 1 | 92 | 14 | 190.53 | 83.4 | 228.29 | 14173 | - | 3778.84 | 0.72 | 2712 | 9.71 | 8.28 | 8.28 | 85.57 |
| 20:00 | 1 | 90 | 14 | 190.53 | 86.5 | 232.91 | 11396 | - | 3861.15 | 1.17 | 4513 | 16.21 | 14.11 | 14.11 | 99.69 |
| 21:00 | 1 | 90 | 14 | 190.53 | 80.4 | 224.55 | 10143 | - | 3861.15 | 1.04 | 4017 | 14.43 | 12.11 | 12.11 | 111.80 |
| 22:00 | 1 | 86 | 14 | 190.53 | 79.7 | 224.39 | 9749 | 3861.15 | 3861.15 | 1.00 | 3861 | 13.97 | 11.72 | 11.72 | 123.52 |
| 23:00 | 1 | 86 | 14 | 190.53 | 82.5 | 228.30 | 10315 | - | 3861.15 | 1.06 | 4085 | 14.78 | 12.61 | 12.61 | 136.13 |
| Averages: | | 95.86 | 14.29 | 194.41 | 85.28 | 227.67 | 17331.71 | | | | | | Total | 136.13 | |

PSH Mass Recovered in Vapor Phase = 19.56 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (light crude)

| Measured Conc. | Molecular Wt. | Pressure | Gas Constant | Temp. | Temp. | Conc. |
|----------------|---------------|----------|--------------------|-------|------------|-------------|
| (C_ppmv) | (Grams) | (atm) | (atm.liter/K.mole) | (F) | (K) | (C_mg/l) |
| 4638 | 90 | 1 | 0.0821 | 96 | 308.555556 | 16.47663287 |

Inputs are the green values.

Calculated values are yellow.

Constants are purple values.

Output are the blue values.

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =

136.13 lbs

PSH Mass Recovered in Liquid Phase =

19.56 gallons

160.08 lbs

23.00 gallons

TOTAL =

296.21 lbs

42.56 gallons

Liquid-phase Hydrocarbon Recovery

(assumes gasoline product)

[] * r³ * h = volume

Gallons removed determined at time of pick up

PSH Volume in Gallons =

23

PSH Mass in Pounds =

160.08

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

| Compound | Molecular Weight (g/mol) | % total | % total (Decimal) | = | Mg/M ³ | = | ppmv |
|---|--------------------------|---------|-------------------|---|-------------------|---|---------|
| Methane (CH ₄) | 16.04 | 0.1856 | 0.001856 | | 1856 | | 526.78 |
| Ethane (C ₂ H ₆) | 30.07 | 0 | 0 | | 0 | | 0.00 |
| Propane (C ₃ H ₈) | 44.10 | 0.0163 | 0.000163 | | 163 | | 46.26 |
| Iso-Butane (C ₄ H ₁₀) | 58.12 | 0.0289 | 0.000289 | | 289 | | 82.03 |
| N-Butane (C ₄ H ₁₀) | 58.12 | 0.15 | 0.0015 | | 1500 | | 425.74 |
| Iso-Pentane (C ₄ H ₁₂) | 72.15 | 0.1401 | 0.001401 | | 1401 | | 397.64 |
| N-Pentane (C ₅ H ₁₂) | 72.15 | 0.2078 | 0.002078 | | 2078 | | 589.79 |
| Hexane+ (C ₆ H ₁₄) | 86.18 | 0.7684 | 0.007684 | | 7684 | | 2180.91 |
| Total | | | | | | | 4249.14 |

