GW - 361

MONITORING REPORTS

DATE:

2005

TEPPCO

Environmental, Health, Safety
and Regulatory Compliance

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October 11, 2005

VIA CERTIFIED MAIL No.:
7004 0750 0003 2947 8620
RETURN RECEIPT REQUESTED

Mr. Paul Sheeley
Environmental Engineer Specialist
New Mexico Oil Conservation Division
1625 N. French Dr.
Hobbs, New Mexico 88240

Re: TEPPCO Hobbs Station, Hobbs, New Mexico
Supplemental Environmental Site Investigation

Dear Mr. Sheeley:

TEPPCO Crude Oil, L.P. (TEPPCO) is submitting the attached *Supplemental Environmental Site Investigation* report describing the soil and groundwater monitoring results obtained during investigation of the TEPPCO Hobbs Station. During March 2003, TEPPCO performed a due diligence investigation of this station following acquisition of the station from ARCO. This due diligence investigation established that groundwater was affected by benzene concentrations in excess of New Mexico Water Quality Control Commission (WQCC) Ground Water Standards at monitor well location MW-3. A copy of this due diligence report entitled: *Environmental Site Investigation of Hobbs Station,* dated May 23, 2003 has been provided with this correspondence.

It has not been possible to obtain additional water samples from MW-3 to verify the March 2003 sample results, since water levels in this area have dropped below the well screen elevation. In order to verify if groundwater in the vicinity of MW-3 remained impacted above regulatory levels, a replacement well (MW-3R) was installed adjacent to MW-3 on July 25, 2005. The groundwater samples from this monitor well indicate no benzene concentrations remain above method detection limits.

Soil samples obtained at two locations (MW-2 and MW-3R) exceed the New Mexico Oil Conservation Division's (OCD's) Remediation Action Levels of 100 mg/kg. However, analyses of the soil sample from MW-3R by Texas Commission on Environmental Quality (TCEQ) Method TX 1005, constituent concentrations were below method detection limits. Also, these results were compared to New Mexico Environmental

Department (NMED) *TPH Screening Guidelines*, dated June 24, 2003. Although there are no screening values established for crude oil, a comparison was made to Diesel #2, #3/#6 Fuel Oil Kerosene and Jet Fuel. The soil sample from MW-3R does not exceed the lower of the NMED screening guidelines (conservative Residential Direct Exposure) of 880 mg/kg.

Based on the decreasing constituent concentrations in groundwater over time, the absence of groundwater receptors near the station, the industrial use of the station and the impractability of soil removal in accordance with NMOCD Section VI.A.1.(b), TEPPCO respectfully requests that OCD approval for closure of this site be granted based on Section VII of the OCD's *Guidelines for Remediation of Leaks, Spills and Releases*.

Please do not hesitate to contact me at (713) 759-3866 if you have any questions concerning the contents of the attached reports.

Sincerely,

David R. Smith, P.G.
Remediation Scientist

Attachments

cc: w/o Attachments
Chris Mitchell – Southwest Geoscience, Dallas, TX

Southwest GEOSCIENCE

SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION

Property at:

HOBBS STATION
Off County Road 61
Hobbs, Lea County, New Mexico

October 7, 2005
Project No. 0105013

SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION

Property at:

HOBBS STATION
Off County Road 61
Hobbs, Lea County, New Mexico

October 7, 2005
Project No. 0105013

Prepared for:

TEPPCO, L.P.
2929 Allen Parkway, Suite 3200
Houston, Texas 77019
Attention: Mr. David Smith, P.G.

Prepared by:

B. Chris Mitchell, P.G.
Principal Geoscientist

Rusty Simpson, P.G., C.P.G.
Senior Technical Review

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SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION

HOBBS STATION
Off County Road 61
Hobbs, Lea County, New Mexico
SWG Project No. 0105013

EXECUTIVE SUMMARY

The TEPPCO Hobbs Station is located off County Road (CR) 61, south-southwest of Hobbs, New Mexico, referred to hereinafter as the "site" or "subject site". The site consists of approximately 35 acres developed as a crude oil storage facility associated with crude oil pipeline operations.

During the completion of due diligence activities during the acquisition of select ARCO assets by TEPPCO, soil borings MW-1, MW-2, MW-4 and B-5 were advanced at the station by ALPHA TESTING, INC. (ALPHA) in March, 2003. Soil borings MW-1, MW-2 and MW-4 were subsequently converted to permanent groundwater monitoring wells. The objective of due diligence activities was to evaluate the presence of petroleum hydrocarbons in the on-site soil and groundwater as a result of the operations historically associated with the Site.

In addition, an existing monitoring well previously installed under the direction of ARCO, labeled MW-3, was identified on the north-northeast portion of the site during the completion of the due diligence activities. No other existing monitoring wells were observed during the 2003 investigation activities.

Petroleum hydrocarbon constituent concentrations identified in on-site soils during the ALPHA Environmental Site Investigation (ESI) dated May 23, 2003, which exceed the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division's (OCD's) *Remediation Action Levels* were limited to the TPH DRO concentration of 621 mg/Kg associated with the soil sample collected from soil boring MW-2. The TPH DRO concentration was resubmitted for polynuclear aromatic hydrocarbon (PAH) analysis. The identified PAH constituent concentrations do not exceed the New Mexico Environment Department (NMED) *Tier 1 Soil Concentrations Protective Of Groundwater.*

Petroleum hydrocarbon constituent concentrations identified in on-site groundwater during the ALPHA ESI dated May 23, 2003, which exceed the New Mexico Water Quality Commission (NMWQC) *Ground Water Standards* were limited to the benzene concentration of 0.0637 mg/L associated with the groundwater sample collected from monitoring well MW-3(ARCO).

The objective of the Supplemental Environmental Site Investigation (SESI) conducted by Southwest Geoscience (SWG) was to further evaluate the presence of petroleum hydrocarbons in the on-site soil and groundwater in the vicinity of monitoring well MW-3, previously installed under the direction of ARCO. One (1) boring, MW-3R, was advanced at the site and converted to a permanent groundwater monitoring well. Soil boring MW-3R was advanced adjacent to monitoring well MW-3, previously installed by ARCO.

Based on SWG's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's *Remediation Action Levels*, the TPH DRO concentration identified in the soil sample collected from soil boring MW-3R exceeds the remediation action level of 100 mg/kg. However, based on the results of the TX 1005/1006 analysis, TPH concentrations were not identified above the laboratory method detection limits.

In addition, SWG compared the identified TPH concentrations to the NMED *TPH Screening Guidelines* dated June 24, 2003. Due to the absence of TPH Screening Values for crude oil in this guidance document, SWG compared the identified TPH concentrations to the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel. Based on the laboratory analytical results, the TPH DRO concentration identified in the soil sample collected from soil boring MW-3R does not exceed the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel of 880 mg/kg.

Based on the laboratory analytical results, TPH GRO/DRO concentrations were identified in the groundwater sample collected from monitoring well MW-3R; however, the identified concentrations do not exceed the applicable New Mexico Water Quality Control Commission (WQCC) Human Health Standards for Groundwater[1].

Based on SWG's review of the historic and current laboratory analytical results, the primary lines of evidence with regard to natural attenuation of chemicals of concern (COCs) demonstrate a clear trend of stable of decreasing COC concentrations in groundwater over time and with distance away from potential source(s).

Based on the results of this SESI, SWG presents the following recommendations:

- Report the results of the investigation to the New Mexico Energy, Minerals and Natural Resources Department OCD and coordinate site activities through the OCD;
- Based on the COC concentrations identified in the on-site soil and groundwater, the trend of decreasing COC concentrations in groundwater over time, the absence of beneficial use of groundwater in the vicinity of monitoring well MW-3R, the anticipated future use of the site (crude oil pipeline facility) and the direction of groundwater flow, SWG recommends TEPPCO request regulatory closure from the NMEMNRD OCD in accordance with Section VII of the OCD's *Guidelines for Remediation of Leaks, Spills & Releases* dated August 13, 1993;
- If soils or groundwater located on the site are to be disturbed during future excavations or construction activities, proper procedures should be followed with respect to worker health and safety, and any affected soil or groundwater encountered should be properly characterized,

[1] *Human Health Standards for Groundwater* for groundwater with a total dissolved concentration (TDS) of less than 10,000 mg/L.

treated and/or disposed in accordance with applicable local, state or federal regulations.

1.0 INTRODUCTION

1.1 Site Description

The TEPPCO Hobbs Station is located off County Road (CR) 61, south-southwest of Hobbs, New Mexico, referred to hereinafter as the "site" or "subject site". The site consists of approximately 35 acres developed as a crude oil storage facility associated with crude oil pipeline operations.

A topographic map is included as Figure 1, a site vicinity map is included as Figure 2, and a site plan is included as Figure 3 of Appendix A.

1.2 Site Background

During the completion of due diligence activities during the acquisition of select ARCO assets by TEPPCO, soil borings MW-1, MW-2, MW-4 and B-5 were advanced at the station by ALPHA TESTING, INC. (ALPHA) in March, 2003. Soil borings MW-1, MW-2 and MW-4 were subsequently converted to permanent groundwater monitoring wells. The objective of the due diligence activities was to evaluate the presence of petroleum hydrocarbons in the on-site soil and groundwater as a result of the operations historically associated with the Site.

In addition, an existing monitoring well previously installed under the direction of ARCO, labeled MW-3, was identified on the north-northeast portion of the site during the completion of the due diligence activities. No other existing monitoring wells were observed during the 2003 investigation activities.

SWG's review of the ALPHA TESTING, INC. Environmental Site Investigation (ESI) dated May 23, 2003, identified the following findings:

> *"Based on the results of the ESI, the on-site soils in the vicinity of soil borings MW-1, MW-2, and B-5 appear to be affected by petroleum hydrocarbons.*
>
> *Based on the results of the ESI, the on-site groundwater in the vicinity of monitor wells MW-1, MW-2, MW-3 and MW-4 appears to be affected by petroleum hydrocarbons.*
>
> *ALPHA compared the identified petroleum hydrocarbon constituent concentrations in on-site soils and groundwater to the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division's (OCD's) Remediation Action Levels and the New Mexico Water Quality Commission (NMWQC) Ground Water Standards for sites affected by a release of oilfield products (i.e. crude oil, condensate, etc.).*
>
> *Based on ALPHA's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's Remediation Action Levels, the identified TPH DRO concentrations associated with the soil samples collected from soil borings MW-1 and B-5 and the identified ethylbenzene and TPH GRO concentrations associated with the soil sample collected from soil boring MW-2 do not exceed their respective action levels.*

Based on ALPHA's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's Remediation Action Levels, the identified TPH DRO concentration associated with the soil sample collected from soil boring MW-2 exceeds the remediation action level of 100 mg/kg.

Based on ALPHA's comparison of the identified petroleum hydrocarbon constituent concentrations to the NMWQC Ground Water Standards, the identified toluene, ethylbenzene, xylenes, TPH DRO/GRO and PAH concentrations associated with the groundwater samples collected from monitor wells MW-1, MW-2, MW-3 and MW-4 do not exceed the respective groundwater standards.

Based on ALPHA's comparison of the identified petroleum hydrocarbon constituent concentrations to the NMWQC Ground Water Standards, the identified benzene concentration associated with the groundwater sample collected from monitor well MW-3 exceeds the groundwater standard of 10 µg/L."

Due to the exceedance of the OCD's *Remediation Action Level* of 100 mg/Kg for Total Petroleum Hydrocarbons (TPH), ALPHA resubmitted the soil sample for polynuclear aromatic hydrocarbon (PAH) analysis. The OCD does not have published cleanup standards for PAHs; therefore, SWG compared the identified PAH concentrations to the New Mexico Environment Department (NMED) Tier 1 *Soil Concentrations Protective Of Groundwater*. Based on SWG's review, the identified PAH concentrations do not exceed the Tier 1 *Soil Concentrations Protective Of Groundwater*.

A groundwater monitoring event was subsequently conducted by ALPHA in May, 2004 to further evaluate the magnitude of petroleum hydrocarbon constituents in the on-site groundwater. During the completion of sampling activities, on-site personnel indicated the location of two additional groundwater monitoring wells previously installed under the direction of ARCO, labeled MW-1 and MW-2. ALPHA sampled monitoring wells MW-1(ARCO), MW-2(ARCO), MW-1, MW-2 and MW-4. However, the groundwater table appeared to have dropped below the total depth of monitoring well MW-3(ARCO); therefore, no groundwater sample was collected.

Analytical tables which include the historical soil and groundwater analytical data are provided in Appendix B.

1.3 Scope of Work

Southwest Geoscience (SWG) has conducted a Supplemental Environmental Site Investigation (SESI) at the Hobbs Station based on the results of the ALPHA ESI dated May 23, 2003. The objective of the SESI was to further evaluate the presence of petroleum hydrocarbons in the on-site soil and groundwater in the vicinity of monitoring well MW-3, previously installed under the direction of ARCO. SWG's SESI was conducted in accordance with SWG's Proposal P01051017 dated April 20, 2005 and authorized on June 9, 2005.