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

| Compound | Molecular Weight (g/mol) | % total | % total (Decimal) | = | Mg/M ³ | = | ppmv |
|---|--------------------------|---------|-------------------|---|-------------------|---|---------|
| Methane (CH ₄) | 16.04 | 0.131 | 0.00131 | | 1310 | | 371.81 |
| Ethane (C ₂ H ₆) | 30.07 | 0 | 0 | | 0 | | 0.00 |
| Propane (C ₃ H ₈) | 44.10 | 0.112 | 0.00112 | | 1120 | | 317.88 |
| Iso-Butane (C ₄ H ₁₀) | 58.12 | 0.0242 | 0.000242 | | 242 | | 68.69 |
| N-Butane (C ₄ H ₁₀) | 58.12 | 0.1194 | 0.001194 | | 1194 | | 338.89 |
| Iso-Pentane (C ₄ H ₁₂) | 72.15 | 0.1224 | 0.001224 | | 1224 | | 347.40 |
| N-Pentane (C ₅ H ₁₂) | 72.15 | 0.1657 | 0.001657 | | 1657 | | 470.30 |
| Hexane+ (C ₆ H ₁₄) | 86.18 | 0.6567 | 0.006567 | | 6567 | | 1863.88 |
| Total | | | | | | | 3778.84 |

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

| Compound | Molecular Weight (g/mol) | % total | % total (Decimal) | = | Mg/M ³ | = | ppmv |
|---|--------------------------|---------|-------------------|---|-------------------|---|---------|
| Methane (CH ₄) | 16.04 | 0.151 | 0.00151 | | 1510 | | 428.58 |
| Ethane (C ₂ H ₆) | 30.07 | 0 | 0 | | 0 | | 0.00 |
| Propane (C ₃ H ₈) | 44.10 | 0.0184 | 0.000184 | | 184 | | 52.22 |
| Iso-Butane (C ₄ H ₁₀) | 58.12 | 0.0218 | 0.000218 | | 218 | | 61.87 |
| N-Butane (C ₄ H ₁₀) | 58.12 | 0.1315 | 0.001315 | | 1315 | | 373.23 |
| Iso-Pentane (C ₄ H ₁₂) | 72.15 | 0.1305 | 0.001305 | | 1305 | | 370.39 |
| N-Pentane (C ₅ H ₁₂) | 72.15 | 0.1736 | 0.001736 | | 1736 | | 492.72 |
| Hexane+ (C ₆ H ₁₄) | 86.18 | 0.7336 | 0.007336 | | 7336 | | 2082.14 |
| Total | | | | | | | 3861.15 |

ATTACHMENT 1
MDPE Field Logs

Start Date: 7/20/2011

MDPE FIELD DATA

| TIME | | SAMPLE TAKEN | Total Flow | | | Well Flow | | | Well Data | | | | | | | | | | | | |
|-------|--|--------------|--------------------|---------------------------------|--------------------|--------------------|---------------------------------|-------------|---------------------|--------------------------------|----------------|-----------|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| | | | Inflent temp. (°f) | Diff. Pressure (INH2O) 6" Pilot | Pressure (ln. h2O) | Inflent temp. (°f) | Diff. Pressure (INH2O) 2" Preso | Vac (ln.Hg) | FID Composite (PPM) | Propane Tank (%-size) 250 Gal. | EXHAUST TEMP F | COMMENTS: | | | | | | | | | |
| | | | | | | | | | | | | MW2 | | MW5 | | MW6 | | MW7 | | | |
| | | | | | | | | | | | | PPM | In. HG | PPM | In. HG | PPM | In. HG | PPM | In. HG | PPM | In. HG |
| 10:30 | | * | 118 | 16 | 0.24 | 96 | 83.4 | 14 | 28347 | 75 | 1419 | | | | | | | | | | |
| 11:00 | | * | 120 | 18 | 0.24 | 100 | 90.2 | 14 | 25972 | 74 | 1415 | | | | | | | | | | |
| 12:00 | | | 122 | 18 | 0.25 | 100 | 93.1 | 14 | 20830 | 74 | 1417 | | | | | | | | | | |
| 13:00 | | | 126 | 18 | 0.26 | 102 | 91.8 | 16 | 18748 | 73 | 1409 | | | | | | | | | | |
| 14:00 | | | 128 | 18 | 0.26 | 102 | 95.3 | 16 | 21325 | 72 | 1411 | | | | | | | | | | |
| 15:00 | | | 130 | 18 | 0.26 | 102 | 91.5 | 14 | 18745 | 70 | 1414 | | | | | | | | | | |
| 16:00 | | | 130 | 18 | 0.26 | 102 | 82.3 | 14 | 15831 | 68 | 1415 | | | | | | | | | | |
| 17:00 | | * | 124 | 18 | 0.26 | 98 | 74.5 | 14 | 19748 | 67 | 1412 | | | | | | | | | | |
| 18:00 | | | 122 | 18 | 0.26 | 96 | 79.3 | 14 | 17322 | 65 | 1416 | | | | | | | | | | |
| 19:00 | | | 120 | 18 | 0.26 | 92 | 83.4 | 14 | 14173 | 63 | 1414 | | | | | | | | | | |
| 20:00 | | | 116 | 18 | 0.26 | 90 | 86.5 | 14 | 11396 | 62 | 1418 | | | | | | | | | | |
| 21:00 | | | 114 | 18 | 0.26 | 90 | 80.4 | 14 | 10143 | 60 | 1413 | | | | | | | | | | |
| 22:00 | | * | 108 | 18 | 0.24 | 86 | 79.7 | 14 | 9749 | 58 | 1414 | | | | | | | | | | |
| 23:00 | | | 102 | 18 | 0.24 | 86 | 82.5 | 14 | 10315 | 56 | 1412 | | | | | | | | | | |

Soil Vacuum Influence

| | |
|----------------------|--------|
| Observation Well | MW9 |
| Extraction Well (EW) | MW5 |
| Distance (ft) to EW | 78 |
| Time: | In.H2O |
| 12:00 | 0.01 |
| 18:00 | 0.03 |
| 23:00 | 0.02 |

ATTACHMENT 2
Laboratory Analytical Results



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: August 24, 2011

Work Order: 11072217



Project Location: Monument, New Mexico
Project Name: Kimbrough Sweet 8"
Project Number: 700376.050.02
SRS #: 2000-10757

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 |
|--------|-------------|--------|------------|------------|---------------|
| 272533 | Influent #1 | air | 2011-07-20 | 11:00 | 2011-07-22 |

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

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Case Narrative

Samples for project Kimbrough Sweet 8" were received by TraceAnalysis, Inc. on 2011-07-22 and assigned to work order 11072217. Samples for work order 11072217 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 11072217 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.

Report Date: August 24, 2011
700376.050.02

Work Order: 11072217
Kimbrough Sweet 8"

Page Number: 4 of 5
Monument, New Mexico

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 than 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.

TraceAnalysis, Inc.

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

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El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

8808 Camp Bowie Blvd. West, Suite 180
Ft. Worth, Texas 76116
Tel (817) 201-5260
Fax (817) 560-4336

email: lab@traceanalysis.com

Company Name: TRACONLPE Phone #: 806-467-0607

Address: 921 N. BIVINS AMARILLO TEXAS 79107 Fax #: 806-467-0622

Contact Person: S. WALSH E-mail: S.WALSH@TRACONLPE.COM

Invoice to: JASON HENRY PLAINS

(If different from above) Project Name: KIMBROUGH SWEET 8"

Project #: 700376.050.02 Sampler Signature: LUIS JAGUEZ

Project Location (Including state): MONUMENT, NEW MEXICO

| LAB # (LAB USE ONLY) | FIELD CODE | # CONTAINERS | Volume / Amount | MATRIX | | | PRESERVATIVE METHOD | | | | | SAMPLING | |
|-------------------------|-------------|--------------|-----------------|--------|-----|--------|---------------------|------------------|--------------------------------|------|-----|----------|-------|
| | | | | WATER | AIR | SLUDGE | HCl | HNO ₃ | H ₂ SO ₄ | NaOH | ICE | DATE | TIME |
| 533 | INFLUENT #1 | 1 | 1 LTR | X | | | | | | | X | 7/20/11 | 11:00 |
| 534 | INFLUENT #2 | 1 | 1 LTR | X | | | | | | | X | 7/20/11 | 11:00 |
| 535 | INFLUENT #3 | 1 | 1 LTR | X | | | | | | | X | 7/20/11 | 11:00 |

ANALYSIS REQUEST (Circle or Specify Method No.)