1.4 Standard of Care

SWG's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time

period. SWG makes no warranties, express or implied, as to the services performed hereunder. Additionally, SWG does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client, as detailed in our proposal.

1.5 Additional Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and SWG cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this LSI. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. SWG's findings, and recommendations are based solely upon data available to SWG at the time of these services.

1.6 Reliance

This report has been prepared for the exclusive use of TEPPCO, L.P., and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of TEPPCO, L.P. and SWG. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, SESI report, and SWG's Agreement. The limitation of liability defined in the agreement is the aggregate limit of SWG's liability to the client.

2.0 SENSITIVE RECEPTOR SURVEY

During the completion of field activities, a sensitive receptor survey, which included a ½-mile radius search for registered water wells and a 500-foot walking survey for unregistered water wells and potential sensitive human and ecological receptors, was performed in the vicinity of the site.

SWG completed a field inventory of registered and unregistered water wells located within 500 feet of the central portion of the site. Additionally, a records inventory of water wells located within a 0.5 mile of the site was completed and included as Appendix C. The results of the water well search conducted during the investigation activities did not identify the beneficial use of groundwater within a one-half mile radius of the site.

During the completion of the 500-foot receptor survey, SWG inspected the site vicinity for dwellings, schools, hospitals, day care centers, nursing homes, businesses and subsurface utilities located within 500 feet of the site. In addition, sensitive receptors such as surface water bodies, parks, recreational areas, wildlife sanctuaries and wetlands areas located within 500 feet of the site were evaluated, if present. The site is located within an agricultural rangeland and oil and gas production and storage setting. SWG did not observe the above referenced sensitive receptors in the vicinity of the site.

3.0 FIELD ACTIVITIES

3.1 Borings and Monitoring Wells

SWG's field activities were conducted on July 25, 2005 by Mr. B. Chris Mitchell, an SWG environmental professional. As part of the approved scope of work, one (1) boring, MW-3R, was advanced at the site and converted to a permanent groundwater monitoring well. Soil boring MW-3R was advanced adjacent to monitoring well MW-3, previously installed by ARCO.

Figure 3 is a site plan which indicates the approximate location of the soil boring/monitoring well in relation to pertinent structures and general site boundaries (Appendix A).

Drilling services were performed under the supervision of a State of New Mexico licensed Water Well Driller using an air-rotary drilling rig. An SWG professional was present to observe the drilling procedures. Soil samples were collected using a one foot core barrel sampler. Drilling equipment was cleaned using a high pressure washer prior to beginning the project and before beginning each soil boring. Sampling equipment was cleaned using an Alconox® wash and potable water rinse prior to the beginning of the project and before collecting each soil sample.

Soil samples were collected continuously and observed to document soil lithology, color, moisture content and evidence of petroleum hydrocarbon impact. The soil samples were field-screened using a calibrated photoionization detector (PID) to indicate the presence of volatile organic compounds.

The lithology encountered during the advancement of soil boring MW-3R consisted of a brown silty clay from the surface to a depth of approximately 2 feet below grade surface (bgs). A tan caliche was encountered from a depth of 2 feet bgs to a depth of approximately 18 feet bgs. The tan caliche was underlain by a pale pink caliche from a depth of 18.0 to 33.0 feet bgs. A reddish purple quartzite lens was encountered from a depth of approximately 33 to 34 feet bgs. The quartzite lens was underlain by a reddish tan sand from a depth of 34 to 40.0 feet bgs. The sand was underlain by a red sand with fragmented sandstone from a depth of 40.0 bgs to the terminus of the soil boring at a depth of 48.0 feet bgs. Detailed lithologic descriptions are presented on the soil boring logs included in Appendix D.

Groundwater was encountered at a depth of approximately 37 feet bgs during the advancement of monitoring well MW-3R.

The groundwater flow direction and the depth to shallow groundwater likely vary depending upon seasonal variations in rainfall and the depth to the soil/bedrock interface. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater flow direction beneath the site cannot be determined. Based on field observations, the general groundwater flow direction appears to follow topography, which grades toward the southwest.

Petroleum odors and PID readings ranging up to 1,342 parts per million (ppm) were detected in the soil samples collected from soil boring MW-3R. The highest PID reading was observed in the soil sample collected from a depth of 36 to 37 feet bgs (capillary fringe) in soil boring MW-3R. The soil boring log is included in Appendix D.

Subsequent to advancement, soil boring MW-3R was converted to a permanent monitoring well. The monitoring well was completed using the following methodology:

- Installation of 15.0 feet of 2-inch diameter, 0.010-inch machine slotted PVC well screen with a threaded bottom cap;
- Installation of 33.0 feet of 2-inch diameter, threaded flush joint PVC riser pipe to just above the ground surface;
- Addition of a pre-sieved 20/40 grade annular silica sand pack from the bottom of the boring to at least 0.5-feet above the top of the well screen;
- Addition of a hydrated bentonite seal above the sand pack filter zone;
- Addition of grout to the surface; and,
- Installation of an above grade monitoring well cover with locking well cap.

Monitoring well construction details are presented on the soil boring log for this monitoring well which is included in Appendix D.

The monitoring well was developed by surging and removing groundwater with a new, disposable, polypropylene bailer until the groundwater was relatively free of fine-grained sediment. Approximately twenty-five gallons of groundwater was removed from the monitoring well during the development activities.

3.2 Soil and Groundwater Sampling

SWG's soil sampling program involved submitting one soil sample from the soil boring for laboratory analysis. The soil sample was collected from the zone exhibiting the highest PID reading, which was the capillary fringe zone. Soil sample intervals are presented along with the soil sample analytical results in Table 1 (Appendix B) and included on the boring log in Appendix D.

A groundwater sample was collected from the monitoring well utilizing a dedicated disposable bailer.

Soil and groundwater samples were collected and placed in laboratory prepared glassware, sealed with custody tape and placed on ice in a cooler, which was secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to Severn Trent's analytical laboratory in Corpus Christi, Texas for normal turnaround.

4.0 LABORATORY ANALYTICAL METHODS

The soil samples collected from each boring and the groundwater samples collected from the monitoring wells were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) using EPA SW-846 method #8021B and TPH DRO/GRO utilizing EPA method SW-846# 5030B/8015Bmodified. In addition, the soil sample was analyzed utilizing Texas Commission on Environmental Quality (TCEQ) Method TX1005/1006 to speciate the identified petroleum hydrocarbons.

Laboratory results are summarized in the tables included in Appendix B. The executed chain-of-custody form and laboratory data sheets are provided in Appendix E.

5.0 DATA EVALUATION

5.1 Soil Samples

SWG compared the petroleum hydrocarbon constituent concentrations identified in the on-site soils to the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division's (OCD's) *Remediation Action Levels* for sites affected by a release of oilfield products (i.e. crude oil, condensate, etc.) in accordance with the OCD's *Guidelines for Remediation of Leaks, Spills and Releases.*

In addition, SWG analyzed the soil sample utilizing TCEQ Method TX1005/1006 to evaluate the aliphatic and aromatic fractions associated with the identified TPH concentration. The inverse weighted average (TPH Mass Fractions) of the aliphatic and aromatic fractions derived from the TPH Method TX 1006 analysis are typically utilized to establish cleanup values for the complete TPH mixture (i.e., the whole product), for each applicable exposure pathway. However, the TX 1005/1006 analysis did not identify petroleum hydrocarbon concentrations above the laboratory method detection limits.

Based on the laboratory analytical results, benzene, toluene and xylenes concentrations were not identified in the soil sample collected from soil boring MW-3R above the laboratory method detection limits.

Based on SWG's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's *Remediation Action Levels*, the identified ethylbenzene concentration associated with the soil sample collected from soil boring MW-3R does not exceed the remediation action level of 50 mg/kg for Total BTEX.

Based on SWG's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's *Remediation Action Levels*, the identified TPH DRO concentration associated with the soil sample collected from soil boring MW-3R exceeds the remediation action level of 100 mg/kg. However, based on the results of the TX 1005/1006 analysis, TPH concentrations were not identified above the laboratory method detection limits.

In addition, SWG compared the identified TPH concentrations to the New Mexico Environmental Department *TPH Screening Guidelines* dated June 24, 2003. Due to the absence of TPH Screening Values for crude oil, SWG compared the identified TPH concentrations to the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel. Based on the laboratory analytical results, the TPH DRO concentration identified in the soil sample collected from soil boring MW-3R does not exceed the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel of 880 mg/kg.

The results of the soil sample analyses are summarized in Table 1, included in Appendix B.

5.2 Groundwater Samples

SWG compared the petroleum hydrocarbon constituent concentrations identified in on-site groundwater to the New Mexico Water Quality Commission (NMWQC) *Ground Water Standards* for sites affected by a release of oilfield products (i.e. crude oil, condensate, etc.) in accordance with the *Guidelines for Remediation of Leaks, Spills and Releases.*

Based on the laboratory analytical results, benzene, toluene, ethylbenzene and/or xylenes concentrations were not identified in the groundwater sample collected from monitoring well MW-3R above the laboratory method detection limits.

Based on the laboratory analytical results, TPH GRO/DRO concentrations were identified in the groundwater sample collected from monitoring well MW-3R; however, the identified concentrations do not exceed the applicable NMWQC Groundwater Water Standards.

The results of the groundwater sample analyses are summarized in Table 2 included in Appendix B.

6.0 MONITORED NATURAL ATTENUATION EVALUATION

SWG conducted a natural attenuation screening to evaluate the site for remediation by monitored natural attenuation. Natural attenuation of petroleum hydrocarbons is recognized as a viable remedial alternative where favorable subsurface conditions prevail. The ASTM guidance document, Standard Guide for Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites, was utilized as the standard for evaluating natural attenuation.

Natural attenuation is the process by which contaminants in the environment are degraded, or reduced in concentration by various means including volatilization, adsorption, desorption, dispersion, dilution, diffusion, biodegradation, and abiotic degradation. Natural attenuation is achieved when one or more of these processes brings about a reduction in the total mass, toxicity, mobility, volume, or concentration of a contaminant. The presence or absence of key indicator parameters will indicate the degree to which (if any) natural attenuation may occur. Monitored natural attenuation is the measurement or analysis of these key indicator parameters over time to establish trends that document that a reduction in total mass, toxicity, mobility, volume, or concentration of a contaminant is taking place. Several of the indicator parameters such as Oxygen, Conductivity, pH, Temperature, and Oxidation-Reduction Potential can be measured in the field. The remaining indicator parameters such as Alkalinity, Nitrate, Ferrous Iron, Ferric Iron, Carbon Dioxide, Sulfate and Methane are submitted to the laboratory for analysis.

Primary Lines of Evidence
Primary lines of evidence consist of historical groundwater data that demonstrate a clear trend of stable of decreasing COC concentrations in groundwater over time and with distance away from the source at appropriate monitoring or sampling points.

Based on SWG's review of the current and historical groundwater data, COC concentrations exhibit a decreasing trend in groundwater samples collected during sample events conducted in 2003 to 2005.

7.0 FINDINGS AND RECOMMENDATIONS

SWG's field activities were conducted on July 25, 2005 by Mr. B. Chris Mitchell, an SWG environmental professional. As part of the approved scope of work, one (1) boring was advanced and converted to a permanent groundwater monitoring well. Boring MW-3R was advanced adjacent to monitoring well MW-3, previously installed by ARCO.

Based on SWG's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's *Remediation Action Levels*, the identified ethylbenzene concentration associated with the soil sample collected from soil boring MW-3R does not exceed the remediation action level of 50 mg/kg for Total BTEX.

Based on SWG's comparison of the identified petroleum hydrocarbon constituent concentrations to the OCD's *Remediation Action Levels*, the identified TPH DRO concentration associated with the soil sample collected from soil boring MW-3R exceeds the remediation action level of 100 mg/kg. However, based on the results of the TX 1005/1006 analysis, TPH concentrations were not identified above the laboratory method detection limits.

In addition, SWG compared the identified TPH concentrations to the New Mexico Environmental Department *TPH Screening Guidelines* dated June 24, 2003. Due to the absence of TPH Screening Values for crude oil, SWG compared the identified TPH concentrations to the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel. Based on the laboratory analytical results, the TPH DRO concentration identified in the soil sample collected from soil boring MW-3R does not exceed the lower of the published NMED Screening Guidelines (Residential Direct Exposure) for Diesel #2, #3/#6 Fuel Oil, Kerosene and Jet Fuel of 880 mg/kg.

Based on the laboratory analytical results, TPH GRO/DRO concentrations were identified in the groundwater sample collected from monitoring well MW-3R; however, the identified concentrations do not exceed the applicable NMWQC Groundwater Water Standards.

Based on SWG's review of the historic and current laboratory analytical results, the primary lines of evidence with regard to natural attenuation of chemicals of concern (COCs) demonstrate a clear trend of stable of decreasing COC concentrations in groundwater over time and with distance away from potential source(s).