SPS# 2000-10757

| | | |
|---------------------|-------------------------------------|--|
| MTBE | 8021B / 602 / 8260B / 624 | |
| BTEX | 8021B / 602 / 8260B / 624 | |
| TPH | 418.1 / TX1005 / TX1005 Ext(C35) | |
| TPH | 8015 GRO / DRO / TVHC | |
| PAH | 8270C / 625 | |
| Total Metals | Ag As Ba Cd Cr Pb Se Hg 6010B/200.7 | |
| TCLP Metals | Ag As Ba Cd Cr Pb Se Hg | |
| TCLP Volatiles | | |
| TCLP Semi Volatiles | | |
| TCLP Pesticides | | |
| RCI | | |
| GC/MS Vol. | 8260B / 624 | |
| GC/MS Semi. Vol. | 8270C / 625 | |
| PCBs | 8082 / 608 | |
| Pesticides | 8081A / 608 | |
| BOD, TSS, pH | | |
| Moisture Content | | |
| Hold | | |

REMARKS:

LAB USE ONLY

Intact Y / N N

Headspace Y / N / NA NA

Log-in-Review Y

Relinquished by: [Signature] Company: Trace Date: 7-20-11 Time: 13:40 Temp °C:

Relinquished by: [Signature] Company: Trace Date: 7-20-11 Time: 13:40 Temp °C:

Relinquished by: [Signature] Company: Trace Date: 7-20-11 Time: 13:40 Temp °C:

Carrier # Campy

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

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 #: 6009-6011

Quality Control #: 1580

Approved by:

Neil Ray

Neil Ray

Date: 8/01/11

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: 272533

Sample Temp.: N/A
 Atmospheric Temp.: N/A
 Pressure: N/A
 Field Data: N/A
 Sample Date: 7/20/11 Time: 11:00 am
 Sampled By: N/A
 Analysis Date: 7/29/11
 Analysis By: Neil Ray

Lab #: 6009

Quality Control Report: 1580

Analytical Results

| <u>Gas Composition</u> | <u>Mol %</u> | <u>GPM</u> | <u>Vol %</u> | <u>Wt. %</u> |
|---------------------------------------|---------------------|-------------------|----------------------|---------------------|
| Nitrogen (N2): | 98.4730 | 10.7759 | 96.9529 | 97.3045 |
| Carbon Dioxide (CO2): | 1.0150 | 0.1712 | 1.5501 | 1.5723 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| <u>Hydrocarbon Composition</u> | <u>Mol %</u> | <u>GPM</u> | <u>Vol. %</u> | <u>Wt. %</u> |
| Methane (CH4): | 0.1223 | 0.0208 | 0.1856 | 0.0690 |
| Ethane (C2H6): | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Propane (C3H8): | 0.0066 | 0.0018 | 0.0163 | 0.0103 |
| Iso-Butane (C4H10): | 0.0099 | 0.0032 | 0.0289 | 0.0202 |
| N-Butane (C4H10): | 0.0531 | 0.0167 | 0.1500 | 0.1086 |
| Iso-Pentane (C5H12): | 0.0428 | 0.0156 | 0.1401 | 0.1085 |
| N-Pentane (C5H12): | 0.0640 | 0.0231 | 0.2078 | 0.1626 |
| Hexane+ (C6H14): | 0.2134 | 0.0921 | 0.7684 | 0.6441 |
| Totals | 100.0000 | 11.1202 | 100.0000 | 100.0000 |

Comments - Additional Data

| | | | |
|--|--------|----------------------------------|---------|
| BTU -dry (BTU/ft ³): | 18.6 | Z-Comp. Factor-dry: | 0.99966 |
| BTU -water vapor sat. (BTU/ft ³): | 19.3 | Z-Comp. Factor-water vapor sat.: | 0.99526 |
| | | | |
| Specific Gravity -dry: | 0.9794 | 14.65 psi Pressure Base | |
| Specific Gravity-water vapor sat.: | 0.9775 | | |

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

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

Sample Id.: Influent #2
 Trace: 272534

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

Sample Temp.: N/A
 Atmospheric Temp.: N/A
 Pressure: N/A
 Field Data: N/A
 Sample Date: 7/20/11 Time: 5:00 pm
 Sampled By: N/A
 Analysis Date: 7/29/11
 Analysis By: Neil Ray

Lab #: 6010

Quality Control Report: 1580

Analytical Results

| Gas Composition | | | | |
|--------------------------------|--------------|------------|---------------|--------------|
| | Mol % | GPM | Vol % | Wt. % |
| Nitrogen (N2): | 98.6812 | 10.7986 | 97.3802 | 97.6587 |
| Carbon Dioxide (CO2): | 0.9075 | 0.1530 | 1.3890 | 1.4078 |
| | | | | |
| | | | | |
| | | | | |
| Hydrocarbon Composition | | | | |
| | Mol % | GPM | Vol. % | Wt. % |
| Methane (CH4): | 0.0862 | 0.0146 | 0.1310 | 0.0487 |
| Ethane (C2H6): | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Propane (C3H8): | 0.0045 | 0.0012 | 0.0112 | 0.0070 |
| Iso-Butane (C4H10): | 0.0083 | 0.0027 | 0.0242 | 0.0169 |
| N-Butane (C4H10): | 0.0422 | 0.0132 | 0.1194 | 0.0864 |
| Iso-Pentane (C5H12): | 0.0373 | 0.0136 | 0.1224 | 0.0947 |
| N-Pentane (C5H12): | 0.0509 | 0.0184 | 0.1657 | 0.1296 |
| Hexane+ (C6H14): | 0.1820 | 0.0785 | 0.6567 | 0.5501 |
| Totals | 100.0000 | 11.0939 | 100.0000 | 100.0000 |

Comments - Additional Data

| | | | |
|---|--------|----------------------------------|---------|
| BTU -dry (BTU/ft ³): | 15.5 | Z-Comp. Factor-dry: | 0.99966 |
| BTU -water vapor sat.(BTU/ft ³): | 16.1 | Z-Comp. Factor-water vapor sat.: | 0.99532 |
| | | | |
| Specific Gravity -dry: | 0.9779 | 14.65 psi Pressure Base | |
| Specific Gravity-water vapor sat.: | 0.9759 | | |

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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: 272535

Sample Temp.: N/A
 Atmospheric Temp.: N/A
 Pressure: N/A
 Field Data: N/A
 Sample Date: 7/20/11 Time: 10:00 pm
 Sampled By: N/A
 Analysis Date: 7/29/11
 Analysis By: Neil Ray

Lab #: 6011

Quality Control Report: 1580

Analytical Results

| Gas Composition | Mol % | GPM | Vol % | Wt. % |
|--------------------------------|--------------|------------|---------------|--------------|
| Nitrogen (N2): | 98.4486 | 10.7732 | 96.9688 | 97.2766 |
| Carbon Dioxide (CO2): | 1.0935 | 0.1844 | 1.6706 | 1.6937 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Hydrocarbon Composition | Mol % | GPM | Vol. % | Wt. % |
| Methane (CH4): | 0.0995 | 0.0169 | 0.1510 | 0.0562 |
| Ethane (C2H6): | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Propane (C3H8): | 0.0074 | 0.0020 | 0.0184 | 0.0116 |
| Iso-Butane (C4H10): | 0.0074 | 0.0024 | 0.0218 | 0.0152 |
| N-Butane (C4H10): | 0.0466 | 0.0146 | 0.1315 | 0.0952 |
| Iso-Pentane (C5H12): | 0.0399 | 0.0145 | 0.1305 | 0.1010 |
| N-Pentane (C5H12): | 0.0535 | 0.0193 | 0.1736 | 0.1358 |
| Hexane+ (C6H14): | 0.2036 | 0.0879 | 0.7336 | 0.6147 |
| Totals | 100.0000 | 11.1152 | 100.0000 | 100.0000 |

Comments - Additional Data

| | | | |
|---|--------|----------------------------------|---------|
| BTU -dry (BTU/ft ³): | 17.1 | Z-Comp. Factor-dry: | 0.99966 |
| BTU -water vapor sat.(BTU/ft ³): | 17.7 | Z-Comp. Factor-water vapor sat.: | 0.99527 |
| | | | |
| Specific Gravity -dry: | 0.9795 | 14.65 psi Pressure Base | |
| Specific Gravity-water vapor sat.: | 0.9775 | | |