Based on the results of this SESI, SWG presents the following recommendations:

- Report the results of the investigation to the New Mexico Energy, Minerals and Natural Resources Department OCD and coordinate site activities through the OCD;

- Based on the COC concentrations identified in the on-site soil and groundwater, the trend of decreasing COC concentrations in groundwater over time, the absence of beneficial use of groundwater in the vicinity of monitoring well MW-3R, the anticipated future use of the site (crude oil pipeline facility) and the direction of groundwater flow, SWG recommends TEPPCO request regulatory closure from the NMEMNRD OCD in accordance with Section VII of the OCD's *Guidelines for Remediation of Leaks, Spills & Releases* dated August 13, 1993;

- If soils or groundwater located on the site are to be disturbed during future excavations or construction activities, proper procedures should be followed with respect to worker health and safety, and any affected soil or groundwater encountered should be properly characterized, treated and/or disposed in accordance with applicable local, state or federal regulations.

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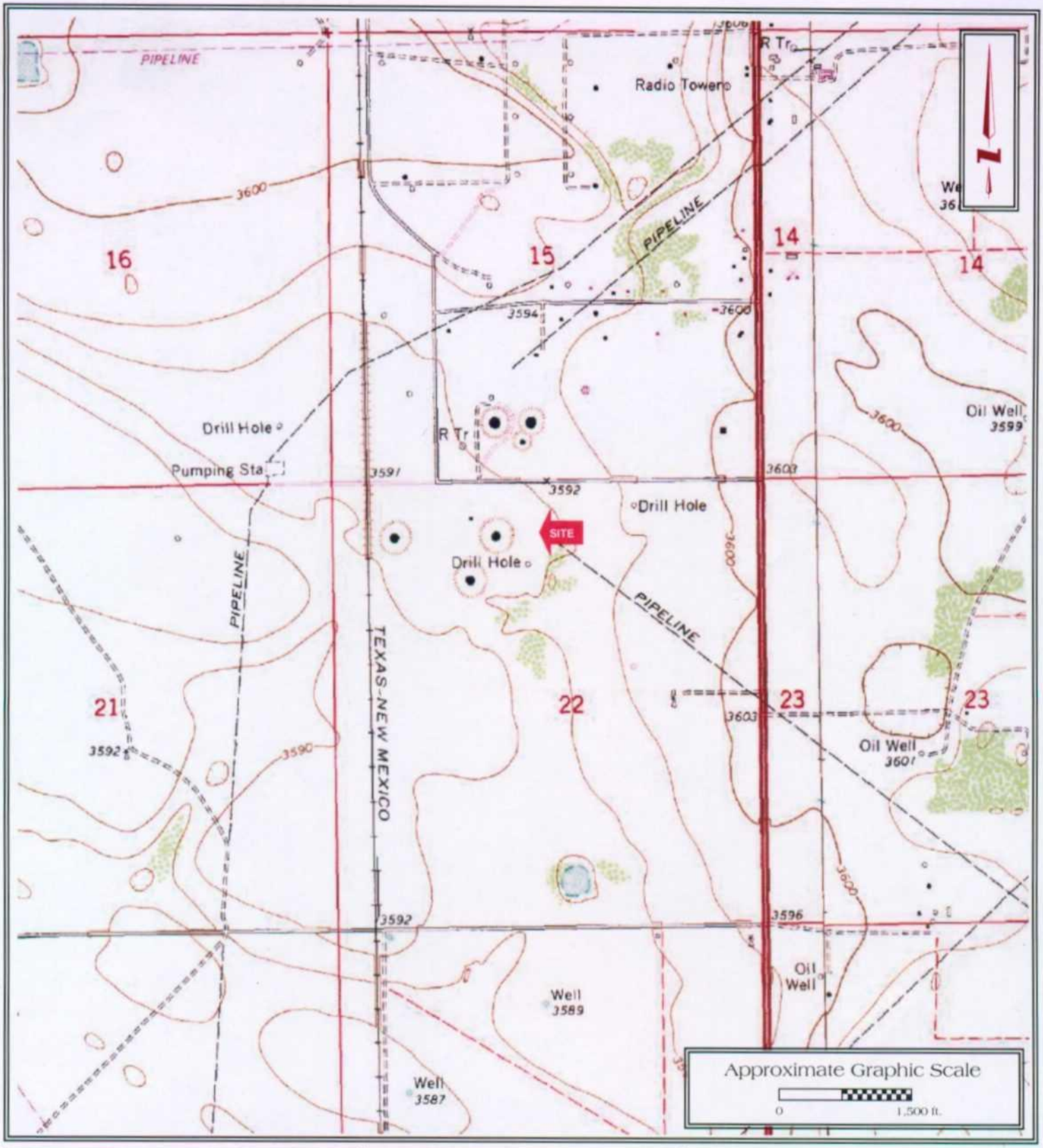
APPENDIX A

Figures



Supplemental LSI
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico

SWG Project No. 0105013

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FIGURE 1
Topographic Map
Hobbs, NM Quadrangle
Contour Interval - 10 Feet
1979

Supplemental LSI

TEPPCO Hobbs Station

Off County Road 61

N 32° 39.135'; W 103° 8.373'

Hobbs, Lea County, New Mexico

SWG Project No. 0105013

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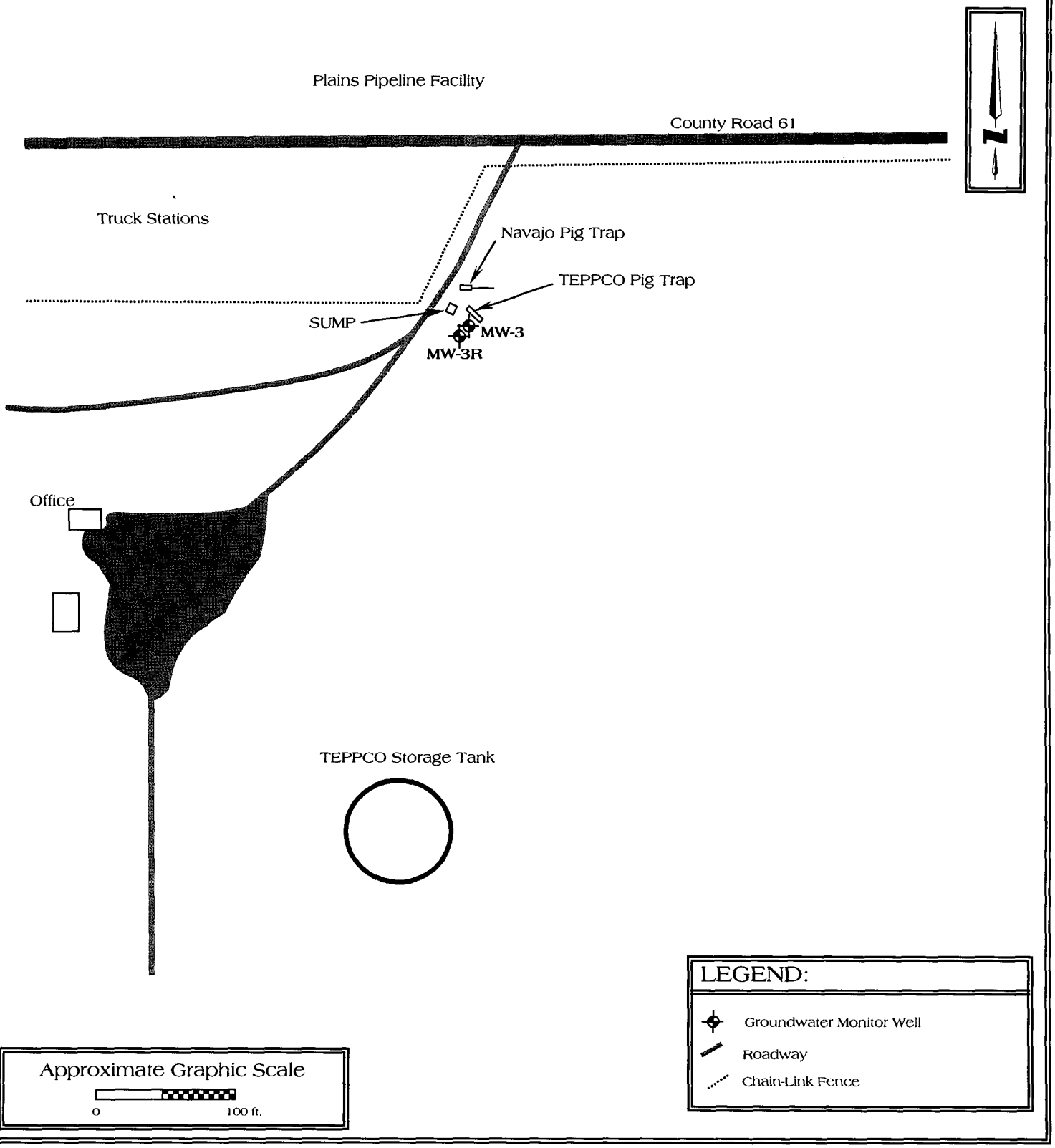
FIGURE 2

Site Vicinity Map

2002 Aerial Photograph

Source: USGS



Supplemental LSI

TEPPCO Hobbs Station

Off County Road 61

N 32° 39.135'; W 103° 8.373'

Hobbs, Lea County, New Mexico

SWG Project No. 0105013

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FIGURE 3

Site Plan

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APPENDIX B

Tables

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TABLE 1
SOIL ANALYTICAL RESULTS

Sample I.D.	Date	Sample Depth (feet)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (µg/kg)	Total BTEX (µg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH (C_6 to C_{12}) (mg/kg)	TPH (>C_{12} to C_{28}) (mg/kg)	TPH (>C_{28} to C_{35}) (mg/kg)	TPH (C_6 to C_{35}) (mg/kg)
New Mexico Energy, Minerals & Natural Resources Department, Oil Conservation Division, Remediation Action Level			10,000	NE	NE	NE	50,000	100	100	100	100		
MW-1	3.19.03	35 to 36	<10.0	<10.0	<10.0	<30.0	<60.0	<1.0	5.13	NA	NA	NA	NA
MW-2	3.19.03	34 to 35	<10.0	<10.0	57.9	<30.0	58	12.6	621	NA	NA	NA	NA
MW-3R	7.25.05	36 to 37	<49	<98.6	540	<296	540	11	730	<60	<60	<60	<60
MW-4	3.20.03	36 to 37	<10.0	<10.0	<10.0	<30.0	<60.0	<1.0	<2.9	NA	NA	NA	NA
B-5	3.19.03	14 to 15	<10.0	<10.0	<10.0	<30.0	<60.0	<1.0	5.77	NA	NA	NA	NA

NA= Not Analyzed

TABLE 2
SOIL ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Sample I.D.	Date	Sample Depth (feet)	Constituent	Observed Concentration (mg/kg)	New Mexico Energy, Minerals & Natural Resources Department, Oil Conservation Division, Remediation Action Level	New Mexico Environment Department, Tier 1 Soil Concentrations Protective of Groundwater - No Transport Zone In The Unsaturated Zone
MW-2	3.19.03	34 to 35	Acenaphthene	0.489	NE	187.95
			Acenaphthylene	0.291	NE	NE
			Anthracene	0.193	NE	4499.81
			Benzo(a)anthracene	<0.0417	NE	7.48
			Benzo(a)pyrene	<0.0417	NE	4.74
			Benzo(b)fluoranthene	0.0512	NE	25.68
			Benzo(g,h,i)perylene	0.0483	NE	NE
			Benzo(k)fluoranthene	0.105	NE	25.68
			Chrysene	0.102	NE	810.27
			Dibenzo(a,h)anthracene	0.0288	NE	3.74
			Fluoranthene	0.57	NE	1247.59
			Fluorene	<0.00833	NE	196.12
			Indeno(1,2,3-cd)pyrene	0.244	NE	NE
			Naphthalene	<0.0417	NE	0.68
			Phenanthrene	0.296	NE	270.07
			Pyrene	0.023	NE	1301.71

NE = Not Established

TABLE 3
SOIL ANALYTICAL RESULTS
PETROLEUM HYDROCARBON MASS FRACTIONS

Sample ID	Date	Sample Depth	(TX 1005) TPH Result C_6 - C_{35} (mg/Kg)	Hydrocarbon Fraction	Observed Concentration (mg/Kg)	Mass Fraction (mg/Kg)	Mass Fraction Total
MW-3R	7.25.05	36 to 37	<60	Aliphatic C6	<60	0.00E+00	0.00E+00
				Aliphatic C6-C8	<60	0.00E+00	
				Aliphatic >C8-C10	<60	0.00E+00	
				Aliphatic >C10-C12	<60	0.00E+00	
				Aliphatic >C12-C16	<60	0.00E+00	
				Aliphatic >C16-C21	<60	0.00E+00	
				Aliphatic >C21-C35	<60	0.00E+00	
				Aromatic C7-C8	<60	0.00E+00	
				Aromatic >C8-C10	<60	0.00E+00	
				Aromatic >C10-C12	<60	0.00E+00	
				Aromatic >C12-C16	<60	0.00E+00	
				Aromatic >C16-C21	<60	0.00E+00	
				Aromatic >C21-C35	<60	0.00E+00	

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TABLE 4
GROUNDWATER ANALYTICAL RESULTS

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L	TPH DRO (mg/L
New Mexico Water Quality Commission (NMWQC) Ground Water Standards		10	750	750	620	NE	NE
Monitoring Wells Intsalled by ARCO							
MW-1	5.11.04	<1.0	<1.0	<1.0	<3.0	NA	0.124
MW-2	5.11.04	<1.0	<1.0	<1.0	<3.0	NA	<0.10
MW-3	3.20.03	63.7	2.49	197	6.23	1.95	18
	5.11.04	Insufficent Water Volume for Sample Collection					
Monitoring Wells Intsalled by TEPPCO							
MW-1	3.20.03	<1.0	<1.0	<1.0	<3.0	<0.05	2.44
	5.11.04	<1.0	<1.0	<1.0	<3.0	<0.05	1.31
MW-2	3.20.03	<1.0	<1.0	<1.0	<3.0	<0.05	0.493
	5.11.04	<1.0	<1.0	<1.0	<3.0	<0.05	<0.10
MW-3R	7.25.05	<2.0	<2.0	<2.0	<6.0	0.074	2.4
MW-4	3.20.03	<1.0	<1.0	<1.0	<3.0	<0.05	0.829
	5.11.04	<1.0	<1.0	<1.0	<3.0	<0.05	<0.10

NE = Not Established

TABLE 5
GROUNDWATER ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Sample I.D.	Date	Constituent	Observed Concentration (µg/L)	New Mexico Energy, Minerals & Natural Resources Department, Oil Conservation Division, Remediation Action Level	New Mexico Water Quality Control Commission Ground Water Standards
MW-3	3.20.03	Acenaphthene	<2.5	NE	-
		Acenaphthylene	4.85	NE	-
		Anthracene	15	NE	-
		Benzo(a)anthracene	0.29	NE	-
		Benzo(a)pyrene	0.394	NE	0.7
		Benzo(b)fluoranthene	<0.01	NE	-
		Benzo(g,h,i)perylene	0.545	NE	-
		Benzo(k)fluoranthene	1.32	NE	-
		Chrysene	1.7	NE	-
		Dibenzo(a,h)anthracene	0.623	NE	-
		Fluoranthene	16.1	NE	-
		Fluorene	9.18	NE	-
		Indeno(1,2,3-cd)pyrene	2.1	NE	-
		Naphthalene	29	NE	30
		Phenanthrene	7.67	NE	-
		Pyrene	0.506	NE	-

NE = Not Established

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APPENDIX C

Water Well Search Report

Banks Information Solutions, Inc.

Water Well Report™

Wednesday, September 21, 2005

CLIENT
SOUTHWEST GEOSCIENCE- DALLAS 3030 LBJ Freeway, # 700 Dallas, TX 75234

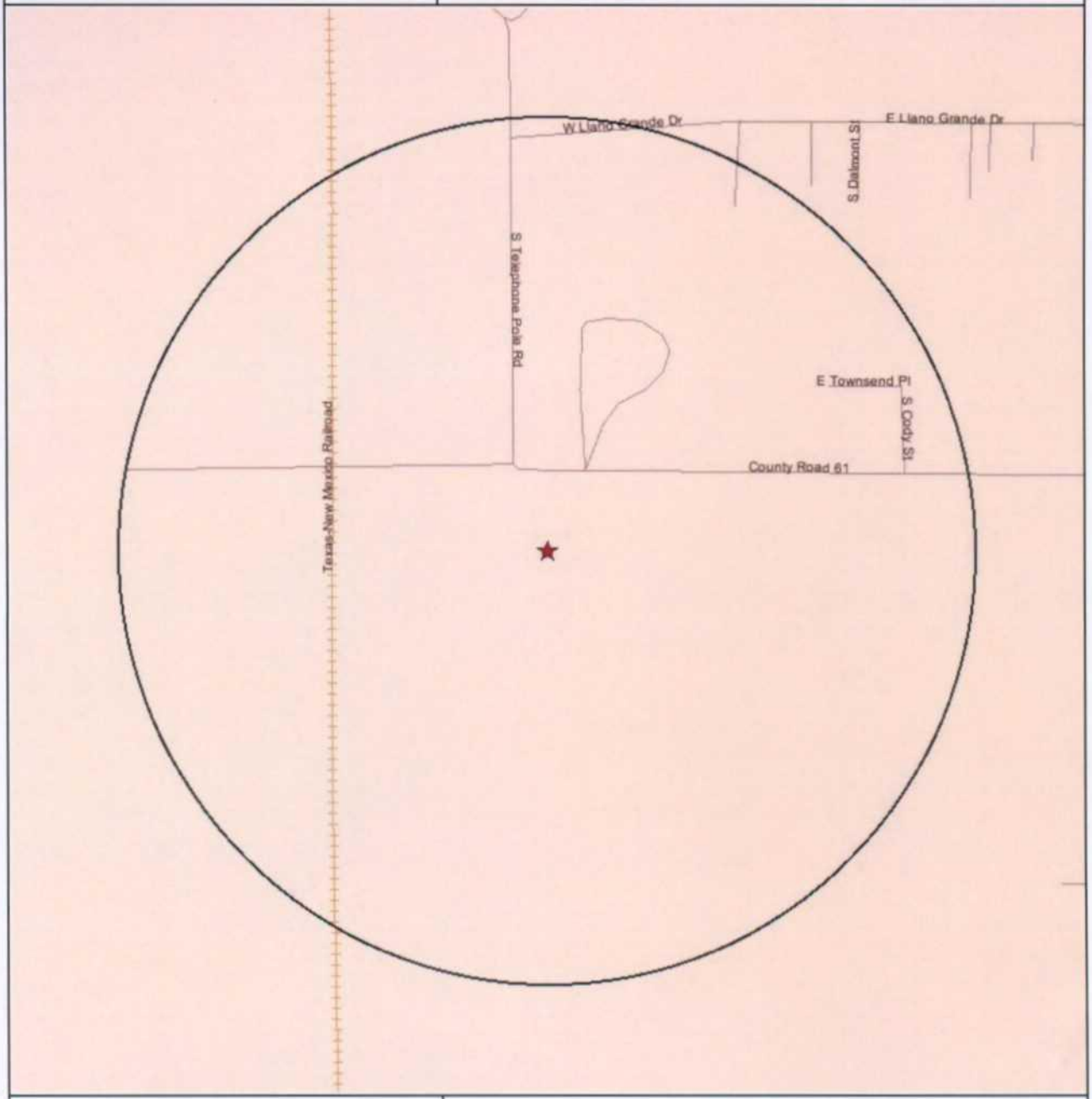
SITE
TEPPCO Hobbs Station Off County Road 61 Hobbs, NM 88240 092105-5 PO #: 0105013

700 N Lamar Suite 200 Austin, Texas 78703
PH 512.478.0059 FAX 512.478.1433 E-mail banks@banksinfo.com

Banks Information Solutions, Inc.

Water Well Report™

Map of Wells within 0.5 Mile(s)



Site	Park	County
Site	School	State
Cluster	Cemetary	Urban Area
Limited Access Hwy	Building	Open Space
Primary Highway	Railroad	Educational/Religious
Secondary Highway	Church	Water Bodies
Roads	Trail	Multihousehold
Hospital	Bridge	Military
Airport	Tower	Custodial Facility

One inch = 0.19 miles

TEPPCO Hobbs Station

Banks Information Solutions, Inc.
700 N Lamar Suite 200 Austin, Texas 78703
PH 512-478-0059 FAX 512-478-1433
E-Mail: banks@banksinfo.com

N

Banks Information Solutions, Inc.	**Water Well Report™**
	DETAILS

Banks Information Solutions, Inc. Performed A Thorough Groundwater Well Search And No Wells Were Found.

WRONG,
DOZENS OF
WATER WELLS
@ SEO

700 N Lamar Suite 200 Austin, Texas 78703
PH 512.478.0059 FAX 512.478.1433 E-mail banks@banksinfo.com

Banks Information Solutions, Inc.

Water Well Report™

DISCLAIMER

Banks Information Solutions, Inc. Water Well Report™ is prepared from existing state water well databases and/or additional file data/records research conducted at the State Engineers Office located in Santa Fe, New Mexico. In New Mexico, water wells are located within a grid system using section, township, and range. The locations of these wells on the enclosed map were plotted using a GIS program, ArcView 3.2, with the aid of the section, township, and range of the wells provided by the drillers logs.

Banks Information Solutions, Inc. has performed a thorough and diligent search of all groundwater well information provided and recorded with the New Mexico State Engineers Office. All mapped locations are based on information obtained from the NMSEO. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Information Solutions, Inc. cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the New Mexico State Engineer regulatory authorities.

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PH 512.478.0059 FAX 512.478.1433 E-mail banks@banksinfo.com

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APPENDIX D

Soil Boring/Monitor Well Logs

Client: TEPPCO Crude Pipeline, LP
Project Name: Hobbs Station
Project Location: Off County Road 61
Project Manager: B. Chris Mitchell

SOIL BORING/MONITOR WELL LOG

DRILLING & SAMPLING INFORMAITON

Date Started: 7.25.05
Date Completed: 7.25.05
Drilling Company: Straub Corporation
Driller: Martin Straub
Geologist: B. Chris Mitchell
Boring Method: AR
Bore Hole Dia: 8"

Soil Boring / Monitor Well Number: MW-3R
Project #: 0105013
Drawn By: BJN
Aprroved By: BCM
Well Diam: 2-inch
Screen Size: 0.010-inch
Screen Length: 15 feet
Casing Length: 33 feet

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▼ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION SURFACE ELEVATION:	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	Silty Clay, Brown, Dry, No Odor							0	
	Caliche, Tan, Dry, No Odor							0	
								0	
								0	
								0	
			5					0	
								0	
								0	
								0	
			10					0	
								0	
								0	
								0	
								0	
			15			100%		0	
								0	
								0	
								0	
	Caliche, Pale Pink, Dry, No Odor							0	
			20					0	
								0	
								0	
								0	
								0	
			25					0	
								0	
								0	
								6	
								4	
			30			100%		17	
						100%		94	
						100%		165	
	Quartzite, Reddish Purple, Dry, Slight Petroleum Odor					100%		NR	
	Sand, Reddish Tan, Moist, Petroleum Odor					100%		63	

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Client: TEPPCO Crude Pipeline, LP
Project Name: Hobbs Station
Project Location: Off County Road 61
Project Manager: B. Chris Mitchell

SOIL BORING/MONITOR WELL LOG

DRILLING & SAMPLING INFORMAITON

Soil Boring / Monitor Well Number: MW-3R
Date Started: 7.25.05
Project #: 0105013
Date Completed: 7.25.05
Drawn By: BJN
Drilling Company: Straub Corporation
Aprroved By: BCM
Driller: Martin Straub
Geologist: B. Chris Mitchell
Well Diam: 2-inch
Boring Method: AR
Screen Size: 0.010-inch
Bore Hole Dia: 8"
Screen Length: 15 feet
Casing Length: 33 feet

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION SURFACE ELEVATION:	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	Sand, Reddish Tan, Moist to Wet, Petroleum Odor			MW-3R (36-37)		100%	▽	189	
						100%		1342	
						100%		11	
						100%		5	
			40			100%		3	
	Sand w/ Fragmented Sandstone, Red, Dry, No Odor					100%		4	
						100%		2	
								0	
								0	
			45			100%		0	
								0	
								0	
	Bottom of Boring @ 48'								
			50						
			55						
			60						
			65						

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APPENDIX E

Laboratory Data Reports & Chain-of-Custody Documentation

SEVERN TRENT STL

ANALYTICAL REPORT

JOB NUMBER: 231322

Prepared For:

Southwest Geoscience
3030 LBJ Freeway
Suite 700
Dallas, TX 75234

Attention: Chris Mitchell

Date: 08/03/2005

Signature

8/9/05
Date

Name: Chip Meador

Title: Laboratory Director

E-Mail: cmeador@stl-inc.com

Severn Trent Laboratories
1733 N. Padre Island Drive
Corpus Christi, TX 78408

PHONE: 361/289-2673
FAX..: 361/289-2471

TOTAL # OF PAGES 14

SEVERN TRENT STL

SAMPLE INFORMATION
Date: 08/03/2005

Job Number.: 231322
Customer...: Southwest Geoscience
Attn.....: Chris Mitchell

Project Number.....: 98000082
Customer Project ID....: 0105017
Project Description....: PROJECT-TLK

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
231322-1	MW-3R	Water	07/25/2005	15:45	07/26/2005	09:45

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SEVERN TRENT STL

LABORATORY TEST RESULTS

Job Number: 231322 Date: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Customer Sample ID: MW-3R
Date Sampled.....: 07/25/2005
Time Sampled.....: 15:45
Sample Matrix.....: Water

Laboratory Sample ID: 231322-1
Date Received.....: 07/26/2005
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW846 8015BMod	Total Volatile Petroleum Hydrocarbons					
	TVPH - Gasoline Range Organics	74	50	ug/L	08/01/05	rh
SW-846 8021B	Volatile Organics - Aromatics					
	Benzene	ND	2	ug/L	07/28/05	rh
	Ethylbenzene	ND	2	ug/L	07/28/05	rh
	Toluene	ND	2	ug/L	07/28/05	rh
	Xylenes (total)	ND	6	ug/L	07/28/05	rh
SW-846 3520C	Extraction (Continuous Liq/Liq) DROs					
	Continuous Liquid-Liquid Extraction	Complete			07/27/05	scm
SW846 8015BMod	Total Extractable Petroleum Hydrocarbons					
	TEPH - Diesel Range Organics	2.4	0.50	mg/L	07/28/05	dml

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW846 8015BMod Units.....: ug/L Analyst...: rh
Method Description.: Total Volatile Petroleum Hydrocarbons Batch.....: 109182

CCV	Continuing Calibration Verification	GAS050505C			08/01/2005	0901

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	531.694		500.000000		106.3	%	75-125

CCV	Continuing Calibration Verification	GAS050505C			08/01/2005	1159

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TVPH - Gasoline Range Organics	498.539		500.000000		99.7	%	75-125

MB	Method Blank	080105			08/01/2005	1000

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	12.794						

MS	Matrix Spike	GAS050505D	231322-1		08/01/2005	1100

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TVPH - Gasoline Range Organics	618.305		500.000000	74.304	108.8	%	60-137

MSD	Matrix Spike Duplicate	GAS050505D	231322-1		08/01/2005	1129

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	571.680	618.305	500.000000	74.304	99.5	%	60-137
					7.8	R	30

SB	Spiked Blank	GAS050505D			08/01/2005	0931

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	536.550		500.000000		107.3	%	41-135

Test Method.....: SW-846 8021B Units.....: ug/L Analyst...: rh
Method Description.: Volatile Organics - Aromatics Batch.....: 109107

CCV	Continuing Calibration Verification	V070105CCC			07/28/2005	0905

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	117.602		100.000000		117.6	%	80-120
Ethylbenzene	103.947		100.000000		103.9	%	80-120
tert-Butyl Methyl Ether (MTBE)	96.367		100.000000		96.4	%	80-120

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V070105CCC			07/28/2005	0905

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Toluene	111.091		100.000000		111.1	%	80-120
Xylenes (total)	311.837		300.000000		103.9	%	80-120
m&p-Xylenes	208.754		200.000000		104.4	%	80-120
o-Xylene	103.083		100.000000		103.1	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V070105CCC			07/28/2005	2052

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	114.758		100.000000		114.8	%	80-120
Ethylbenzene	100.620		100.000000		100.6	%	80-120
tert-Butyl Methyl Ether (MTBE)	85.946		100.000000		85.9	%	80-120
Toluene	106.982		100.000000		107.0	%	80-120
Xylenes (total)	299.961		300.000000		100.0	%	80-120
m&p-Xylenes	200.533		200.000000		100.3	%	80-120
o-Xylene	99.428		100.000000		99.4	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V070105CCC			07/29/2005	0933

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	110.064		100.000000		110.1	%	80-120
Ethylbenzene	95.910		100.000000		95.9	%	80-120
tert-Butyl Methyl Ether (MTBE)	81.175		100.000000		81.2	%	80-120
Toluene	102.300		100.000000		102.3	%	80-120
Xylenes (total)	285.633		300.000000		95.2	%	80-120
m&p-Xylenes	190.532		200.000000		95.3	%	80-120
o-Xylene	95.101		100.000000		95.1	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	072805			07/28/2005	1054

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	0.059						
Ethylbenzene	0.149						
tert-Butyl Methyl Ether (MTBE)	ND						
Toluene	0.096						
Xylenes (total)	0.413						
m&p-Xylenes	0.291						
o-Xylene	0.122						

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	072805			07/28/2005	2146

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	0.137						
Ethylbenzene	0.272						
tert-Butyl Methyl Ether (MTBE)	ND						
Toluene	0.207						
Xylenes (total)	0.806						

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	072805			07/28/2005	2146

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
m&p-Xylenes	0.574						
o-Xylene	0.232						

MS	Matrix Spike	V070105SBW	231330-2		07/29/2005	0744

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	20.912		20.000000	0.021	104.5	%	50-147
Ethylbenzene	16.844		20.000000	0.027	84.1	%	35-147
tert-Butyl Methyl Ether (MTBE)	90.833		100.000000	ND	90.8	%	48-150
Toluene	18.684		20.000000	0.019	93.3	%	40-143
Xylenes (total)	36.679		40.000000	0.067	91.5	%	43-149
m&p-Xylenes	18.535		20.000000	0.065	92.3	%	25-150
o-Xylene	18.144		20.000000	0.002	90.7	%	57-138

MSD	Matrix Spike Duplicate	V070105SBW	231330-2		07/29/2005	0839

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	20.996	20.912	20.000000	0.021	104.9	%	50-147
					0.4	R	20
Ethylbenzene	17.106	16.844	20.000000	0.027	85.4	%	35-147
					1.5	R	20
tert-Butyl Methyl Ether (MTBE)	84.430	90.833	100.000000	ND	84.4	%	48-150
					7.3	R	20
Toluene	18.930	18.684	20.000000	0.019	94.6	%	40-143
					1.3	R	20
Xylenes (total)	37.306	36.679	40.000000	0.067	93.1	%	43-149
					1.7	R	20
m&p-Xylenes	18.837	18.535	20.000000	0.065	93.9	%	25-150
					1.6	R	20
o-Xylene	18.469	18.144	20.000000	0.002	92.3	%	57-138
					1.8	R	20

SB	Spiked Blank	V070105SBW			07/28/2005	0959

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene	23.811		20.000000		119.1	%	78-121
Ethylbenzene	21.220		20.000000		106.1	%	72-120
tert-Butyl Methyl Ether (MTBE)	107.930		100.000000		107.9	%	79-132
Toluene	22.301		20.000000		111.5	%	72-120
Xylenes (total)	45.44		40.000000		113.6	%	81-127
m&p-Xylenes	23.544		20.000000		117.7	%	80-129
o-Xylene	21.896		20.000000		109.5	%	80-127

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW846 8015BMod. Units.....: mg/L Analyst...: dml
Method Description.: Total Extractable Petroleum Hydrocarbons Batch.....: 109091

LCD	Laboratory Control Sample Duplicate	DR72705X			07/28/2005	1123

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
EPH - Diesel Range Organics	805.548	714.981	1000.000000		80.6	%	29-120
					11.9	R	30

LCS	Laboratory Control Sample	DR72705X			07/28/2005	1118

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
EPH - Diesel Range Organics	714.981		1000.000000		71.5	%	29-120

MB	Method Blank	072705			07/28/2005	1114

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
EPH - Diesel Range Organics	ND						

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Method.....: Total Extractable Petroleum Hydrocarbons Method Code.....: 8015DR
Batch.....: 109091 Analyst.....: dml Equipment Code: TPH #4

Surrogate	Units
o-Terphenyl (Surrogate)	mg/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		22.563	50.000	45	26-141		07/28/2005	1114
		LCS		31.206	50.000	62	26-141		07/28/2005	1118
		LCD		34.464	50.000	69	26-141		07/28/2005	1123
231322-1			1	30.751	50.000	62	26-141		07/28/2005	1127

Method.....: Volatile Organics - Aromatics Method Code.....: 8020
Batch.....: 109107 Analyst.....: rh Equipment Code: BTEX#4GC

Surrogate	Units
BFB (Surrogate)	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		CCV	1.00	20.131	20.000000	100.7	66-120		07/28/2005	0905
		SB	1.00	18.125	20.000000	90.6	66-120		07/28/2005	0959
		MB	1.00	17.703	20.000000	88.5	66-120		07/28/2005	1054
231326-1			1.00	17.911	20.000000	89.6	66-120		07/28/2005	1148
231326-2			1.00	17.362	20.000000	86.8	66-120		07/28/2005	1242
231322-1			1.00	17.508	20.000000	87.5	66-120		07/28/2005	1337
231330-2			1.00	17.206	20.000000	86.0	66-120		07/28/2005	1431
231330-3			1.00	17.524	20.000000	87.6	66-120		07/28/2005	1526
231330-4			1.00	17.356	20.000000	86.8	66-120		07/28/2005	1620
231330-5			1.00	17.432	20.000000	87.2	66-120		07/28/2005	1714
231330-6			1.00	17.037	20.000000	85.2	66-120		07/28/2005	1809
231332-1			1.00	16.886	20.000000	84.4	66-120		07/28/2005	1903
231332-2			1.00	17.370	20.000000	86.8	66-120		07/28/2005	1957
		CCV	1.00	18.822	20.000000	94.1	66-120		07/28/2005	2052
		MB	1.00	16.605	20.000000	83.0	66-120		07/28/2005	2146
231332-3			1.00	16.907	20.000000	84.5	66-120		07/28/2005	2241
231332-4			1.00	16.829	20.000000	84.1	66-120		07/28/2005	2335
231332-5			1.00	16.804	20.000000	84.0	66-120		07/29/2005	0029
231332-6			1.00	16.636	20.000000	83.2	66-120		07/29/2005	0124
231341-4			1.00	16.808	20.000000	84.0	66-120		07/29/2005	0218
231341-5			1.00	16.938	20.000000	84.7	66-120		07/29/2005	0312
231341-6			1.00	16.662	20.000000	83.3	66-120		07/29/2005	0407
231341-7			1.00	16.525	20.000000	82.6	66-120		07/29/2005	0501
231326-3			1.00	16.550	20.000000	82.8	66-120		07/29/2005	0556
231349-4			1.00	16.730	20.000000	83.7	66-120		07/29/2005	0650
231330-2		MS	1.00	17.195	20.000000	86.0	66-120		07/29/2005	0744
231330-2		MSD	1.00	17.205	20.000000	86.0	66-120		07/29/2005	0839
		CCV	1.00	18.297	20.000000	91.5	66-120		07/29/2005	0933

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 231322 Report Date.: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Surrogate	Units
Trifluorotoluene	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		CCV	1.00	21.571	20.000000	107.9	71-120		07/28/2005	0905
		SB	1.00	18.454	20.000000	92.3	71-120		07/28/2005	0959
		MB	1.00	17.745	20.000000	88.7	71-120		07/28/2005	1054
231326-1			1.00	17.626	20.000000	88.1	71-120		07/28/2005	1148
231326-2			1.00	17.694	20.000000	88.5	71-120		07/28/2005	1242
231322-1			1.00	18.125	20.000000	90.6	71-120		07/28/2005	1337
231330-2			1.00	17.607	20.000000	88.0	71-120		07/28/2005	1431
231330-3			1.00	17.703	20.000000	88.5	71-120		07/28/2005	1526
231330-4			1.00	17.939	20.000000	89.7	71-120		07/28/2005	1620
231330-5			1.00	17.886	20.000000	89.4	71-120		07/28/2005	1714
231330-6			1.00	17.406	20.000000	87.0	71-120		07/28/2005	1809
231332-1			1.00	17.023	20.000000	85.1	71-120		07/28/2005	1903
231332-2			1.00	17.231	20.000000	86.2	71-120		07/28/2005	1957
		CCV	1.00	19.136	20.000000	95.7	71-120		07/28/2005	2052
		MB	1.00	17.126	20.000000	85.6	71-120		07/28/2005	2146
231332-3			1.00	17.202	20.000000	86.0	71-120		07/28/2005	2241
231332-4			1.00	16.974	20.000000	84.9	71-120		07/28/2005	2335
231332-5			1.00	16.899	20.000000	84.5	71-120		07/29/2005	0029
231332-6			1.00	16.835	20.000000	84.2	71-120		07/29/2005	0124
231341-4			1.00	16.836	20.000000	84.2	71-120		07/29/2005	0218
231341-5			1.00	17.086	20.000000	85.4	71-120		07/29/2005	0312
231341-6			1.00	16.812	20.000000	84.1	71-120		07/29/2005	0407
231341-7			1.00	16.743	20.000000	83.7	71-120		07/29/2005	0501
231326-3			1.00	16.829	20.000000	84.1	71-120		07/29/2005	0556
231349-4			1.00	17.396	20.000000	87.0	71-120		07/29/2005	0650
231330-2		MS	1.00	16.757	20.000000	83.8	71-120		07/29/2005	0744
231330-2		MSD	1.00	16.933	20.000000	84.7	71-120		07/29/2005	0839
		CCV	1.00	18.424	20.000000	92.1	71-120		07/29/2005	0933

Method.....: Total Volatile Petroleum Hydrocarbons Method Code.....: 8015G
Batch.....: 109182 Analyst.....: rh Equipment Code: BTEX#4GC

Surrogate	Units
BFB (Surrogate)	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		CCV		24.052	20.00	120.3	41-135		08/01/2005	0901
		SB		20.196	20.00	101.0	41-135		08/01/2005	0931
		MB		21.381	20.00	106.9	41-135		08/01/2005	1000
231322-1				24.426	20.00	122.1	41-135		08/01/2005	1030
231322-1		MS		23.958	20.00	119.8	41-135		08/01/2005	1100
231322-1		MSD		23.547	20.00	117.7	41-135		08/01/2005	1129
		CCV		20.472	20.00	102.4	41-135		08/01/2005	1159

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 231322 Date: 08/03/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Lab ID: 231322-1 Client ID: MW-3R Date Recvd: 07/26/2005 Sample Date: 07/25/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 3520C	Extraction (Continuous Liq/Liq) DROs	1	109021		07/27/2005	1100	
SW846 8015BMod	Total Extractable Petroleum Hydrocarbons	1	109091		07/28/2005	1127	1
SW846 8015BMod	Total Volatile Petroleum Hydrocarbons	1	109182		08/01/2005	1030	
SW-846 8021B	Volatile Organics - Aromatics	1	109107		07/28/2005	1337	1.00

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/03/2005

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III
(3) Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992
(4) Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater, Federal Register, Vol. 49, No. 209, October 1984 and 40 CFR Part 136 amendments
(5) EPA 600/2-78-054, Field and Laboratory Methods Applicable to Overburdens and Minesoils
(6) Methods of Soil Analysis, American Society of Agronomy, Agronomy No. 9, 1965
(7) ASTM, Section 11 Water and Environmental Technology, Volume 11.01 Water (1), 1991
(8) American Society for Testing and Materials, Petroleum Products, Lubricants, and Fossil Fuels, Section 5, Volumes 05.01 - 05.05
(9) Hach Handbook of Water Analysis, 1979

Comments:

The test results in this report meet all NELAP requirements for parameters for which accreditation is held. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

According to 40CFR Part 136.3, pH, total residual chlorine, dissolved oxygen, sulfite, and temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH, Client Provided), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Data in the QC report may differ from final results due to digestion and/or dilution of sample into analytical ranges. The "Time Analyzed" may not be the actual time of analysis. The "Date Analyzed" is the actual date of analysis. Sludge samples are reported on a wet weight basis (i.e., not corrected for percent moisture) unless otherwise indicated.

Quality Control acceptance criteria are based either on limits specified in the referenced method or on actual laboratory performance.

All data is reported on sample "as received" unless noted.

Sample IDs with a "-00" at the end indicate a blank spike or blank spike duplicate associated with the numbered sample.

SAMPLE RESULT IDENTIFICATION

ND	= Not detected at a value greater than the reporting limit
TNTC	= Too numerous to count

BLANK QC SAMPLE IDENTIFICATION

MB	Method Blank
ICB	Initial Calibration Blank
CCB	Continuing Calibration Blank

SPIKE QC SAMPLE IDENTIFICATION

MS	Method (Matrix) Spike
MSD	Method (Matrix) Spike Duplicate
PDS	Post Digestion/Distillation Spike
SB	Spiked Blank
SBD	Spiked Blank Duplicate

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/03/2005

REFERENCE STANDARD QC SAMPLE IDENTIFICATION

LCS	Laboratory Control Standard
RS	Reference Standard
ICV	Initial Calibration Verification Standard
CCV	Continuing Calibration Verification Standard
ISA/ISB	ICP Interference Check Sample
DSC	Distilled Standard Check

DUPLICATE QC SAMPLE IDENTIFICATION

MD	Method (Matrix) Duplicate
ED	Extraction Duplicate
DD	Digestion Duplicate
PDD	Post Digestion Duplicate
PSD	Post Digestion/Distillation Spike Duplicate

Analyses performed by a subcontract laboratory are indicated on the analytical and/or quality control reports under "technician" using the following codes:

SUBCONTRACT LABORATORIES

Severn Trent Laboratories:

Los Angeles, CA	*la	Houston, TX	*he
Aurora, CO	*au	North Canton, OH	*nc
Tampa, FL	*ta	Valparaiso, IN	*vp
Sacramento, CA	*sa	Chicago, IL	*ch
Pensacola, FL	*pe	Tallahassee, FL	*tl

Other:

Client provided data	*cp	Non-STL Subcontract Lab	*xx

EXPLANATION OF QC FLAGS

B - This flag is used to indicate that an analyte is present in the method blank as well as in the sample. It indicates that the client should consider this when evaluating the results.
D - This flag indicates that surrogates were diluted out of calibration range and cannot be quantified.
E - Indicates that a sample result is an estimate because the concentration exceeded the calibration range of the instrument.
F - Indicated that a initial calibration verification or continuing calibration verification recovery is outside the specified quality control limits.
I - Used to indicate matrix interference.
X - Indicates that a surrogate recovery is outside the specified quality control limits.
Y - Used to identify a spike or spike duplicate recovery is outside the specified quality control limits.
Z - Used to indicate a relative percent difference (RPD) for a duplicate analysis is outside the specified quality control limits.
* - Indicates a relative percent difference for a duplicate analysis is outside the specified quality control limits.
^ - Used to indicate that a standard is outside specified quality control limits.

EXPLANATION OF DATA QUALIFIERS

B - Indicates that a value for an inorganic analysis is an estimate. It is used when a compound is determined to be present but at a concentration less than the quantitation limit of the method.
J - Indicates that a value for an organic analysis is an estimate. It is used when a compound is determined to be present based on chromatographic pattern or mass spectral data, but at a concentration less than the quantitation limit of the method. This flag is also used when estimating the concentration of a tentatively identified compound.
U - Indicates that a value is less than the MDL or was not detected.

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SEVERN TRENT **STL**

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: Southwest Geoscience	PROJECT NAME/NUMBER: 0105017
SEND REPORT TO: Chris Mitchell	**BILLING INFORMATION**
ADDRESS: 3030 LBJ Freeway, Suite 700	BILL TO:
Dallas TX 75234	ADDRESS:
PHONE: (214) 722-7537	PHONE:
FAX: (214) 722-7632	FAX: PO NO:

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: TPH GRO (SW-846 #8015-Mod)	TPH DRO (SW-846 #8015-Mod)	BTEX (SW-846 # 8021B)	LAB JOB NO.	REMARKS/PRECAUTIONS
	MW-3R	7.25.05	1545	H_2O	VOA 3/1 um	4°C/HCl	8	/	/	/		

No Further Entries

SAMPLER: B. Chris Mitchell SHIPMENT METHOD: FedEx AIRBILL NO.: 0215

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE: B. Chris		SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: SWG	TIME	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY: FedEx	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE:		SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

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Corpus Christi, TX 78408
Phone: (361) 289-2673 / Fax: (361) 289-2471

STL8222-560 (12/02)

rpjsckl | Job Sample Receipt Checklist Report | V2

Job Number.: 231322 Location.: 57203 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: Date of the Report..: 07/26/2005
Project Number.: 98000082 Project Description.: PROJECT-TLK Project Manager.....: tlk
Customer.....: New Client Contact.: New Client

Questions ?	(Y/N)	Comments
How did samples arrive?	Y	FED EX
Chain-of-Custody Present?	Y	
Custody seal on shipping container?	Y	
...If "yes", custody seal intact?	Y	
Custody seals on sample containers?	N	
...If "yes", custody seal intact?		
Samples chilled?	Y	
Temperature blank in cooler?	Y	
Temp of cooler acceptable? (0.05 to 6.00 deg C)	Y	3.6 C
Samples received intact (good condition)?	Y	
Volatile samples acceptable? (no headspace)	Y	
Correct containers used?	Y	
Adequate sample volume provided?	Y	
Samples preserved correctly?	Y	
Samples received within holding-time?	Y	
Agreement between COC and sample labels?	Y	
Additional		
Comments		
Sample Custodian Signature		

7/26 LP

SEVERN TRENT STL

ANALYTICAL REPORT

JOB NUMBER: 231324

Prepared For:

Southwest Geoscience
3030 LBJ Freeway
Suite 700
Dallas, TX 75234

Attention: Chris Mitchell

Date: 08/19/2005

Signature

Name: Chip Meador

Title: Laboratory Director

E-Mail: cmeador@stl-inc.com

8/22/05
Date

Severn Trent Laboratories
1733 N. Padre Island Drive
Corpus Christi, TX 78408

PHONE: 361/289-2673
FAX..: 361/289-2471

TOTAL # OF PAGES 19

SEVERN TRENT STL

CASE NARRATIVE

Job Number 231324

August 19, 2005

Aromatic Volatile Organic (BTEX) Analysis (EPA 8021B)

Please note that initially the sample analysis for total xylene on STL Corpus Christi 231324 has reportable concentration. Upon review and confirmation by GC/MS the preliminarily reported value was retracted. All associated quality control was acceptable. No deviations from standard operating procedures were noted for this sample delivery group.

Gasoline Range Organics (GRO) Analysis (EPA 8015B mod.)

It was noted during the analysis that the surrogate recoveries for bromofluorobenzene on STL Corpus Christi sample 231324-001 and its method spike (MS)/method spike duplicate (MSD) were outside of the normal laboratory acceptance criteria (QC batch # 109193). It was also noted that the MS/MSD recoveries for this sample were outside of the normal acceptance criteria. It is suspected that the recoveries were due to matrix interferences inherent in the sample. All other associated quality control was acceptable.

Diesel Range Organics (DRO) Analysis (EPA 8015B mod.)

It was noted during the analysis that the surrogate recoveries for o-terphenyl on STL Corpus Christi sample 231324-001 method spike (MS) and method spike duplicate (MSD) were outside of the normal laboratory acceptance criteria (QC batch # 109146). It was also noted that the MS recovery for this sample was outside of the normal acceptance criteria. It is suspected that the recoveries were due to matrix interferences inherent in the sample. All other associated quality control was acceptable.

Please contact me at 361-289-2673 or tkellogg@stl-inc.com if you have further questions or if I can be of further assistance.

Timothy L. Kellogg
Project Manager

SEVERN TRENT STL

SAMPLE INFORMATION
Date: 08/19/2005

Job Number.: 231324
Customer...: Southwest Geoscience
Attn.....: Chris Mitchell

Project Number.....: 98000082
Customer Project ID....: 0105017
Project Description....: PROJECT-TLK

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
231324-1	MW-3R (36-37)	Soil	07/25/2005	13:15	07/26/2005	09:45

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SEVERN TRENT STL

LABORATORY TEST RESULTS

Job Number: 231324 Date: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Customer Sample ID: MW-3R (36-37)
Date Sampled.....: 07/25/2005
Time Sampled.....: 13:15
Sample Matrix.....: Soil

Laboratory Sample ID: 231324-1
Date Received.....: 07/26/2005
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
EPA 160.3 Mod.	% Solids (@ 104 deg. C)	83.2	0.1	%	07/26/05	dev
EPA 160.3 Mod.	Moisture (@ 104 deg. C)	16.8	0.1	%	07/26/05	dev
SW-846 5030B	Methanol Extraction - BTEX	Complete			08/01/05	mal
SW846 8015BMod	Total Volatile Petroleum Hydrocarbons					
	TVPH - Gasoline Range Organics, Solid*	11000	1500	ug/Kg	08/01/05	rh
SW-846 8021B	Volatile Organics - Aromatics					
	Benzene, Solid*	ND	49	ug/Kg	08/01/05	mal
	Ethylbenzene, Solid*	540	49	ug/Kg	08/01/05	mal
	Toluene, Solid*	ND	98.6	ug/Kg	08/01/05	mal
	Xylenes (total), Solid*	ND	296	ug/Kg	08/01/05	mal
SW846 3550B Mo	Extraction (Ultrasonic) DROs					
	Ultrasonic Extraction	Complete			07/28/05	scm
TCEQ TX1006	Petroleum Hydrocarbon Fractionation					
	Fractionation - Soils	Complete			08/11/05	scm
TCEQ TX1006	Characterization of C6 to C35 TPH					
	nC6 Aliphatic, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C6 to C8 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C8 to C10 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C10 to C12 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C12 to C16 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C16 to C21 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C21 to C35 Aliphatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C7 to C8 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C8 to C10 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C10 to C12 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C12 to C16 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C16 to C21 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
	>C21 to C35 Aromatics, Solid*	ND	60	mg/Kg	08/15/05	bec
TCEQ TX1005	Petroleum Hydrocarbons Extraction					
	n-Pentane Extraction - Solids & Wastes	Complete			08/04/05	lpm
SW846 8015BMod	Total Extractable Petroleum Hydrocarbons					
	TEPH - Diesel Range Organics, Solid*	730	20	mg/Kg	07/28/05	dml
TCEQ TX1005	Total Petroleum Hydrocarbons					
	Petroleum Hydrocarbons (C6 to C12), Solid*	ND	60	mg/Kg	08/05/05	dml
	Petroleum Hydrocarbons (>C12 to C28), Solid*	ND	60	mg/Kg	08/05/05	dml
	Petroleum Hydrocarbons (>C28 to C35), Solid*	ND	60	mg/Kg	08/05/05	dml
	TPH (C6 to C35), Solid*	ND	60	mg/Kg	08/05/05	dml

* In Description = Dry Wgt.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Test Method.....: EPA 160.3 Mod. Batch.....: 109001 Analyst...: dev
Method Description.: Moisture/%Solids Units.....: % Test Code.: %SOLID
Parameter.....: % Solids (@ 104 deg. C)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	231305-1		91.6			91.2	0.4	R	20	07/26/2005	1413
MD	231305-8		91.6			91.5	0.1	R	20	07/26/2005	1425

Test Method.....: EPA 160.3 Mod. Batch.....: 109001 Analyst...: dev
Method Description.: Moisture/%Solids Units.....: % Test Code.: MOIST
Parameter.....: Moisture (@ 104 deg. C)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	231305-1		8.4			8.8	4.7	R	20	07/26/2005	1413
MD	231305-8		8.4			8.5	1.2	R	20	07/26/2005	1425

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW846 8015BMod Units.....: ug/L Analyst...: rh
Method Description.: Total Volatile Petroleum Hydrocarbons Batch.....: 109193

CCV	Continuing Calibration Verification	GAS050505A			08/01/2005	1329

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	1000.049		1000.000000		100.0	%	75-125

CCV	Continuing Calibration Verification	GAS050505A			08/01/2005	1706

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TVPH - Gasoline Range Organics	1036.735		1000.000000		103.7	%	75-125

MB	Method Blank	080105			08/01/2005	1441

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	19.555						

MS	Matrix Spike	GAS050505B	231324-1	5	08/01/2005	1554

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TVPH - Gasoline Range Organics, Solid	2728.529		2000.000000	1759.663	48.4	%	60-140

MSD	Matrix Spike Duplicate	GAS050505B	231324-1	5	08/01/2005	1630

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics, Solid	2628.925	2728.529	2000.000000	1759.663	43.5	%	60-140
					3.7	R	50

SB	Spiked Blank	GAS050505B			08/01/2005	1405

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
VPH - Gasoline Range Organics	1768.262		2000.000000		88.4	%	41-135

Test Method.....: SW-846 8021B Units.....: ug/Kg Analyst...: mal
Method Description.: Volatile Organics - Aromatics Batch.....: 109190

CCV	Continuing Calibration Verification	V080105CCC			08/01/2005	1022

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	89.507		100.000000		89.5	%	80-120
Ethylbenzene, Solid	89.720		100.000000		89.7	%	80-120
Toluene, Solid	89.087		100.000000		89.1	%	80-120

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V080105CCC			08/01/2005	1022

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Xylenes (total), Solid	265.656		300.000000		88.6	%	80-120
m&p-Xylenes, Solid	175.690		200.000000		87.8	%	80-120
o-Xylene, Solid	89.966		100.000000		90.0	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V080105CCC			08/02/2005	0646

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	91.513		100.000000		91.5	%	80-120
Ethylbenzene, Solid	93.622		100.000000		93.6	%	80-120
Toluene, Solid	93.107		100.000000		93.1	%	80-120
Xylenes (total), Solid	276.592		300.000000		92.2	%	80-120
m&p-Xylenes, Solid	182.587		200.000000		91.3	%	80-120
o-Xylene, Solid	94.005		100.000000		94.0	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V080105CCC			08/02/2005	0808

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	94.930		100.000000		94.9	%	80-120
Ethylbenzene, Solid	96.984		100.000000		97.0	%	80-120
Toluene, Solid	96.056		100.000000		96.1	%	80-120
Xylenes (total), Solid	285.405		300.000000		95.1	%	80-120
m&p-Xylenes, Solid	189.005		200.000000		94.5	%	80-120
o-Xylene, Solid	96.400		100.000000		96.4	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
CCV	Continuing Calibration Verification	V080105CCC			08/02/2005	1051

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	89.084		100.000000		89.1	%	80-120
Ethylbenzene, Solid	92.440		100.000000		92.4	%	80-120
Toluene, Solid	91.154		100.000000		91.2	%	80-120
Xylenes (total), Solid	272.056		300.000000		90.7	%	80-120
m&p-Xylenes, Solid	180.081		200.000000		90.0	%	80-120
o-Xylene, Solid	91.975		100.000000		92.0	%	80-120

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	080105			08/01/2005	1305

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	0.000						
Ethylbenzene, Solid	0.000						
Toluene, Solid	0.000						
Xylenes (total), Solid	0.000						
m&p-Xylenes, Solid	0.000						
o-Xylene, Solid	0.000						

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	V080105SBS	231360-6		08/02/2005	0403

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
enzene, Solid	7.771		10.000000	0.000	77.7	%	68-127
thylbenzene, Solid	8.542		10.000000	0.000	85.4	%	63-130
Toluene, Solid	8.607		10.000000	0.000	86.1	%	69-123
Xylenes (total), Solid	18.479		20.000000	0.114	91.8	%	66-136
&p-Xylenes, Solid	9.139		10.000000	0.114	90.2	%	65-136
-Xylene, Solid	9.340		10.000000	0.000	93.4	%	70-137

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	V080105SBS	231360-6		08/02/2005	0525

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	8.104	7.771	10.000000	0.000	81.0	%	68-127
					4.2	R	30
thylbenzene, Solid	9.177	8.542	10.000000	0.000	91.8	%	63-130
					7.2	R	30
Toluene, Solid	9.061	8.607	10.000000	0.000	90.6	%	69-123
					5.1	R	30
ylenes (total), Solid	19.67	18.479	20.000000	0.114	97.8	%	66-136
					6.2	R	30
m&p-Xylenes, Solid	9.768	9.139	10.000000	0.114	96.5	%	65-136
					6.7	R	30
-Xylene, Solid	9.902	9.340	10.000000	0.000	99.0	%	70-137
					5.8	R	30

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
SB	Spiked Blank	V080105SBS			08/01/2005	1144

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Benzene, Solid	9.521		10.000000		95.2	%	74-125
thylbenzene, Solid	10.013		10.000000		100.1	%	81-127
oluene, Solid	9.870		10.000000		98.7	%	80-128
Xylenes (total), Solid	21.467		20.000000		107.3	%	80-138
m&p-Xylenes, Solid	10.717		10.000000		107.2	%	80-141
-Xylene, Solid	10.750		10.000000		107.5	%	80-136

Test Method.....: TCEQ TX1006 Units.....: mg/L Analyst...: bec
Method Description.: Characterization of C6 to C35 TPH Batch.....: 109684

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	TX50815B			08/15/2005	1241

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
>C6-C35 Aliphatic and Aromatic Fractions	169.1	186.2	237.79		71.1	%	60-140
					9.6	R	30

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	TX50815A			08/15/2005	1227

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
C6-C35 Aliphatic and Aromatic Fractions	186.2		251.35		74.1	%	60-140

MB	Method Blank	081105			08/15/2005	1213

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
nC6 Aliphatic, Solid	ND						
C6 to C8 Aliphatics, Solid	ND						
C8 to C10 Aliphatics, Solid	ND						
C10 to C12 Aliphatics, Solid	ND						
>C12 to C16 Aliphatics, Solid	ND						
C16 to C21 Aliphatics, Solid	ND						
C21 to C35 Aliphatics, Solid	ND						
C6-C35 Aliphatic and Aromatic Fractions	ND						
>C7 to C8 Aromatics, Solid	ND						
>C8 to C10 Aromatics, Solid	ND						
C10 to C12 Aromatics, Solid	ND						
C12 to C16 Aromatics, Solid	ND						
C16 to C21 Aromatics, Solid	ND						
>C21 to C35 Aromatics, Solid	ND						

MS	Matrix Spike	TX50815C	231324-1		08/15/2005	1309

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
C6-C35 Aliphatic and Aromatic Fractions	170.4		257.92	ND	66.1	%	60-140

MSD	Matrix Spike Duplicate	TX50815D	231324-1		08/15/2005	1323

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
>C6-C35 Aliphatic and Aromatic Fractions	173.2	170.4	254.21	ND	68.1	%	60-140
					1.6	R	30

Test Method.....: SW846 8015BMod. Units.....: mg/L Analyst...: dml
Method Description.: Total Extractable Petroleum Hydrocarbons Batch.....: 109146

LCS	Laboratory Control Sample	DR72705X			07/28/2005	1632

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TEPH - Diesel Range Organics, Solid	693.744		1000.000000		69.4	%	30-140

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	072805			07/28/2005	1627

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TEPH - Diesel Range Organics, Solid	ND						

MS	Matrix Spike	DR72705X	231324-1	2	07/28/2005	1656

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TEPH - Diesel Range Organics, Solid	3243		1000.000000	1789	145.4	%	20-143

MSD	Matrix Spike Duplicate	DR72705X	231324-1	2	07/28/2005	1700

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TEPH - Diesel Range Organics, Solid	2419	3243	1000.000000	1789	63.0	%	20-143
					29.1	R	30

Test Method.....: TCEQ TX1005 Units.....: mg/L Analyst...: dml
Method Description.: Total Petroleum Hydrocarbons Batch.....: 109363

LCD	Laboratory Control Sample Duplicate	TE50715A			08/05/2005	1124

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TPH (C6 to C35), Solid	237.79	251.35	250.000000		95.1	%	76-133
					5.5	R	30

LCS	Laboratory Control Sample	TE50715A			08/05/2005	1115

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TPH (C6 to C35), Solid	251.35		250.000000		100.5	%	76-133

MB	Method Blank	080405			08/05/2005	1106

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Petroleum Hydrocarbons (C6 to C12), Soli	0.10						
Petroleum Hydrocarbons (>C12 to C28), So	1.42						
Petroleum Hydrocarbons (>C28 to C35), So	ND						
TPH (C6 to C35), Solid	0.00						

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	TE50715A	231324-1		08/05/2005	1141

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TPH (C6 to C35), Solid	257.92		250.000000	0.00	103.2	%	65-142

MSD	Matrix Spike Duplicate	TE50715A	231324-1		08/05/2005	1150

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
TPH (C6 to C35), Solid	254.21	257.92	250.000000	0.00	101.7	%	65-142
					1.4	R	30

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Method.....: Total Extractable Petroleum Hydrocarbons Method Code.....: 8015DR
Batch.....: 109146 Analyst.....: dml Equipment Code: TPH #4

Surrogate	Units
o-Terphenyl (Surrogate)	mg/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
	Solid	MB		26.443	50.000	53	32-141		07/28/2005	1627
	Solid	LCS		36.009	50.000	72	32-141		07/28/2005	1632
231324-1	Solid		2	34.842	50.000	139	32-141		07/28/2005	1651
231324-1	Solid	MS	2	56.007	50.000	224	32-141	X	07/28/2005	1656
231324-1	Solid	MSD	2	52.803	50.000	211	32-141	X	07/28/2005	1700

Method.....: Volatile Organics - Aromatics Method Code.....: 8020S
Batch.....: 109190 Analyst.....: mal Equipment Code: BTEX#2GC

Surrogate	Units
BFB (Surrogate)	ug/Kg

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
	Solid	CCV	1.00	14.443	20.00000	72.2	42-142		08/01/2005	1022
	Solid	SB	1.00	14.596	20.00000	73.0	42-142		08/01/2005	1144
	Solid	MB	1.00	14.615	20.00000	73.1	42-142		08/01/2005	1305
231324-1	Solid		0.82	18.843	16.393443	114.9	42-142		08/01/2005	1427
231348-1	Solid		1.00	19.973	20.00000	99.9	42-142		08/01/2005	1548
231348-2	Solid		1.00	14.753	20.00000	73.8	42-142		08/01/2005	1710
231348-3	Solid		1.00	12.780	20.00000	63.9	42-142		08/01/2005	1832
231360-1	Solid		1.00	13.045	20.00000	65.2	42-142		08/01/2005	1953
231360-3	Solid		1.00	12.990	20.00000	65.0	42-142		08/01/2005	2237
231360-4	Solid		1.00	12.723	20.00000	63.6	42-142		08/01/2005	2358
231360-5	Solid		1.00	12.567	20.00000	62.8	42-142		08/02/2005	0120
231360-6	Solid		1.00	12.698	20.00000	63.5	42-142		08/02/2005	0241
231360-6	Solid	MS	1.00	12.582	20.00000	62.9	42-142		08/02/2005	0403
231360-6	Solid	MSD	1.00	13.686	20.00000	68.4	42-142		08/02/2005	0525
	Solid	CCV	1.00	14.196	20.00000	71.0	42-142		08/02/2005	0646
	Solid	CCV	1.00	14.959	20.00000	74.8	42-142		08/02/2005	0808
231360-2	Solid		2.00	14.455	10.000000	144.6	42-142	X	08/02/2005	0929
	Solid	CCV	1.00	14.252	20.00000	71.3	42-142		08/02/2005	1051

Surrogate	Units
Trifluorotoluene	ug/Kg

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
	Solid	CCV	1.00	15.839	20.00000	79.2	55-155		08/01/2005	1022
	Solid	SB	1.00	15.948	20.00000	79.7	55-155		08/01/2005	1144
	Solid	MB	1.00	16.225	20.00000	81.1	55-155		08/01/2005	1305

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Surrogate	Units
Trifluorotoluene	ug/Kg

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
231324-1	Solid		0.82	15.994	16.393443	97.5	55-155		08/01/2005	1427
231348-1	Solid		1.00	14.046	20.00000	70.2	55-155		08/01/2005	1548
231348-2	Solid		1.00	15.566	20.00000	77.8	55-155		08/01/2005	1710
231348-3	Solid		1.00	13.982	20.00000	69.9	55-155		08/01/2005	1832
231360-1	Solid		1.00	14.062	20.00000	70.3	55-155		08/01/2005	1953
231360-3	Solid		1.00	13.985	20.00000	69.9	55-155		08/01/2005	2237
231360-4	Solid		1.00	13.605	20.00000	68.0	55-155		08/01/2005	2358
231360-5	Solid		1.00	13.633	20.00000	68.2	55-155		08/02/2005	0120
231360-6	Solid		1.00	13.887	20.00000	69.4	55-155		08/02/2005	0241
231360-6	Solid	MS	1.00	13.295	20.00000	66.5	55-155		08/02/2005	0403
231360-6	Solid	MSD	1.00	14.699	20.00000	73.5	55-155		08/02/2005	0525
	Solid	CCV	1.00	15.629	20.00000	78.1	55-155		08/02/2005	0646
	Solid	CCV	1.00	16.939	20.00000	84.7	55-155		08/02/2005	0808
231360-2	Solid		2.00	66.189	10.000000	661.9	55-155	X	08/02/2005	0929
	Solid	CCV	1.00	15.337	20.00000	76.7	55-155		08/02/2005	1051

Method.....: Total Volatile Petroleum Hydrocarbons Method Code.....: 8015G
Batch.....: 109193 Analyst.....: rh Equipment Code:

Surrogate	Units
BFB (Surrogate)	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		CCV		22.563	20.00	112.8	41-135		08/01/2005	1329
		SB		23.616	20.00	118.1	41-135		08/01/2005	1405
		MB		22.755	20.00	113.8	41-135		08/01/2005	1441
231324-1	Solid		5	104.275	20.00	521.4	28-150	X	08/01/2005	1518
231324-1	Solid	MS	5	142.652	20.00	713.3	28-150	X	08/01/2005	1554
231324-1	Solid	MSD	5	123.867	20.00	619.3	28-150	X	08/01/2005	1630
		CCV		22.805	20.00	114.0	41-135		08/01/2005	1706

Method.....: Total Petroleum Hydrocarbons Method Code.....: TX1005
Batch.....: 109363 Analyst.....: dml Equipment Code: TPH #1

Surrogate	Units
o-Terphenyl (Surrogate)	mg/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
	Solid	MB	1	95.15	100.00	95	65-143		08/05/2005	1106
	Solid	LCS	1	97.42	100.00	97	65-143		08/05/2005	1115
	Solid	LCD	1	95.92	100.00	96	65-143		08/05/2005	1124
231324-1	Solid		1	98.75	100.00	99	65-143		08/05/2005	1132

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 231324 Report Date.: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Surrogate	Units
o-Terphenyl (Surrogate)	mg/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
231324-1	Solid	MS	1	101.51	100.00	102	65-143		08/05/2005	1141
231324-1	Solid	MSD	1	100.84	100.00	101	65-143		08/05/2005	1150
231406-1	Solid		1000	9.15	100.00	9150	65-143	X	08/05/2005	1208
231410-1	Solid		1	109.84	100.00	110	65-143		08/05/2005	1225
231410-2	Solid		1	103.24	100.00	103	65-143		08/05/2005	1234
231410-3	Solid		1	97.01	100.00	97	65-143		08/05/2005	1243
231414-1	Solid		10	98.52	1000.00	99	65-143		08/05/2005	1252
231421-1	Solid		1	77.04	100.00	77	65-143		08/05/2005	1300
231421-2	Solid		1	93.49	100.00	93	65-143		08/05/2005	1309
231424-1	Solid		1	100.23	100.00	100	65-143		08/05/2005	1318
231424-2	Solid		1	102.35	100.00	102	65-143		08/05/2005	1327
231398-1	Solid		3	35.45	100.00	106	65-143		08/05/2005	1344
231406-2	Solid		500	3.78	100.00	1890	65-143	X	08/05/2005	1353
231427-1	Solid		10	21.26	100.00	213	65-143	X	08/05/2005	1402

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 231324 Date: 08/19/2005

CUSTOMER: Southwest Geoscience PROJECT: 0105017 ATTN: Chris Mitchell

Lab ID: 231324-1 Client ID: MW-3R (36-37) Date Recvd: 07/26/2005 Sample Date: 07/25/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 5030B	BTEX Extraction-Solid	1	109177		08/01/2005	1012	
TCEQ TX1006	Characterization of C6 to C35 TPH	1	109684		08/15/2005	1255	
SW846 3550B Mo	Extraction (Ultrasonic) DROs	1	109081		07/28/2005	1030	
EPA 160.3 Mod.	Moisture/%Solids	1	109001		07/26/2005	1430	
TCEQ TX1006	Petroleum Hydrocarbon Fractionation	1	109545		08/11/2005	0630	
TCEQ TX1005	Petroleum Hydrocarbons Extraction	1	109319		08/04/2005	1328	
SW846 8015BMod	Total Extractable Petroleum Hydrocarbons	1	109146		07/28/2005	1651	2
TCEQ TX1005	Total Petroleum Hydrocarbons	1	109363		08/05/2005	1132	1
SW846 8015BMod	Total Volatile Petroleum Hydrocarbons	1	109193		08/01/2005	1518	5
SW-846 8021B	Volatile Organics - Aromatics	1	109190		08/01/2005	1427	0.82

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/19/2005

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III
(3) Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992
(4) Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater, Federal Register, Vol. 49, No. 209, October 1984 and 40 CFR Part 136 amendments
(5) EPA 600/2-78-054, Field and Laboratory Methods Applicable to Overburdens and Minesoils
(6) Methods of Soil Analysis, American Society of Agronomy, Agronomy No. 9, 1965
(7) ASTM, Section 11 Water and Environmental Technology, Volume 11.01 Water (1), 1991
(8) American Society for Testing and Materials, Petroleum Products, Lubricants, and Fossil Fuels, Section 5, Volumes 05.01 - 05.05
(9) Hach Handbook of Water Analysis, 1979

Comments:

The test results in this report meet all NELAP requirements for parameters for which accreditation is held. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

According to 40CFR Part 136.3, pH, total residual chlorine, dissolved oxygen, sulfite, and temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH, Client Provided), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Data in the QC report may differ from final results due to digestion and/or dilution of sample into analytical ranges. The "Time Analyzed" may not be the actual time of analysis. The "Date Analyzed" is the actual date of analysis. Sludge samples are reported on a wet weight basis (i.e., not corrected for percent moisture) unless otherwise indicated.

Quality Control acceptance criteria are based either on limits specified in the referenced method or on actual laboratory performance.

All data is reported on sample "as received" unless noted.

Sample IDs with a "-00" at the end indicate a blank spike or blank spike duplicate associated with the numbered sample.

SAMPLE RESULT IDENTIFICATION

ND	= Not detected at a value greater than the reporting limit
TNTC	= Too numerous to count

BLANK QC SAMPLE IDENTIFICATION

MB	Method Blank
ICB	Initial Calibration Blank
CCB	Continuing Calibration Blank

SPIKE QC SAMPLE IDENTIFICATION

MS	Method (Matrix) Spike
MSD	Method (Matrix) Spike Duplicate
PDS	Post Digestion/Distillation Spike
SB	Spiked Blank
SBD	Spiked Blank Duplicate

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/19/2005

REFERENCE STANDARD QC SAMPLE IDENTIFICATION

LCS	Laboratory Control Standard
RS	Reference Standard
ICV	Initial Calibration Verification Standard
CCV	Continuing Calibration Verification Standard
ISA/ISB	ICP Interference Check Sample
DSC	Distilled Standard Check

DUPLICATE QC SAMPLE IDENTIFICATION

MD	Method (Matrix) Duplicate
ED	Extraction Duplicate
DD	Digestion Duplicate
PDD	Post Digestion Duplicate
PSD	Post Digestion/Distillation Spike Duplicate

Analyses performed by a subcontract laboratory are indicated on the analytical and/or quality control reports under "technician" using the following codes:

SUBCONTRACT LABORATORIES

Severn Trent Laboratories:

Los Angeles, CA	*la	Houston, TX	*he
Aurora, CO	*au	North Canton, OH	*nc
Tampa, FL	*ta	Valparaiso, IN	*vp
Sacramento, CA	*sa	Chicago, IL	*ch
Pensacola, FL	*pe	Tallahassee, FL	*tl

Other:

Client provided data	*cp	Non-STL Subcontract Lab	*xx

EXPLANATION OF QC FLAGS

- B - This flag is used to indicate that an analyte is present in the method blank as well as in the sample. It indicates that the client should consider this when evaluating the results.
- D - This flag indicates that surrogates were diluted out of calibration range and cannot be quantified.
- E - Indicates that a sample result is an estimate because the concentration exceeded the calibration range of the instrument.
- F - Indicated that a initial calibration verification or continuing calibration verification recovery is outside the specified quality control limits.
- I - Used to indicate matrix interference.
- X - Indicates that a surrogate recovery is outside the specified quality control limits.
- Y - Used to identify a spike or spike duplicate recovery is outside the specified quality control limits.
- Z - Used to indicate a relative percent difference (RPD) for a duplicate analysis is outside the specified quality control limits.
- * - Indicates a relative percent difference for a duplicate analysis is outside the specified quality control limits.
- ^ - Used to indicate that a standard is outside specified quality control limits.

EXPLANATION OF DATA QUALIFIERS

- B - Indicates that a value for an inorganic analysis is an estimate. It is used when a compound is determined to be present but at a concentration less than the quantitation limit of the method.
- J - Indicates that a value for an organic analysis is an estimate. It is used when a compound is determined to be present based on chromatographic pattern or mass spectral data, but at a concentration less than the quantitation limit of the method. This flag is also used when estimating the concentration of a tentatively identified compound.
- U - Indicates that a value is less than the MDL or was not detected.

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SEVERN TRENT STL

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: Southwest Geoscience	PROJECT NAME/NUMBER: 0105017
SEND REPORT TO: Chris Mitchell	**BILLING INFORMATION**
ADDRESS: 3030 LBJ Freeway	BILL TO:
Suite 700	ADDRESS:
Dallas TX 75234	
PHONE: (214) 722-7531	PHONE:
FAX: (214) 722-7632	FAX: PO NO:

LAB JOB NO.

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	TPH GRO (SW-846 #8015-Mod)	TPH DRO (SW-846 #8015-Mod)	BTEX (SW-846 #8021B)	REMARKS/PRECAUTIONS
	MW-3R (36-37)	7.25.05	1315	Soil	VOA/SAR	4°C/	7	✓	✓	✓	

No Further Entries

SAMPLER: B. Chris Mitchell SHIPMENT METHOD: FedEx AIRBILL NO.: 0215 [illegible]

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	7.25.05	SIGNATURE: FedEx		SIGNATURE:	
PRINTED NAME/COMPANY: SWG	TIME 1430	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY: FEDEX	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE:		SIGNATURE:	07/26/05	SIGNATURE:	
PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME 0845	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

SEVERN TRENT LABORATORIES, INC.
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone: (361) 289-2673 / Fax: (361) 289-2471

rpjsckl | Job Sample Receipt Checklist Report | V2

Job Number.: 231324 Location.: 57203 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: Date of the Report..: 07/26/2005
Project Number.: 98000082 Project Description.: PROJECT-TLK Project Manager.....: tlk
Customer.....: New Client Contact.: New Client

Questions ?	(Y/N)	Comments
How did samples arrive?.....	Y	FED EX
Chain-of-Custody Present?.....	Y	
Custody seal on shipping container?.....	Y	
...If "yes", custody seal intact?.....	Y	
Custody seals on sample containers?.....	N	
...If "yes", custody seal intact?.....		
Samples chilled?.....	Y	
Temperature blank in cooler?.....	Y	
Temp of cooler acceptable? (0.05 to 6.00 deg C)	Y	3.6 C
Samples received intact (good condition)?.....	Y	
Volatile samples acceptable? (no headspace).....		NA
Correct containers used?.....	Y	
Adequate sample volume provided?.....	Y	
Samples preserved correctly?.....	Y	
Samples received within holding-time?.....	Y	
Agreement between COC and sample labels?.....	Y	
Additional.....		
Comments.....		
Sample Custodian Signature.....		

7/26
UP