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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: 7/29/11

Analysis By: Neil Ray

Method(s): ASTM D 1945

Gas Analysis by Gas
Chromatography

Quality Control Report#: 1580

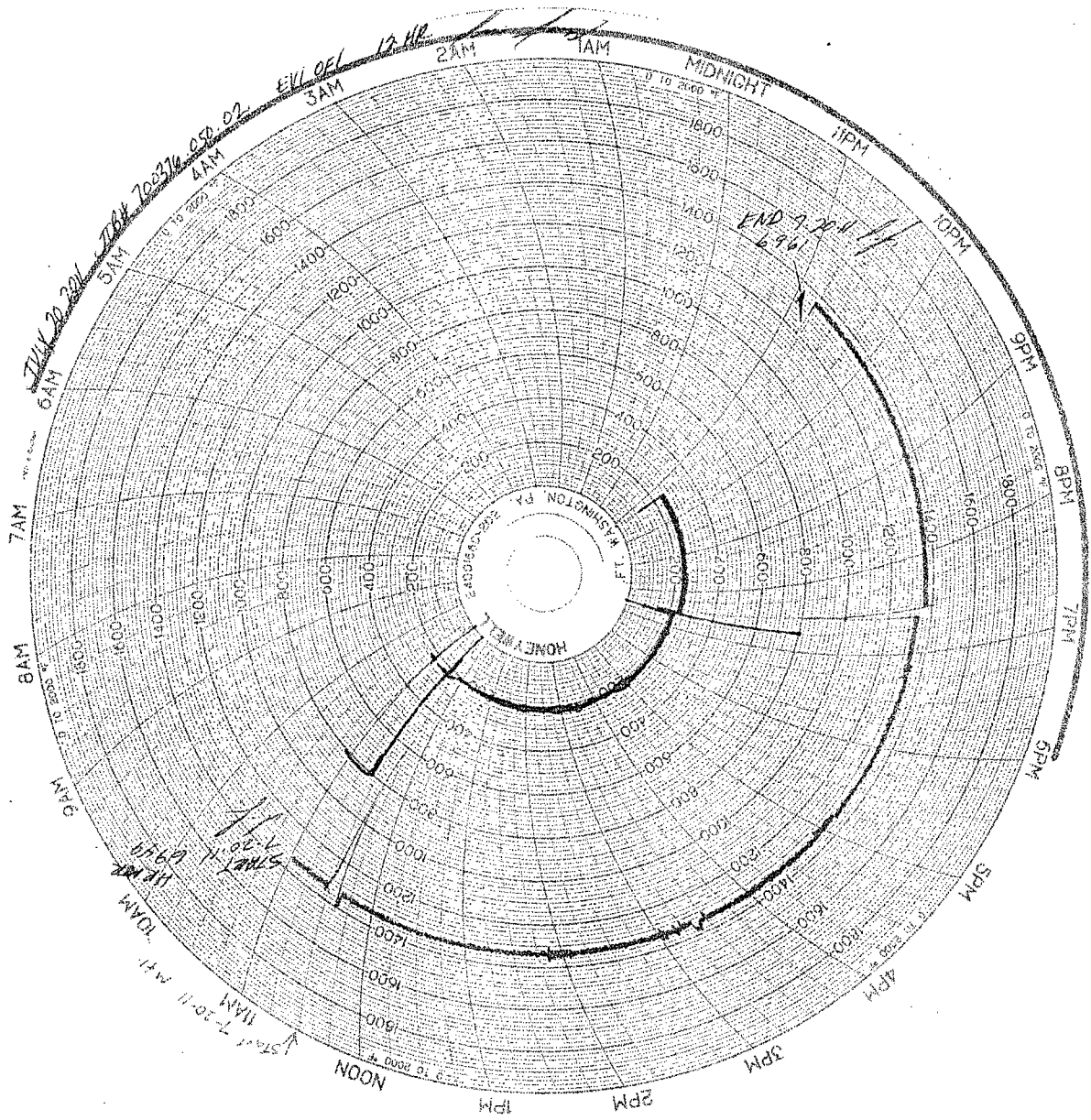
Analytical Results

| RESULTS | ACTUAL | ANALYSIS | | | |
|--------------------------------|---------|----------|--------|---------|-------------|
| <u>Gas Composition</u> | | | MDL | RL | % Deviation |
| | Mol % | Mol % | Mol % | ppm mol | (90-100%) |
| Nitrogen (N2): | 4.926 | 4.7451 | 0.0010 | 10 | 96.3 |
| Carbon Dioxide (CO2): | 1.489 | 1.4885 | 0.0010 | 10 | 100.0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | MDL | RL | % Deviation |
| <u>Hydrocarbon Composition</u> | Mol % | Mol % | Mol % | ppm mol | (90-100%) |
| Methane (CH4): | 69.955 | 70.5102 | 0.0001 | 1 | 99.2 |
| Ethane (C2H6): | 9.138 | 9.0967 | 0.0001 | 1 | 99.5 |
| Propane (C3H8): | 5.947 | 5.8182 | 0.0001 | 1 | 97.8 |
| Iso-Butane (C4H10): | 3.018 | 2.9541 | 0.0001 | 1 | 97.9 |
| N-Butane (C4H10): | 3.021 | 2.9588 | 0.0001 | 1 | 97.9 |
| Iso-Pentane (C5H12): | 1.001 | 0.9971 | 0.0001 | 1 | 99.6 |
| N-Pentane (C5H12): | 1.007 | 0.9773 | 0.0001 | 1 | 97.0 |
| Hexane+ (C6H14): | 0.498 | 0.4541 | 0.0001 | 1 | 91.2 |
| Totals | 100.000 | 100.000 | | | |

Comments - Additional Data

| ACTUAL | | ANALYSIS | |
|---|---------|---|---------|
| BTU -dry (BTU/ft ³): | 1322.3 | BTU -dry (BTU/ft ³): | 1316.1 |
| BTU -water vapor sat. (BTU/ft ³): | 1316.6 | BTU -water vapor sat. (BTU/ft ³): | 1310.4 |
| | | | |
| Specific Gravity -dry: | 0.8337 | Specific Gravity -dry: | 0.8278 |
| Specific Gravity -water vapor sat.: | 0.8406 | Specific Gravity -water vapor sat.: | 0.8347 |
| | | | |
| Z-Comp. Factor -dry: | 0.99565 | Z-Comp. Factor -dry: | 0.99571 |
| Z-Comp. Factor -water vapor sat.: | 0.98309 | Z-Comp. Factor -water vapor sat.: | 0.98320 |

ATTACHMENT 3
Oxidizer Charts



ATTACHMENT 4

Waste Ticket

S. C. C 35434
ICC MC #259649

TRANSPORTS
FRAC TANKS
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PATE TRUCKING CO.

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

B
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Plans

CONTRACT
NUMBER

A. F. E.
NUMBER

REQ. OR
PURCHASE ORDER
NUMBER

FIELD
ORDER
NUMBER

DATE

ORDERED BY

167069

8-3-11

BRAD IVY

DELIVERED
FROM

LOCATION

TRUCK OR
UNIT NO.

Location

TO

moore Jal #1

Kimbrough sweet 8"

WELL OR
RIG NO.

CAPACITY

AMOUNT
HAULED

START
TIME

AMEND
TIME
PM

AMPHAT 100
PM 4

73

130

40

DESCRIPTION

O HR.

O BBL.

RATE

AMOUNT

Drove to location

4

Hrs.

82 00

328 00

mt Containers on location

Bbls

took 40 BBLs Fluids and oil

Bbls

to moore Jal #1

KCL

Disp

Disp

Helper

Tank Min

Day Rental

SRS 2000-10757

Chart Recorder

328 00

TOP GAUGE

BOTTOM GAUGE

SET DATE

RELEASE DATE

FOR OFFICE USE ONLY

TAX

22.00

NET TOTAL

350.00

Thank You

Alfredo Saldaña
OPERATOR OR DRIVER

SRS #2000-10757

Jason Henry 08/15/2011
AUTHORIZED BY: