GW – 361

2009 WORKPLAN

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GW-361

TEPPCO

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August 11, 2009

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Mr. Larry Johnson
Environmental Engineer
New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

Re: TEPPCO Hobbs Station, Hobbs, New Mexico

Dear Mr. Johnson:

TEPPCO Crude Oil, LLC (TEPPCO) is submitting the enclosed *Stage 1 Abatement Plan and Abatement Completion Report*, dated August 7, 2009. This report summarizes site investigation actions performed at the location of an April 22, 2008 crude oil release at this facility.

Initial investigations of the release site were performed by Kleinfelder Central, Inc. during May 2008. The investigation results were reported to the New Mexico Oil Conservation Division (NMOCD) in the May 30, 2008 report entitled: *Work Plan Approval for Site Investigation Activities*. Remedial actions for the release were completed during June 2008, and were reported in the August 12, 2008 *Soil Remediation Report*. This report indicated elevated TPH diesel range organic (DRO) and benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations in a confirmation soil sample at a depth of 39 ft. below ground surface (bgs). Further excavation below this depth was not possible due to technical constraints.

Due to the confirmation soil sample (S Floor Exc) exceeding applicable NMOCD *Remediation Action Levels,* an additional investigation of the release site was performed by Southwest Geoscience during April 2009. This investigation is summarized in the enclosed *Stage 1 Abatement Plan and Abatement Completion Report.* During the investigation, two soil borings were installed immediately upgradient, and downgradient, of the former remediation excavation. The soil borings were completed as permanent monitor wells. Only one soil sample, from soil boring MW-7, had detectable levels (10 mg/kg) of TPH DRO. This sample concentration is near laboratory detection limits, and well below OCD *Remediation Action Levels.* No other soil or groundwater samples had measurable constituent concentrations.

The source of the elevated TPH and BTEX concentrations observed in confirmation sample S Floor Exc is not known, but may have resulted from overlying soils reaching the base of the excavation. The results of the enclosed abatement report indicated that the site has been remediated to below OCD *Remediation Action Levels* or New Mexico Water Quality Control

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Houston, TX 77252-2521
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Commission (WQCC) *Human Health Standards for Groundwater*. TEPPCO believes no further actions are necessary for the April 22, 2008 crude oil release, and respectively requests agency closure approval. Please do not hesitate to contact me at (713) 381-2286 if you have any questions.

Sincerely,

David R. Smith, P.G.
Sr. Environmental Scientist

/bjm
Enclosure

cc: w/ Enclosure

Glenn Von Gonten
Senior Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

w/o Enclosure
Chris Mitchell – Southwest Geoscience, Dallas, TX

STAGE 1 ABATEMENT PLAN AND ABATEMENT COMPLETION REPORT

Property:

HOBBS STATION
Off County Road 61(ARCO Road)
Hobbs, Lea County, New Mexico

August 7, 2009
SWG Project No. 0105013

Prepared for:

TEPPCO Crude Pipeline, L.L.C.
PO Box 2521
Houston, Texas 77252-2521
Attn: Mr. David Smith, P.G.

Prepared by:

Kathryn J. Donnell
Senior Project Engineer

B. Chris Mitchell, P.G.
Principal Geoscientist

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STAGE 1 ABATEMENT PLAN AND ABATEMENT COMPLETION REPORT

HOBBS STATION
Off County Road 61(ARCO Road)
Hobbs, Lea County, New Mexico

SWG Project No. 0105013

1.0 EXECUTIVE SUMMARY

Southwest Geoscience (SWG) has prepared this Stage 1 Abatement Plan and Abatement Completion Report anticipating that closure will be obtained for the portion of the TEPPCO Hobbs Station facility that was remediated as a result of a manifold leak (referred to hereinafter as the "Site" or "subject Site") utilizing the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) rules (*NMAC 19.15.30 Remediation and NMAC 20.6.2 Ground and Surface Water Protection*) and the New Mexico EMNRD OCD *Guidelines for Remediation of Leaks, Spills and Releases* as guidance. The results from the scope of work documented in this Stage 1 Abatement Plan and Abatement Completion Report indicate that no additional work is necessary for the Site to be in compliance with the applicable New Mexico regulatory requirements.

The TEPPCO Hobbs Station is located off County Road (CR) 61, also referred to as ARCO Road, south-southwest of Hobbs, New Mexico. The Site consists of a portion of an approximate 35 acres developed as part of a crude oil storage facility associated with crude oil pipeline operations. In April 2008, a leak was identified near the manifold area on the north-central portion of the Site. Kleinfelder Central, Inc. (Kleinfelder) prepared a report entitled "Soil Remediation Report," dated August 12, 2008, to document the initial investigation and abatement activities conducted by Kleinfelder in June 2008.

In Kleinfelder's report, the Site's characteristics, specifically depth to groundwater, wellhead protection area and distance to surface water, were evaluated and an associated ranking score, and subsequently remediation action levels, were determined for the Site. The Site's ranking score was 20; therefore, the OCD's remediation action levels for the on-Site soil are 10 milligrams per kilogram (mg/Kg) benzene, 50 mg/Kg total benzene, toluene, ethylbenzene and xylenes (BTEX) and 100 mg/Kg total petroleum hydrocarbons (TPH).

On April 22, 2008, a crude oil release was identified near the manifold area on the north-central portion of the Site. Subsequent to discovery, the release source was exposed, a clamp was placed on the pipeline and crude oil was recovered from the ground surface to the extent practical (approximately 16 barrels). An approximate 80 foot section of the pipeline was then removed to facilitate initial abatement activities, which included the excavation of petroleum hydrocarbon affected soils.

On May 15, 2008, five (5) soil borings were advanced at the Site by Kleinfelder. Soil boring PSB-1 was advanced to the north of the release source. Soil boring PSB-3 was advanced to the east of the release source. Soil boring PSB-4 was advanced adjacent to the release source, and soil borings PSB-5 and PSB-6 were advanced to the south of the release source. Each of the soil borings were advanced to depths ranging from 15 to 25 feet below ground surface (ft bgs).

The soil samples collected from soil borings PSB-1, PSB-3, PSB-4, PSB-5 and PSB-6 did not exhibit TPH gasoline range organics (GRO)/diesel range organics (DRO) or BTEX concentrations above the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases* Remediation Action Levels. The results of the soil sample analyses are summarized in Table 1 included in Appendix E.

In June, 2008, petroleum hydrocarbon affected soils were excavated from the release Site under the direction of Kleinfelder. Excavated soils were segregated based on field screening results. The impacted soil was transported to either the Sundance or J and L landfarms, while the soils that did not appear to be impacted were utilized as excavation backfill material. The final excavation depths ranged from three (3) ft bgs to 39 ft bgs. Thirty-nine (39) ft bgs was as deep as was deemed technically feasible due to the locations of additional pipelines in the area. An estimated 1,040 cubic yards of soil were excavated from the release area, of which, approximately 640 cubic yards were classified by Kleinfelder as impacted by petroleum hydrocarbons and disposed off-site.

Confirmation soil sampling was conducted during, as well as at the completion of, the excavation activities. Select confirmation soil samples collected from the floor (S Floor Exec) and walls (S Wall Trench and E Wall Exec) did exhibit TPH DRO and/or BTEX concentrations above the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases* Remediation Action Levels.

The objective of the activities conducted by SWG and presented in this Stage 1 Abatement Plan and Abatement Completion Report was to evaluate the presence, magnitude and extent of petroleum hydrocarbons in the on-Site soil and groundwater, if encountered, in the vicinity of the excavation conducted due to a leak in a manifold.

- Two (2) soil borings were advanced at the Site during the completion of the investigation activities. Soil boring MW-7 was advanced to the southeast of the excavation, hydrogeologically down-gradient from the excavation and the source of the release. Soil boring MW-8 was advanced to the northwest, hydrogeologically up-gradient of the excavation/source area.

- Groundwater was encountered at depths ranging from approximately 40 to 42 ft bgs during the advancement of soil borings MW-7 and MW-8.

- Based on the results of SWG's sensitive receptor survey, no beneficial use of aquifers/groundwater sources, registered and unregistered water wells or sensitive human and ecological receptors were observed within a 500-ft radius of the Site.

- The Site is currently utilized as commercial/industrial (non-residential) land use.

- Based on the groundwater elevations associated with each of the monitoring wells installed in the vicinity of the Site during other investigative activities, the groundwater generally flows to the east-southeast at an average hydraulic gradient of 0.0012 ft/ft.

- Based on SWG's review of the laboratory analytical results, TPH GRO and BTEX concentrations were not identified in the soil samples collected

from soil borings MW-7 and MW-8 above the laboratory sample detection limits (SDLs).

- Based on SWG's review of the laboratory analytical results, a TPH DRO concentration was identified in the soil sample collected from soil boring MW-7; however, the identified TPH DRO concentration does not exceed the OCD's *Remediation Action Levels*.

- Based on SWG's review of the laboratory analytical results, TPH GRO/DRO and BTEX concentrations were not identified above the laboratory SDLs in the groundwater samples collected from monitoring wells MW-7 and MW-8.

Based on the results presented in this Stage 1 Abatement Plan and Abatement Completion Report, SWG has the following recommendations:

- Report the results of the investigation to the New Mexico EMNRD OCD and request closure of the portion of the Site that was impacted by the manifold leak and subsequently remediated by Kleinfelder and confirmed by SWG's investigation; and

- If soils and/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, reused and/or disposed in accordance with applicable local, state or federal regulations.

2.0 INTRODUCTION

2.1 Site Description

The TEPPCO Hobbs Station is located off CR 61 (ARCO Road), south-southwest of Hobbs, New Mexico. The Site consists of a portion of an approximate 35 acres developed as part of a crude oil storage facility associated with crude oil pipeline operations.

A Topographic Map is included as Figure 1, and a Site Vicinity Map is included as Figure 2.

2.2 Site Background

On April 22, 2008, a crude oil release was identified near the manifold area on the north-central portion of the Site. Subsequent to discovery, the release source was exposed, a clamp was placed on the pipeline and crude oil was recovered from the ground surface to the extent practical (approximately 16 barrels). An approximate 80 foot section of the pipeline was then removed to facilitate initial abatement activities, which included the excavation of petroleum hydrocarbon affected soils.

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the south of the release source. Each of the soil borings were advanced to depths ranging from 15 to 25 ft bgs.

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In June, 2008, petroleum hydrocarbon affected soils were excavated from the release Site under the direction of Kleinfelder. Excavated soils were segregated based on field screening results. The impacted soil was transported to either the Sundance or J and L landfarms, while the soils that did not appear to be impacted were utilized as excavation backfill material. The final excavation depths ranged from three (3) ft bgs to 39 ft bgs. Thirty-nine (39) ft bgs was as deep as was deemed technically feasible due to the locations of additional pipelines in the area. An estimated 1,040 cubic yards of soil were excavated from the release area, of which, approximately 640 cubic yards were classified by Kleinfelder as impacted by petroleum hydrocarbons and disposed off-site.

Confirmation soil sampling was conducted during, as well as at the completion of, the excavation activities. Select confirmation soil samples collected from the floor (S Floor Exec) and walls (S Wall Trench and E Wall Exec) did exhibit TPH DRO and/or BTEX concentrations above the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases* Remediation Action Levels.

2.3 Site Investigation Scope of Work

The objective of the Site investigation was to further evaluate the magnitude and extent of petroleum hydrocarbons in the on-Site soil, and evaluate the presence of petroleum hydrocarbons in the on-Site groundwater as a result of the documented release of crude oil from the TEPPCO pipeline in April 2008.

SWG's scope of work included the following:

1) The advancement of two (2) soil borings adjacent to the excavation to a depth of up to fifty (50) ft bgs, five (5) ft below the initial water table, or auger refusal, whichever is more shallow. Each soil boring was converted to a permanent groundwater monitoring well to evaluate the initial groundwater-bearing unit.

2) Conduct field screening during drilling utilizing a photo-ionization detector (PID) meter to evaluate the potential presence of volatile organic compounds (VOCs) to assist in determining the extent of impact and in determining the soil sample locations.

3) Collect soil and groundwater samples from each soil boring/monitoring well for analysis of TPH GRO/DRO and BTEX to determine if soil and/or groundwater are impacted above the applicable regulatory standards.

2.4 Standard of Care & Limitations

The findings and recommendations contained in this report represent SWG's professional opinions based upon information derived from the on-Site activities and other services performed under this scope of work and were arrived at in accordance with currently acceptable professional standards. The findings were based upon analytical results provided by an independent laboratory. Evaluations of the geologic/hydrogeologic conditions at the Site for the purpose of this investigation are made from a limited number of available data points (i.e. soil borings and ground water samples) and Site wide subsurface conditions may vary from these data points. 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 report is based upon a specific scope of work requested by TEPPCO. The agreement between SWG and TEPPCO outlines the scope of work, and only those tasks specifically authorized by that agreement or outlined in this report were performed. This report has been prepared for the intended use of TEPPCO and their subsidiaries, 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 and SWG.

3.0 SITE CHARACTERIZATION

3.1 Geology & Hydrogeology

The *Geologic Map of Southern Lea County, New Mexico* indicates the Site is located over soils formed from the Ogallala formation. The Ogallala formation geologic unit in the area of the Site is composed of fluviatile sand, silt, clay and gravel capped by caliche. The Ogallala formation can be up to 100 ft thick in this area.

The lithology encountered during the advancement of soil boring MW-7 included a pale brownish silty clay from the surface to a depth of approximately two (2) ft bgs. The silty clay stratum was underlain by a pale tan caliche to a depth of approximately 24 ft bgs. A pale tan and pink silty sand with quartzite lens was encountered from a depth of 24 ft bgs to a depth of approximately 34 ft bgs. A pale pinkish orange silty sand was again encountered from a depth of approximately 34 ft bgs to a depth of approximately 45 ft bgs. A reddish pink quartzite was encountered from a depth of approximately 45 ft bgs to 47 ft bgs. A pale orange sandstone was encountered from a depth of 47 ft bgs to the terminus of the soil boring at 50 ft bgs. Groundwater was encountered at approximately 40 ft bgs. The lithology encountered during advancement of soil boring MW-8 was similar to soil boring MW-7.

According to the *Geohydrology of the High Plains Aquifer in Southeastern New Mexico*, published by Donald L. Hart Jr. and Douglass P. McAda (1985), the Site is underlain by the Ogallala aquifer. Groundwater was encountered in monitoring wells MW-7 and MW-8 at a depth of approximately 40 ft bgs. The Ogallala aquifer generally consists of sand, silt, clay and gravel capped by caliche deposited during the Tertiary Period. The Ogallala aquifer is a major aquifer in Lea County.

3.2 Sensitive Receptor Survey

During the completion of field activities, a sensitive receptor survey, which included a one-half mile radius search for registered water wells and a 500-ft radius 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 ft of the central portion of the Site. Additionally, a records inventory of water wells located within a one-half mile of the Site was completed and included as Appendix B. 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 ft of the Site. In addition, sensitive receptors such as surface water bodies, parks, recreational areas, wildlife sanctuaries and wetlands areas located within 500 ft 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.

4.0 SITE INVESTIGATION

4.1 Soil Borings & Monitoring Wells

SWG's field investigation activities were conducted on April 20 and 21, 2009 by B. Chris Mitchell, a licensed professional geoscientist. As part of the approved scope of work, two (2) soil borings were advanced at the Site in the vicinity of the excavation. Soil boring MW-7 was advanced to the southeast of the excavation, hydrogeologically down-gradient from the excavation and the source of the release. Soil boring MW-8 was advanced to the northwest, hydrogeologically up-gradient from the excavation/source area.

Figure 3 is a Site Plan that indicates the approximate location of the soil borings in relation to pertinent structures and land features (Appendix A). Photographic documentation is provided in Appendix C.

Soil borings MW-7 and MW-8 were advanced using an air rotary drilling rig under the supervision of a State of New Mexico licensed water well driller. Soil samples were collected continuously using a one-foot core barrel sampler. Soil samples were observed to document soil lithology, color, moisture content and visual and olfactory evidence of petroleum hydrocarbons. Each soil sample was immediately divided into portions designated for field screening or laboratory analysis. Field headspace analysis was conducted by placing the portion of the soil sample designated for field screening into a plastic ziplock bag. The plastic bag was sealed and then placed in a warm area to promote volatilization. The air above the sample, the headspace, was then evaluated using a PID capable of detecting VOCs. The PID was calibrated utilizing an isobutylene standard prior to use in the field.

During the completion of each soil boring, an on-Site geoscientist documented the lithology encountered and constructed a continuous profile of the soil column from the surface to the soil boring terminus. Soil samples from each soil boring location were visually inspected and classified in the field utilizing the Unified Soil Classification System. The lithology encountered during the advancement of soil boring MW-7 included a pale brownish silty clay from the surface to a depth of approximately two (2) ft bgs. The silty clay stratum was underlain by a pale tan caliche to a depth of approximately 24 ft bgs. A pale tan and pink silty sand with quartzite lens was encountered from a depth of 24 ft bgs to a depth of approximately 34 ft bgs. A pale pinkish orange silty sand was again encountered from a depth of approximately 34 ft bgs to a depth of approximately 45 ft bgs. A reddish pink quartzite was encountered from a depth of approximately 45 ft bgs to 47 ft bgs. A pale orange sandstone was encountered from a depth of 47 ft bgs to the terminus of the soil boring at 50 ft bgs. The lithology encountered during advancement of soil boring MW-8 was similar to soil boring MW-7. Detailed lithologic descriptions are presented on the soil boring logs included in Appendix D.

There were no petroleum hydrocarbon odors or PID readings detected in the soil samples collected from soil borings MW-7 and MW-8. Field screening results are presented on the soil boring logs included in Appendix D.

Subsequent to advancement, soil borings MW-7 and MW-8 were converted to permanent monitoring wells. The monitoring wells were completed using the following methodology:

- Installation of 15.0 ft of 2-inch inside diameter, 0.010-inch machine slotted polyvinyl chloride (PVC) well screen with a threaded bottom cap;
- Installation of 2-inch inside diameter, threaded flush joint PVC riser pipe to the ground surface;
- Addition of a pre-sieved 20/40 grade annular silica sand pack from the bottom of the soil boring to 2-ft 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 a locking well cap and circular, bolt-down, flush mount or upright above-grade well cover.

Monitoring well construction details are presented on the soil boring/monitoring well logs included in Appendix D.

The monitoring wells were developed by surging and removing groundwater with a new, disposable, polypropylene bailer until the groundwater was relatively free of fine-grained sediment, or until the monitoring wells purged dry. Approximately 15 to 20 gallons of groundwater were removed from each of the monitoring wells during the development activities.

4.2 Investigation Sampling Program

4.2.1 Soil Sampling Program

SWG's soil sampling program involved submitting one (1) soil sample from each soil boring for laboratory analysis. Soil samples were collected from the capillary fringe zone. Soil sample intervals are presented with the soil sample analytical results (Table 1) in Appendix E and are provided on the soil boring logs included in Appendix D.

4.2.2 Groundwater Sampling Program

A groundwater sample was collected and analyzed from each of the monitoring wells. Prior to sample collection, each monitoring well was micro-purged utilizing low-flow sampling techniques. Low-flow refers to the velocity with which groundwater enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface which can be affected by flow regulators or restrictions. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective was to pump in a manner that minimizes stress (drawdown) to the system to the extent practical taking into account established Site sampling objectives. Flow rates on the order of 0.1 to 0.5 Liters per minute (L/min) were maintained during the sampling activities using dedicated sampling equipment.

The utilization of low-flow minimal drawdown techniques enables the isolation of the screened interval groundwater from the overlying stagnant casing water. The pump intake is placed within the screened interval such that the groundwater recovered is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone.

The groundwater samples were collected from each monitoring well once produced groundwater was consistent in color and clarity.

4.3 Groundwater Flow

Prior to sample collection, SWG gauged the depth to fluids in each monitoring well. During gauging activities, PSH was not observed in either monitoring well.

Since only two (2) monitoring wells were installed and sampled during this Site investigation, a groundwater gradient was not calculated utilizing site specific data. However, according to the *Groundwater Map of Southern Lea County, New Mexico* and based on historic groundwater investigation activities completed at the Site, groundwater flow at the Site is to the east-southeast at an average hydraulic gradient of 0.0012 ft/ft. A copy of a portion of the *Groundwater Map of Southern Lea County, New Mexico* is included as Figure 5 in Appendix A.

5.0 LABORATORY ANALYTICAL PROGRAM

5.1 Laboratory Analytical Methods

The soil and groundwater samples collected from the soil borings/monitoring wells were analyzed for TPH GRO/DRO utilizing EPA method SW-846 #8015 and BTEX using EPA method SW-846 #8021B.

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

5.2 Quality Assurance/Quality Control (QA/QC)

Sampling equipment was cleaned using an Alconox® wash and potable water rinse prior to the beginning of the project and before the collection of each sample.

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 TestAmerica Laboratories, Inc.'s (TestAmerica) analytical laboratory in Corpus Christi, Texas for normal turnaround.

TestAmerica performed the analyses of samples under an adequate and documented quality assurance program to meet the project and data quality objectives. The laboratory's quality assurance program is generally consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program, as amended. In addition, the data generated by TestAmerica meets the intralaboratory performance standards for the selected analytical method and the performance standards are sufficient to meet the bias, precision, sensitivity, representativeness, comparability, and completeness, as specified in the project data quality objectives.

6.0 DATA EVALUATION

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to crude oil releases, the New Mexico EMNRD OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the OCD rules, specifically *NMAC 19.15.30 Remediation*. These guidance documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

6.1 Soil Samples

SWG compared the petroleum hydrocarbon constituent concentrations identified in the on-Site soils to the New Mexico EMNRD OCD's *Remediation Action Levels* for sites affected by a release of oilfield products (i.e. crude oil, condensate, etc.) having a Total Ranking Score greater than 19 (Site total score of 20) in accordance with the OCD's *Guidelines for Remediation of Leaks, Spills and Releases*.

Based on SWG's review of the laboratory analytical results, TPH GRO and BTEX concentrations were not identified in the soil samples collected from soil borings MW-7 and MW-8 above the laboratory SDLs.

Based on SWG's review of the laboratory analytical results, a TPH DRO concentration was identified in the soil sample collected from soil boring MW-7; however, the identified TPH DRO concentration does not exceed the OCD's *Remediation Action Level.*

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

6.2 Groundwater Samples

SWG compared the TPH GRO/DRO and BTEX concentrations identified in on-Site groundwater to the New Mexico Water Quality Control Commission (WQCC) *Human Health Standards for Groundwater* 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*. Groundwater samples were collected from monitoring wells MW-7 and MW-8.

Based on SWG's review of the laboratory analytical results, TPH GRO/DRO and BTEX concentrations were not identified above the laboratory SDLs in the groundwater samples collected from monitoring wells MW-7 and MW-8.

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

7.0 ABATEMENT COMPLETION

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to releases in sensitive areas, the New Mexico EMNRD commonly utilizes New Mexico EMNRD OCD *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the OCD rules, specifically *NMAC 19.15.30 Remediation and NMAC 20.6.2 Ground and Surface Water Protection*. These guidance documents establish investigation and response action requirements for sites subject to reporting and/or corrective action.

In April 2008, a leak was identified near the manifold area on the north-central portion of the Site. Initial investigation and abatement actions were conducted by Kleinfelder and included the excavation and off-site disposal of impacted soil. The soil was excavated to a maximum depth of 39 ft whereupon it was not technically feasible to excavate deeper. Interim and final confirmation soil samples collected from the excavation were below the applicable OCD *Remediation Action Levels*, with three (3) exceptions (S Wall Trench, E Wall Exc and S Floor Exc). One of the final excavation floor soil samples, which was collected at 39 ft bgs, was reported with exceedances of TPH DRO and BTEX; however, excavating and collecting a deeper sample was not technically feasible.

SWG installed two (2) soil borings, one (1) hydrogeologically down-gradient (MW-7) and one (1) hydrogeologically up-gradient (MW-8) of the excavation. Soil samples were collected from each of the soil borings from a comparable depth from which

the sample with the exceedances was collected (40-41 ft bgs) and analyzed for TPH GRO/DRO and BTEX. Each soil boring was immediately converted into a monitoring well and groundwater samples collected utilizing low-flow sampling techniques. The groundwater samples were also analyzed for TPH GRO/DRO and BTEX. The results did not indicate the presence of TPH GRO/DRO or BTEX in the soil or groundwater samples at concentrations above the SDLs except for TPH DRO in the soil sample collected from soil boring/monitoring well MW-7; however, the detected concentration was 10 times lower than the applicable OCD's *Remediation Action Level* of 100 mg/kg.

Although a TPH DRO concentration from the excavation at a depth of 39 ft bgs was detected above the OCD's *Remediation Action Level*, the confirmation soil samples collected from the vicinity were well below these levels, i.e., the soil samples collected from a depth of 40 to 41 ft bgs in soil borings/monitoring wells MW-7 and MW-8 were detected at 10 mg/Kg and <10 mg/Kg, respectively. In addition, the concentrations of TPH GRO/DRO and BTEX reported for groundwater samples collected from monitoring wells MW-7 and MW-8 were not detected above the SDLs. These soil and groundwater results indicate that the Site is in compliance with the requirements and standards set forth in NMAC 19.15.30.9, so the abatement is complete.

Since no chemicals of concern (COCs) were detected in soil above the applicable OCD's *Remediation Action Levels* or in groundwater above the applicable New Mexico WQCC *Human Health Standards for Groundwater*, public notification in accordance with Subsections B and C of 19.30.15 NMAC is not necessary.

8.0 FINDINGS AND RECOMMENDATIONS

The objective of SWG's scope of services was to evaluate the presence, magnitude and extent of petroleum hydrocarbons in the on-Site soil and groundwater, if encountered, in the vicinity of the excavation conducted due to a leak in a manifold.

- Two (2) soil borings were advanced at the Site during the completion of the investigation activities. Soil boring MW-7 was advanced to the southeast of the excavation, hydrogeologically down-gradient from the excavation and the source of the release. Soil boring MW-8 was advanced to the northwest, hydrogeologically up-gradient of the excavation/source area.

- Groundwater was encountered at depths ranging from approximately 40 to 42 ft bgs during the advancement of soil borings MW-7 and MW-8.

- Based on the results of SWG's sensitive receptor survey, no beneficial use of aquifers/groundwater sources, registered and unregistered water wells or sensitive human and ecological receptors were observed within a 500-ft radius of the Site.

- The Site is currently utilized as commercial/industrial (non-residential) land use.

- Based on the groundwater elevations associated with each of the monitoring wells installed in the vicinity of the Site during other investigative activities,

the groundwater generally flows to the east-southeast at an average hydraulic gradient of 0.0012 ft/ft.

- Based on SWG's review of the laboratory analytical results, TPH GRO and BTEX concentrations were not identified in the soil samples collected from soil borings MW-7 and MW-8 above the laboratory SDLs.

- Based on SWG's review of the laboratory analytical results, a TPH DRO concentration was identified in the soil sample collected from soil boring MW-7; however, the identified TPH DRO concentration does not exceed the OCD's *Remediation Action Levels*.

- Based on SWG's review of the laboratory analytical results, TPH GRO/DRO and BTEX concentrations were not identified above the laboratory SDLs in the groundwater samples collected from monitoring wells MW-7 and MW-8.

Based on the laboratory analytical results, the extent of the COCs in soil and groundwater have been delineated to below the applicable OCD *Remediation Action Levels* or New Mexico WQCC *Human Health Standards for Groundwater*. Based on the results of these Site investigation activities, SWG has the following recommendations:

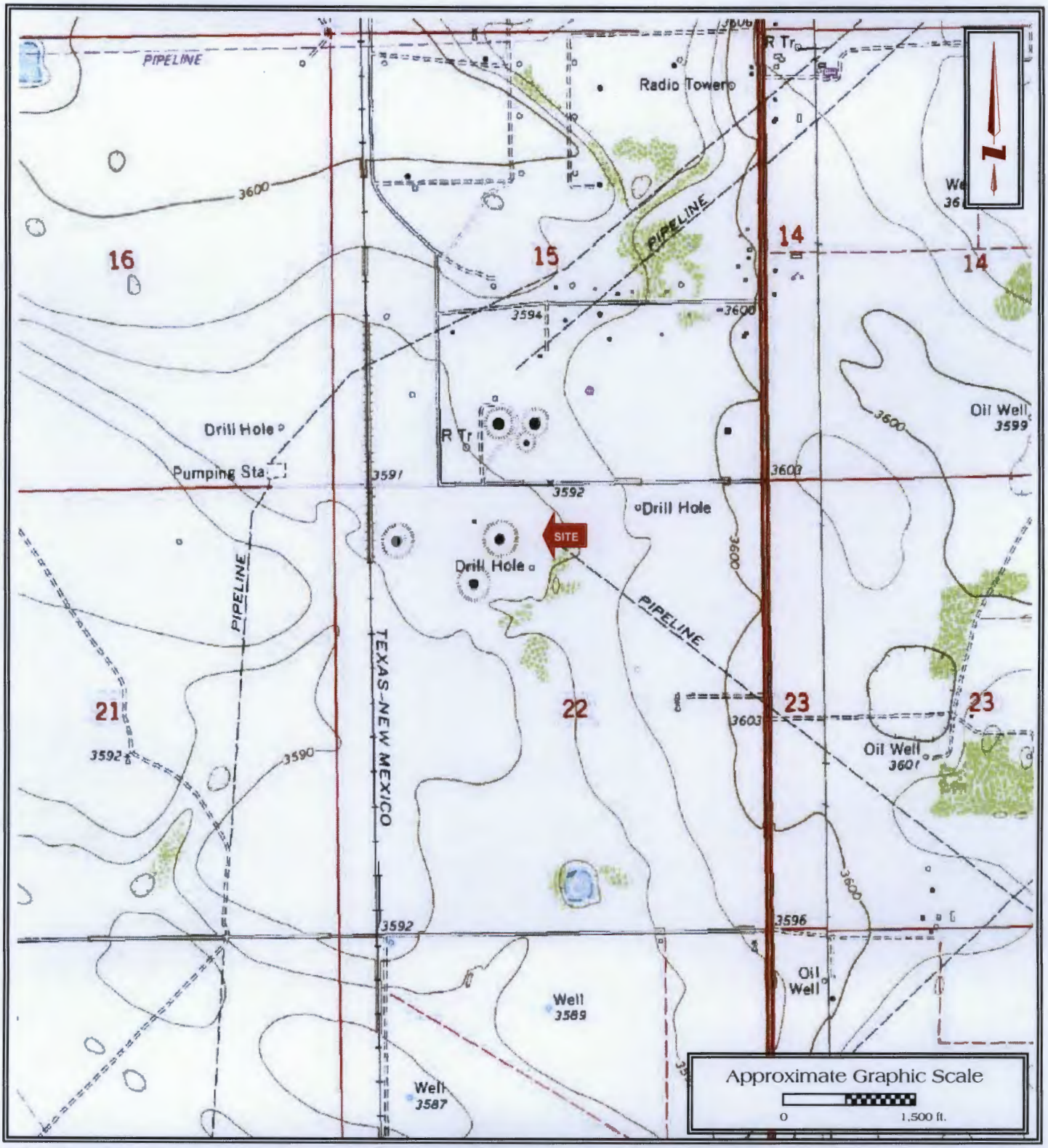
- Report the results of the Site investigation activities to the New Mexico EMNRD OCD.

- If soils and/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, reused and/or disposed in accordance with applicable local, state or federal regulations.

Southwest GEOSCIENCE

APPENDIX A

Figures



Stage 1 Abatement Plan &
Abatement Completion Report
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico
SWG Project No. 0105013

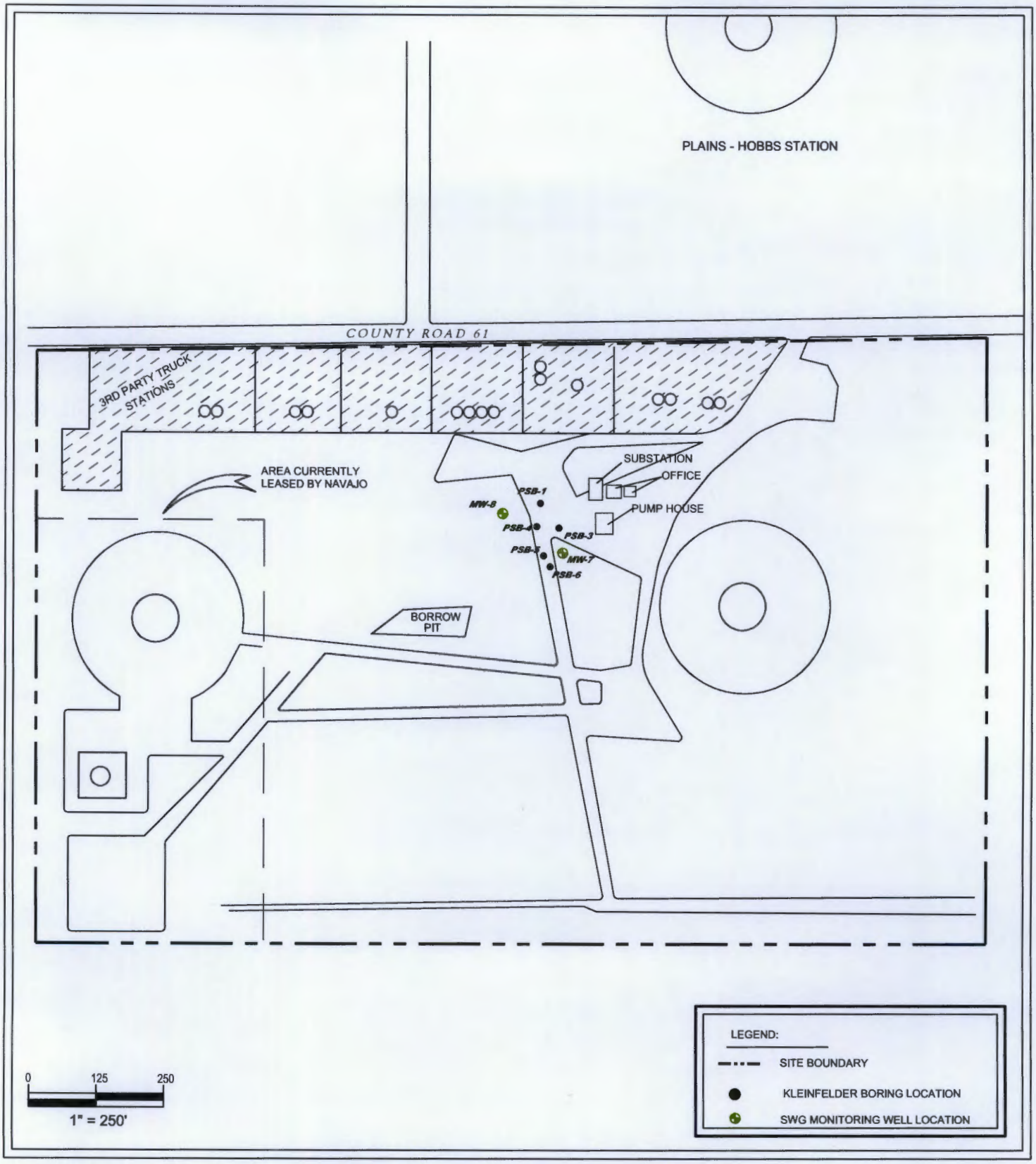
Southwest GEOSCIENCE

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

Stage 1 Abatement Plan &
Abatement Completion Report
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico
SWG Project No. 0105013

Southwest GEOSCIENCE

FIGURE 2
Site Vicinity Map
2002 Aerial Photograph
Source: USGS



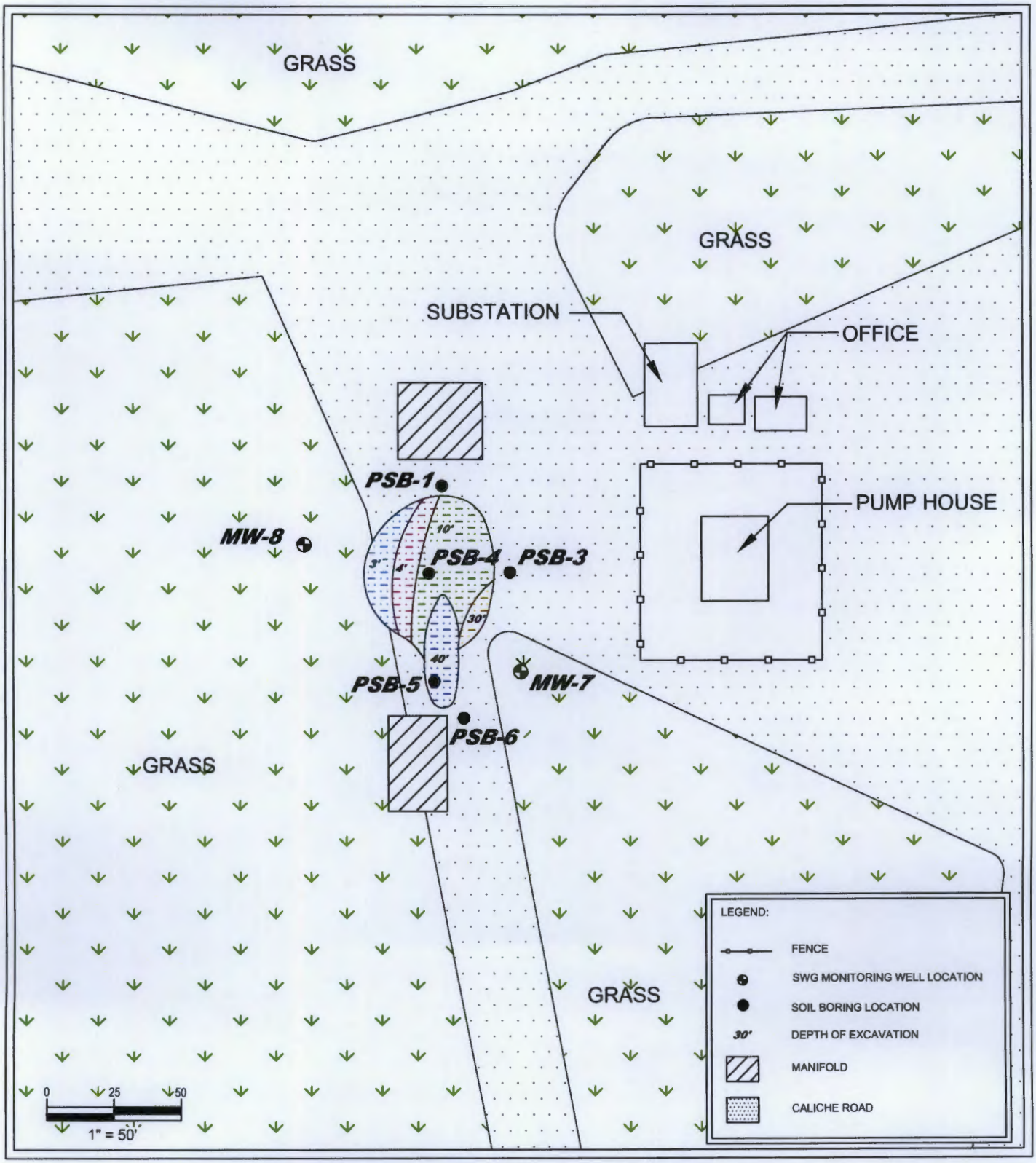
Stage 1 Abatement Plan &
Abatement Completion Report
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico

SWG Project No. 0105013

Southwest GEOSCIENCE

FIGURE 3

SITE MAP



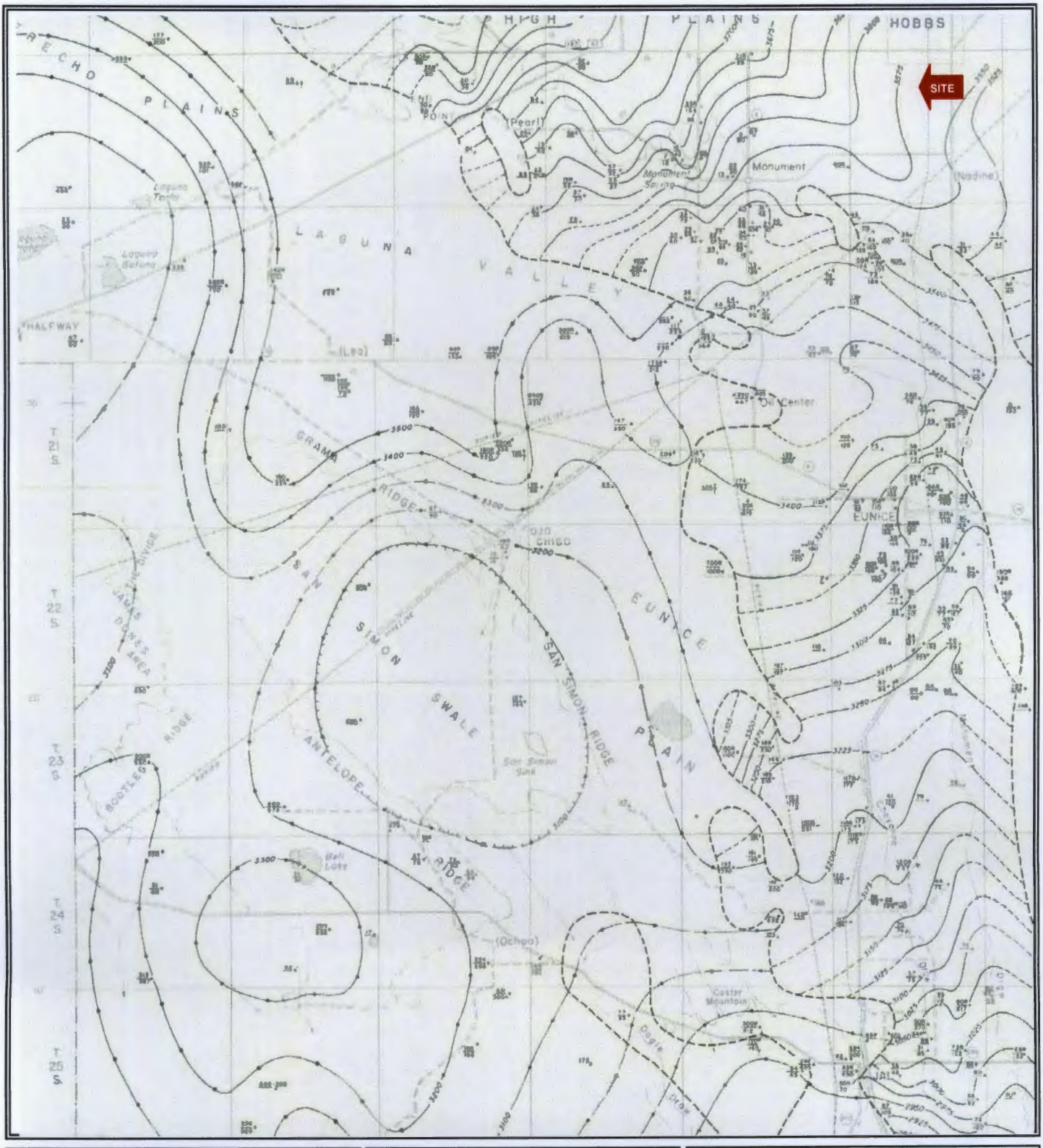
Stage 1 Abatement Plan &
Abatement Completion Report
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico

SWG Project No. 0105013

Southwest GEOSCIENCE

FIGURE 4

SOIL BORING &
MONITORING WELL
LOCATION MAP



Stage 1 Abatement Plan &
Abatement Completion Report
TEPPCO Hobbs Station
Off County Road 61
N 32° 39.135'; W 103° 8.373'
Hobbs, Lea County, New Mexico
SWG Project No. 0105013

Southwest GEOSCIENCE

FIGURE 5
Groundwater Map of Southern
Lea County, New Mexico

Southwest GEOSCIENCE

APPENDIX B

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

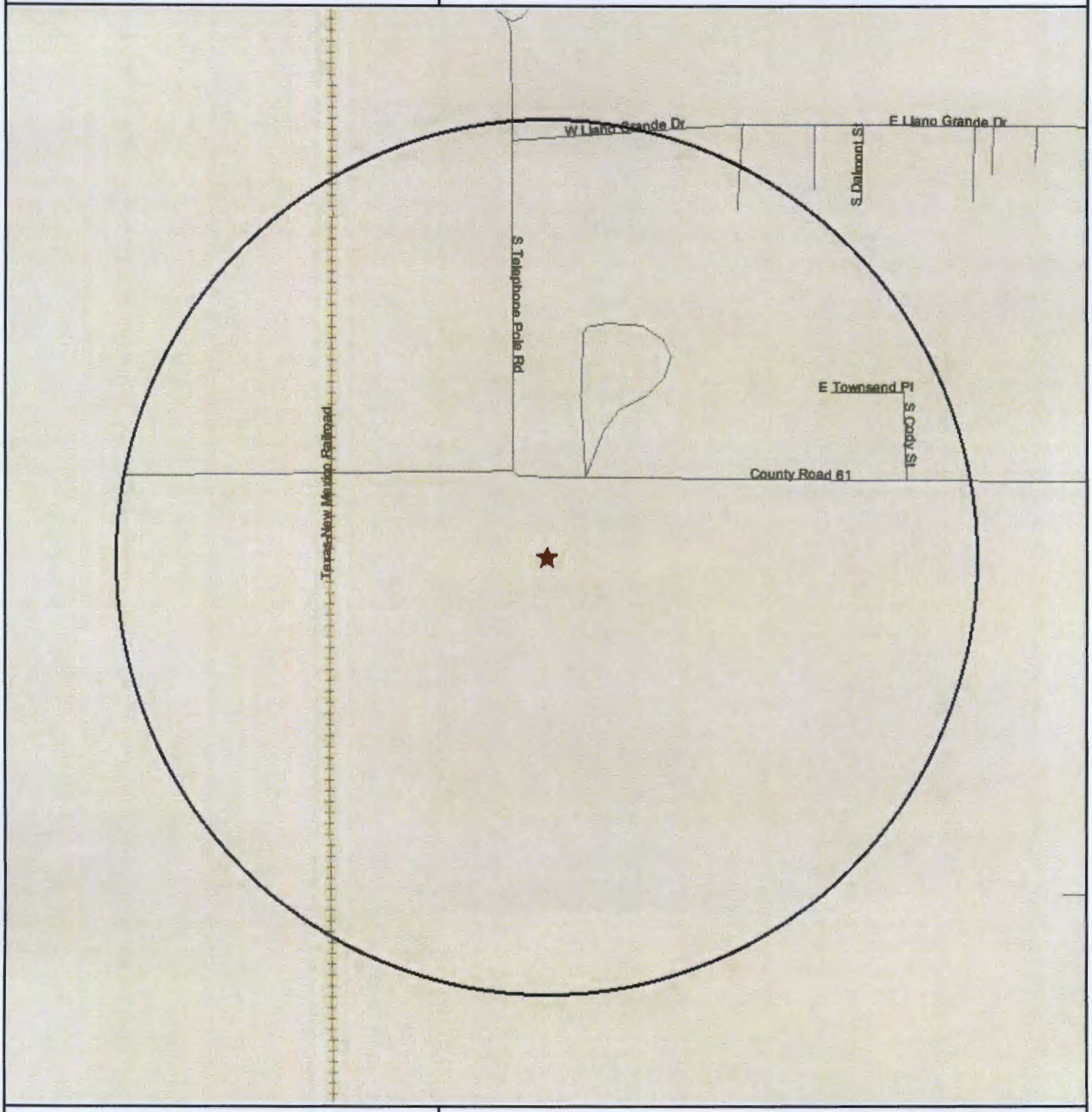
SITE
TEPPCO Hobbs Station Off County Road 61 Hobbs, NM 88240 092105-5 PO #: 0105013

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)



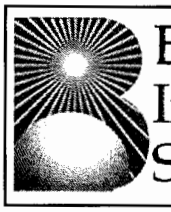
Site	Park	County
Site	School	State
Cluster	Cemetary	Urban Area
Limited Access Hwy	Building	Open Space
Primary Highway	Railroad	Educational/Religious
Secondary Highway	Church	Water Bodies
Roads	Trail	Multihousehold
Hospital	Bridge	Military
Airport	Tower	Custodial Facility

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.

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.

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

Southwest GEOSCIENCE

APPENDIX C

Photographic Documentation

1.) Representative view of the leak source, immediately after discovery of the release.

2.) General view of area during the completion of initial abatement activities at the Site.

3.) General view of the installation of soil boring/monitoring well MW-7, on the hydrogeologically down-gradient edge of the former excavation.

4.) General view of soil boring/monitoring well MW-8, on the hydrogeologically up-gradient edge of the former excavation.

Southwest GEOSCIENCE

APPENDIX D

Soil Boring/Monitoring Well Logs

Client: TEPPCO
Project Name: Hobbs Station
Project Location: Hobbs, New Mexico
Project Manager: Heather Holthaus

SOIL BORING / MONITORING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 4.20.09
Date Completed: 4.20.09
Drilling Company: Straub Corp.
Driller: Marty Straub
Geologist: B. Chris Mitchell
Boring Method: AR
Bore Hole Dia: 6"

Monitoring Well Number: MW-7
Project #: 0105013
Drawn By: RDH
Approved By: BCM

Well Diam: 2"
Screen Size: 0.010"
Screen Length: 15'
Casing Length: 35'

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	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY CLAY, Pale Tan, Dry, No Odor					100%		0	
	CALICHE, Pale Tan, Dry, No Odor		5			100%		0	
						100%		0	
			10			100%		0	
						100%		0	
			15			100%		0	
						100%		0	
			20			100%		0	
						100%		0	
	SILTY SAND w/ Quartzite Lens, Pale Tan and Pink, Dry, No Odor		25			100%		0	
						100%		0	
			30			100%		0	
	SILTY SAND, Pale Pinkish Orange, Dry to Moist, No Odor					100%		0	

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: TEPPCO
Project Name: Hobbs Station
Project Location: Hobbs, New Mexico
Project Manager: Heather Holthaus

SOIL BORING / MONITORING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 4.20.09
Date Completed: 4.20.09
Drilling Company: Straub Corp.
Driller: Marty Straub
Geologist: B. Chris Mitchell
Boring Method: AR
Bore Hole Dia: 6"

Monitoring Well Number: MW-7 (continued)
Project #: 0105013
Drawn By: RDH
Approved By: BCM

Well Diam: 2"
Screen Size: 0.010"
Screen Length: 15'
Casing Length: 35'

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	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND, Pale Pinkish Orange, Dry to Moist, No Odor		40	40-41 1350		100%	▼	0	
	QUARTZITE, Reddish Pink, Dry, No Odor		45			100%		0	
	SANDSTONE, Pale Orange, Dry, No Odor		50			100%		0	
	Bottom of Boring @ 50'		55						
			60						
			65						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: TEPPCO
Project Name: Hobbs Station
Project Location: Hobbs, New Mexico
Project Manager: Heather Holthaus

SOIL BORING / MONITORING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 4.20.09
Date Completed: 4.20.09
Drilling Company: Straub Corp.
Driller: Marty Straub
Geologist: B. Chris Mitchell
Boring Method: AR
Bore Hole Dia: 6"

Well Diam: 2"
Screen Size: 0.010"
Screen Length: 15'
Casing Length: 35'

Monitoring Well Number: MW-8
Project #: 0105013
Drawn By: RDH
Approved By: BCM

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 CALICHE, Pale Tan and Gray, Dry, No Odor		5			100%		0	
	SILTY SAND w/ Quartzite Lens, Tan and Pale Reddish Purple, Dry, No Odor		10			100%		0	
	CALICHE, Tan, Dry, No Odor		15			100%		0	
			20			100%		0	
	SAND, Tan, Dry, No Odor		25			100%		0	
	QUARTZITE, Amber and Pale Reddish Purple, Dry, No Odor		30			100%		0	

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: TEPPCO
Project Name: Hobbs Station
Project Location: Hobbs, New Mexico
Project Manager: Heather Holthaus

SOIL BORING / MONITORING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 4.20.09
Date Completed: 4.20.09
Drilling Company: Straub Corp.
Driller: Marty Straub
Geologist: B. Chris Mitchell
Boring Method: AR
Bore Hole Dia: 6"

Well Diam: 2"
Screen Size: 0.010"
Screen Length: 15'
Casing Length: 35'

Monitoring Well Number: MW-8 (Continued)
Project #: 0105013
Drawn By: RDH
Approved By: BCM

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	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	PID/FID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND, Pale Reddish Orange, Dry to Wet, No Odor		40	4041 1525		100%	▼	0	
	QUARTZITE AND SAND, Pale Reddish Purple, Wet, No Odor		45			100%		0	
	Bottom of Boring @ 50'		50			100%		0	
			55						
			60						
			65						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
HOBBS STATION MW-7	
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
TEPPCO	
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1100 LOUISIANA STREET	HOUSTON / TX / 77002

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	39	6.00	N
	LONGITUDE	103	8	23.00	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

ARCO RD OFF HWY 18 SOUTH OF HOBBS NM, LEA CO

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP ☐ NORTH ☐ SOUTH	RANGE ☐ EAST ☐ WEST
¼	¼	¼	¼			

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1478	MARTIN STRAUB	STRAUB CORPORATION

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4-20-09	4-20-09	50	50	

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 41

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES – SPECIFY

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
35	50	6	SCH 40 .010 SCREEN	FJ	2	0.154	N/A
+4	35	6	SCH 40 PVC RISER	FJ	2	0.154	N/A

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☐ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	33	50	6	7 BAGS 20/40 SAND		TOPLOAD
	2	33	6	10 BAGS OF 3/8 PLUG		TOPLOAD
	0	2	6	1 BAG OF CONCRETE		TOPLOAD

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	2	2	BROWN SILTY CLAY & SAND	☐ YES ☑ NO
2	6	4	TAN SILTY CLAY & SAND	☐ YES ☑ NO
6	12	6	CALICHE	☐ YES ☑ NO
12	35	23	TAN SILTY SAND & SANDSTONE	☐ YES ☑ NO
35	45	10	PINK SILTY SAND & SANDSTONE	☐ YES ☑ NO
45	50	5	HARD SANDSTONE LAYERS	☐ YES ☑ NO
TD	50			☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

2X2 HIGH RISE

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Martin Stroh — SIGNATURE OF DRILLER

4-24-09 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
HOBBS STATION MW-8	
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
TEPPCO	
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1100 LOUISIANA STREET	HOUSTON / TX / 77002

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	39	7.00	N
	LONGITUDE	103	8	25.00	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

ARCO RD OFF HWY 18 SOUTH OF HOBBS NM, LEA CO

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP ☐ NORTH ☐ SOUTH	* RANGE ☐ EAST ☐ WEST
¼	¼	¼	¼			

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1478	MARTIN STRAUB	STRAUB CORPORATION

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4-20-09	4-20-09	50	50	

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 41

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
35	50	6	SCH 40 .010 SCREEN	FJ	2	0.154	N/A
+4	35	6	SCH 40 PVC RISER	FJ	2	0.154	N/A

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☐ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	33	50	6	7 BAGS 20/40 SAND		TOPLOAD
	2	33	6	10 BAGS OF 3/8 PLUG		TOPLOAD
	0	2	6	1 BAG OF CONCRETE		TOPLOAD

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	1	1	BROWN SILTY SAND & CLAY	☐ YES ☑ NO
1	13	12	TAN SILTY SAND & CALICHE	☐ YES ☑ NO
13	21	8	TAN SANDSTONE & CALICHE	☐ YES ☑ NO
21	34	13	TAN SILTY SAND & SANDSTONE	☐ YES ☑ NO
34	35	1	TAN HARD SANDSTONE LAYERS	☐ YES ☑ NO
35	37	2	PINK HARD SANDSTONE & SILTY SAND	☐ YES ☑ NO
37	44	7	PINK SILTY SAND & SOFT SANDSTONE	☐ YES ☑ NO
44	48	4	PINK HARD SANDSTONE LAYERS	☐ YES ☑ NO
48	50	2	PINK SILTY SAND	☐ YES ☑ NO
TD	50			☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

2X2 HIGH RISE

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Martin Stroh

SIGNATURE OF DRILLER _____ DATE _____

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

Southwest GEOSCIENCE

APPENDIX E

Tables

TABLE 1
SOIL ANALYTICAL RESULTS

Sample I.D.	Date	Sample Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH GRO/DRO (mg/kg)
New Mexico Oil Conservation Division (NMOCD) Recommended Remediation Action Levels (RRALs) (Total Ranking Score >19)										
New Mexico Energy, Minerals & Natural Resources Department, Oil Conservation Division, Remediation Action Level			10	NE	NE	NE	50	NE	NE	100
Interim Excavation Samples (Kleinfelder)										
West Wall #1	05.06.08	6	52.4	4.6	1.21	107	165	3,490	5,430	8,920
East Wall #1	05.06.08	6	15.3	50.2	77.3	60.5	203	7,320	2,310	9,630
North Wall #1	05.06.08	6	39.1	116	151	112	418	5,350	6,200	11,550
South Wall #1	05.06.08	6	49.0	146	183	136	514	6,430	5,500	11,930
NE Corner	06.12.08	6	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
East Wall	06.12.08	10	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
N Pipeline	06.12.08	6	0.886	10.5	25.3	22.7	59	6,040	1,070	7,110
West Wall	06.12.08	10	<0.0100	<0.0100	<0.0100	0.013	0.013	<50.0	1.15	1.15
West Shelf	06.12.08	3	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
S Pipeline	06.12.08	6	3.49	24.0	51.8	39.5	119	6,440	1,940	8,380
SE Corner	06.12.08	6	<0.0100	<0.0100	0.013	0.0147	0.028	<50.0	1.94	1.94
Bottom SE	06.12.08	30	2.71	22.0	47.4	36.0	108	4,980	1,790	6,770
Confirmation Excavation Samples (Kleinfelder)										
S Wall Trench	06.17.08	6	<0.005	<0.005	0.025	0.088	0.113	298	14.7	313
W Wall Trench	06.17.08	6	<0.005	<0.005	<0.005	<0.015	BDL	<10.0	<10.0	BDL
E Wall Trench	06.17.08	6	<0.005	<0.005	<0.005	<0.015	BDL	43.5	<10.0	43.5
Trench Floor	06.17.08	10	<0.005	<0.005	<0.005	<0.015	BDL	<10.0	<10.0	BDL
N Wall Exc	06.17.08	8	<0.005	<0.005	<0.005	<0.015	BDL	13.2	<10.0	13.2
E Wall Exc	06.17.08	8	<0.005	<0.005	<0.005	<0.015	BDL	396	<10.0	396
W Wall Exc	06.17.08	10	<0.005	<0.005	<0.005	<0.015	BDL	19.7	<10.0	19.7
S Floor Exc	06.17.08	39	9.22	19.5	164	84.2	277	10,000	8,020	18,020
Sample of Excavated Soil to Be Used as Backfill Material (Kleinfelder)										
Stockpile	06.18.08	N/A	<0.0100	<0.0100	<0.0100	0.0113	0.0113	95.6	4.94	101
Soil Boring Samples (Kleinfelder)										
SB-1	05.15.08	14 to 15	<0.0200	<0.0200	<0.0200	<0.0200	BDL	<50.0	<1.00	BDL
		24 to 25	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<2.00	BDL
SB-3	05.15.08	4 to 5	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<2.00	BDL
		19 to 20	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
SB-4	05.15.08	4 to 5	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
		19 to 20	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
SB-5	05.15.08	4 to 5	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
		24 to 25	<0.0200	<0.0200	<0.0200	<0.0200	BDL	<50.0	<1.00	BDL
SB-6	05.15.08	9 to 10	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
		14 to 15	<0.0100	<0.0100	<0.0100	<0.0100	BDL	<50.0	<1.00	BDL
Soil Boring Samples (SWG)										
MW-7	04.20.09	40 to 41	<0.0043	<0.0043	<0.0043	<0.013	BDL	<0.25	NA	10
MW-8	04.20.09	40 to 41	<0.0043	<0.0043	<0.0043	<0.013	BDL	<0.25	NA	<10

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
TPH GRO = Total Petroleum Hydrocarbons Gasoline Range Organics
TPH DRO = Total Petroleum Hydrocarbons Diesel Range Organics
mg/Kg - milligrams/Kilogram
NE = Not Established
BDL = Below the Detection Limits of the analytical method
N/A = Not Applicable
NA = Not Analyzed
< - Not detected above laboratory Sample Detection Limit (SDL).
Bolded concentrations are above laboratory SDLs.
Bolded/highlighted concentrations are above laboratory SDLs and NMOCD RRALs.

TABLE 2
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 Control Commission (WQCC) Ground Water Standards		10	750	750	620	NE	NE
MW-7	4.21.09	<2.0	<2.0	<2.0	<6.0	<0.15	<0.47
MW-8	4.21.09	<2.0	<2.0	<2.0	<6.0	<0.15	<0.47

TPH GRO = Total Petroleum Hydrocarbons Gasoline Range Organics

TPH DRO = Total Petroleum Hydrocarbons Diesel Range Organics

ug/L - micrograms/Liter

mg/L - milligrams/Liter

NE = Not Established

< - Not detected above laboratory Sample Detection Limit.

Southwest GEOSCIENCE

APPENDIX F

Laboratory Data Reports & Chain of Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 560-15285-1

Job Description: Hobbs Station

For:
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Attention: Mr. Chris Mitchell

Erica H Padilla

Approved for release.
Erica Padilla
Project Manager I
5/12/2009 12:12 PM

Erica Padilla
Project Manager I
erica.padilla@testamericainc.com
05/12/2009

The test results entered in this report meet all NELAC requirements for accredited parameters. Any exceptions to NELAC requirements are noted in the report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Corpus Christi Certifications and Approvals: NELAC TX T104704210-08B-TX, NELAC KS E-10362, Oklahoma 9968, USDA Soil Permit P330-08-00033

EXECUTIVE SUMMARY - Detections

Client: Southwest Geoscience Job Number: 560-15285-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
560-15285-1	**MW-7**				
Diesel Range Organics [C10-C28]		10	10	mg/Kg	8015B

METHOD SUMMARY

Client: Southwest Geoscience

Job Number: 560-15285-1

Description	Lab Location	Method	Preparation Method
Matrix Solid			
Gasoline Range Organics - (GC)	TALCC	SW846 8015B	
Purge and Trap	TALCC		SW846 5030B
Volatile Organic Compounds (GC)	TALCC	SW846 8021B	
Purge and Trap	TALCC		SW846 5030B
Diesel Range Organics (DRO) (GC)	TALCC	SW846 8015B	
Ultrasonic Extraction	TALCC		SW846 3550B

Lab References:

TALCC =TestAmerica Corpus Christi

Method References:

SW846 =" Test Methods For Evaluating Solid Waste, Physical/ Chemical Methods" , Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Southwest Geoscience Job Number: 560-15285-1

Method		Analyst	Analyst ID
SW846	8015B	Newman, David	DN
SW846	8021B	Alvarez, Tracy L	TLA
SW846	8015B	Craig Bronson	BC

SAMPLE SUMMARY

Client: Southwest Geoscience

Job Number: 560-15285-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
560-15285-1	MW-7	Solid	04/20/2009 1350	04/23/2009 0846
560-15285-2	MW-8	Solid	04/20/2009 1525	04/23/2009 0846

Mr. Chris Mitchell
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Job Number: 560-15285-1

Client Sample ID: **MW-7**
Lab Sample ID: **560-15285-1**

Date Sampled: 04/20/2009 1350
Date Received: 04/23/2009 0846
Client Matrix: Solid

Analyte	Result/Qualifier	Unit		RL	Dilution
Method: 8015B			Date Analyzed:	04/28/2009 1404	
Prep Method: 5030B			Date Prepared:	04/28/2009 1404	
GRO	<0.25	mg/Kg		0.25	1.0
Surrogate				Acceptance Limits	
4-Bromofluorobenzene (Surr)	106	%		28.0 - 150.0	
Method: 8021B			Date Analyzed:	04/30/2009 2119	
Prep Method: 5030B			Date Prepared:	04/30/2009 2119	
Benzene	<0.0043	mg/Kg		0.0043	1.0
Toluene	<0.0043	mg/Kg		0.0043	1.0
Ethylbenzene	<0.0043	mg/Kg		0.0043	1.0
Xylenes, Total	<0.013	mg/Kg		0.013	1.0
Surrogate				Acceptance Limits	
4-Bromofluorobenzene (Surr)	85	%		54 - 127	
Trifluorotoluene (Surr)	86	%		50 - 125	
Method: 8015B			Date Analyzed:	04/30/2009 2156	
Prep Method: 3550B			Date Prepared:	04/27/2009 1030	
Diesel Range Organics [C10-C28]	10	mg/Kg		10	1.0
Surrogate				Acceptance Limits	
o-Terphenyl (Surr)	100	%		55 - 117	

Mr. Chris Mitchell
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Job Number: 560-15285-1

Client Sample ID: **MW-8**
Lab Sample ID: **560-15285-2**

Date Sampled: 04/20/2009 1525
Date Received: 04/23/2009 0846
Client Matrix: Solid

Analyte	Result/Qualifier	Unit	RL	Dilution
Method: 8015B		Date Analyzed:	04/28/2009 1433	
Prep Method: 5030B		Date Prepared:	04/28/2009 1433	
GRO	<0.25	mg/Kg	0.25	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	110	%	28.0 - 150.0	
Method: 8021B		Date Analyzed:	04/30/2009 2147	
Prep Method: 5030B		Date Prepared:	04/30/2009 2147	
Benzene	<0.0043	mg/Kg	0.0043	1.0
Toluene	<0.0043	mg/Kg	0.0043	1.0
Ethylbenzene	<0.0043	mg/Kg	0.0043	1.0
Xylenes, Total	<0.013	mg/Kg	0.013	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	80	%	54 - 127	
Trifluorotoluene (Surr)	87	%	50 - 125	
Method: 8015B		Date Analyzed:	04/30/2009 2349	
Prep Method: 3550B		Date Prepared:	04/27/2009 1030	
Diesel Range Organics [C10-C28]	<10	mg/Kg	10	1.0
Surrogate			Acceptance Limits	
o-Terphenyl (Surr)	96	%	55 - 117	

QUALITY CONTROL RESULTS

Client: Southwest Geoscience

Job Number: 560-15285-1

Method Blank - Batch: 560-34837

Method: 8015B
Preparation: 5030B

Lab Sample ID: MB 560-34837/3
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/28/2009 1331
Date Prepared: 04/28/2009 1331

Analysis Batch: 560-34837
Prep Batch: N/A
Units: mg/Kg

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
GRO	<0.25		0.25

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	110	28.0 - 150.0

Lab Control Sample - Batch: 560-34837

Method: 8015B
Preparation: 5030B

Lab Sample ID: LCS 560-34837/2
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/28/2009 1133
Date Prepared: 04/28/2009 1133

Analysis Batch: 560-34837
Prep Batch: N/A
Units: mg/Kg

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
GRO	4.00	4.99	125	60.0 - 140.0	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	121	28.0 - 150.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15285-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 560-34837

Method: 8015B
Preparation: 5030B

MS Lab Sample ID:	560-15285-1	Analysis Batch: 560-34837	Instrument ID: No Equipment Assigned
Client Matrix:	Solid	Prep Batch: N/A	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 5 g
Date Analyzed:	04/28/2009 1551		Final Weight/Volume: 5 mL
Date Prepared:	04/28/2009 1551		Injection Volume:
			Column ID: PRIMARY

MSD Lab Sample ID:	560-15285-1	Analysis Batch: 560-34837	Instrument ID: No Equipment Assigned
Client Matrix:	Solid	Prep Batch: N/A	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 5 g
Date Analyzed:	04/28/2009 1620		Final Weight/Volume: 5 mL
Date Prepared:	04/28/2009 1620		Injection Volume:
			Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
GRO	108	110	60.0 - 140.0	2.2	30.0		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	107	107	28.0 - 150.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15285-1

Method Blank - Batch: 560-34841

Method: 8021B
Preparation: 5030B

Lab Sample ID: MB 560-34841/3
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/30/2009 0906
Date Prepared: 04/30/2009 0906

Analysis Batch: 560-34841
Prep Batch: N/A
Units: mg/Kg

Instrument ID: VGC#2
Lab File ID: 04300903.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Benzene	<0.0050		0.0050
Toluene	<0.0050		0.0050
Ethylbenzene	<0.0050		0.0050
Xylenes, Total	<0.015		0.015

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	82	54 - 127
Trifluorotoluene (Surr)	88	50 - 125

Lab Control Sample - Batch: 560-34841

Method: 8021B
Preparation: 5030B

Lab Sample ID: LCS 560-34841/2
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/30/2009 0838
Date Prepared: 04/30/2009 0838

Analysis Batch: 560-34841
Prep Batch: N/A
Units: mg/Kg

Instrument ID: VGC#2
Lab File ID: 04300902.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	0.0200	0.0191	96	76 - 128	
Toluene	0.0200	0.0195	97	71 - 124	
Ethylbenzene	0.0200	0.0197	99	73 - 125	
Xylenes, Total	0.0400	0.0406	101	73 - 130	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	97	54 - 127
Trifluorotoluene (Surr)	96	50 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15285-1

Method Blank - Batch: 560-34715

Method: 8015B
Preparation: 3550B

Lab Sample ID: MB 560-34715/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/30/2009 2040
Date Prepared: 04/27/2009 1030

Analysis Batch: 560-35224
Prep Batch: 560-34715
Units: mg/Kg

Instrument ID: SVGC#5
Lab File ID: 04300931.D
Initial Weight/Volume: 29.99 g
Final Weight/Volume: 5.0 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Diesel Range Organics [C10-C28]	<10		10

Surrogate	% Rec	Acceptance Limits
o-Terphenyl (Surr)	102	55 - 117

Lab Control Sample - Batch: 560-34715

Method: 8015B
Preparation: 3550B

Lab Sample ID: LCS 560-34715/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/30/2009 2118
Date Prepared: 04/27/2009 1030

Analysis Batch: 560-35224
Prep Batch: 560-34715
Units: mg/Kg

Instrument ID: SVGC#5
Lab File ID: 04300933.D
Initial Weight/Volume: 29.99 g
Final Weight/Volume: 5.0 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Diesel Range Organics [C10-C28]	167	173	104	38 - 131	

Surrogate	% Rec	Acceptance Limits
o-Terphenyl (Surr)	103	55 - 117

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15285-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 560-34715

Method: 8015B
Preparation: 3550B

MS Lab Sample ID:	560-15285-1	Analysis Batch: 560-35224	Instrument ID: SVGC#5
Client Matrix:	Solid	Prep Batch: 560-34715	Lab File ID: 04300937.D
Dilution:	1.0		Initial Weight/Volume: 30.01 g
Date Analyzed:	04/30/2009 2233		Final Weight/Volume: 5.0 mL
Date Prepared:	04/27/2009 1030		Injection Volume:
			Column ID: PRIMARY
MSD Lab Sample ID:	560-15285-1	Analysis Batch: 560-35224	Instrument ID: SVGC#5
Client Matrix:	Solid	Prep Batch: 560-34715	Lab File ID: 04300939.D
Dilution:	1.0		Initial Weight/Volume: 29.99 g
Date Analyzed:	04/30/2009 2311		Final Weight/Volume: 5.0 mL
Date Prepared:	04/27/2009 1030		Injection Volume:
			Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Diesel Range Organics [C10-C28]	97	101	38 - 131	4.2	30.0		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl (Surr)	101	104	55 - 117

Calculations are performed before rounding to avoid round-off errors in calculated results.

15285

CHAIN OF CUSTODY RECORD

Southwest GEOSCIENCE
Environmental & Hydrogeologic Consultants

Office Location: San Antonio
Project Manager: C. Mirtele

Laboratory: Test America
Address: 1733 N. Padre Island Dr
Corpus Christi, TX 78408
Contact: L. Maingot
Phone: (361) 289-2673
PO/SO #:

Sampler's Name: B. Cletus Mirtele
Sampler's Signature:

Lab use only
Due Date:
Temp. of coolers when received (C°): IR5 2.6C
1 2 3 4 5
Page 1 of 1

Proj. No.: 0105013
Project Name: Hobbs Station

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No/Type of Containers: VOA	A/G 1 Lt.	250 ml	P/O	ANALYSIS REQUESTED: TPH DRO/GRO (SW-846 #8015)	BTEX (SW-846 #8021B)	Lab Sample ID (Lab Use Only)
S	4.20.09	1350		X	MW-7	40	41				2	/	/	
S	4.20.09	1525		X	MW-8	40	41				2	/	/	

N2 Purge Entries

Turn around time: ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4.22.09	1200		4-22-09	12:00
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4-22-09	12:00		042309	0846
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:
New Mexico
GLI 3052390143 Greyhound

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

SOUTHWEST GEOSCIENCE • 2351 W. Northwest Hwy., Suite 3321 • Dallas, Texas 75220 • Office: 214-350-5469 • Fax 214-350-2914

Login Sample Receipt Check List

Client: Southwest Geoscience

Job Number: 560-15285-1

Login Number: 15285

List Source: TestAmerica Corpus Christi

Creator: Magee, Alice J.

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.6 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 560-15286-1

Job Description: Hobbs Station

For:
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Attention: Mr. Chris Mitchell

Erica H Padilla

Approved for release
Erica Padilla
Project Manager I
5/12/2009 10:40 AM

Erica Padilla
Project Manager I
erica.padilla@testamericainc.com
05/12/2009

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Job Narrative
560-J15286-1

Deisel-Range Organics (DRO) Analysis

Samples 560-15286-1 and 2 were prepped for DRO using EPA Method 3520C. Insufficient volume existed to perform an MS/MSD in the preparation batch. An LCS/LCSD was performed instead.

EXECUTIVE SUMMARY - Detections

Client: Southwest Geoscience Job Number: 550-15286-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: Southwest Geoscience

Job Number: 560-15286-1

Description	Lab Location	Method	Preparation Method
Matrix Water			
Gasoline Range Organics - (GC)	TAL CC	SW846 8015B	
Purge and Trap	TAL CC		SW846 5030B
Volatile Organic Compounds (GC)	TAL CC	SW846 8021B	
Purge and Trap	TAL CC		SW846 5030B
Diesel Range Organics (DRO) (GC)	TAL CC	SW846 8015B	
Liquid-Liquid Extraction (Continuous)	TAL CC		SW846 3520C

Lab References:

TAL CC = TestAmerica Corpus Christi

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/ Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Southwest Geoscience Job Number: 550-15286-1

Method		Analyst	Analyst ID
SW846	8015B	Newman, David	DN
SW846	8021B	Newman, David	DN
SW846	8015B	Craig, Bronson	BC

SAMPLE SUMMARY

Client: Southwest Geoscience

Job Number: 560-15286-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
560-15286-1	MW-7	Water	04/21/2009 1215	04/23/2009 0846
560-15286-2	MW-8	Water	04/21/2009 1145	04/23/2009 0846

Mr. Chris Mitchell
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Job Number: 560-15286-1

Client Sample ID: **MW-7**
Lab Sample ID: **560-15286-1**

Date Sampled: 04/21/2009 1215
Date Received: 04/23/2009 0846
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
Method: 8015B		Date Analyzed:	04/28/2009 1624	
Prep Method: 5030B		Date Prepared:	04/28/2009 1624	
GRO	<0.15	mg/L	0.15	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	93	%	70 - 130	
Method: 8021B		Date Analyzed:	04/30/2009 0408	
Prep Method: 5030B		Date Prepared:	04/30/2009 0408	
Benzene	<0.0020	mg/L	0.0020	1.0
Toluene	<0.0020	mg/L	0.0020	1.0
Ethylbenzene	<0.0020	mg/L	0.0020	1.0
Xylenes, Total	<0.0060	mg/L	0.0060	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	117	%	42 - 142	
Trifluorotoluene (Surr)	79	%	57 - 138	
Method: 8015B		Date Analyzed:	05/01/2009 0256	
Prep Method: 3520C		Date Prepared:	04/28/2009 1030	
Diesel Range Organics [C10-C28]	<0.47	mg/L	0.47	1.0
Surrogate			Acceptance Limits	
o-Terphenyl (Surr)	65	%	47 - 117	

Mr. Chris Mitchell
Southwest Geoscience
2351 W Northwest Hwy
Suite 3321
Dallas, TX 75220

Job Number: 560-15286-1

Client Sample ID: **MW-8**
Lab Sample ID: **560-15286-2**

Date Sampled: 04/21/2009 1145
Date Received: 04/23/2009 0846
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
Method: 8015B		Date Analyzed:	04/28/2009 1657	
Prep Method: 5030B		Date Prepared:	04/28/2009 1657	
GRO	<0.15	mg/L	0.15	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	92	%	70 - 130	
Method: 8021B		Date Analyzed:	04/30/2009 0441	
Prep Method: 5030B		Date Prepared:	04/30/2009 0441	
Benzene	<0.0020	mg/L	0.0020	1.0
Toluene	<0.0020	mg/L	0.0020	1.0
Ethylbenzene	<0.0020	mg/L	0.0020	1.0
Xylenes, Total	<0.0060	mg/L	0.0060	1.0
Surrogate			Acceptance Limits	
4-Bromofluorobenzene (Surr)	119	%	42 - 142	
Trifluorotoluene (Surr)	79	%	57 - 138	
Method: 8015B		Date Analyzed:	05/01/2009 0333	
Prep Method: 3520C		Date Prepared:	04/28/2009 1030	
Diesel Range Organics [C10-C28]	<0.47	mg/L	0.47	1.0
Surrogate			Acceptance Limits	
o-Terphenyl (Surr)	74	%	47 - 117	

QUALITY CONTROL RESULTS

Client: Southwest Geoscience

Job Number: 560-15286-1

Method Blank - Batch: 560-34836

Method: 8015B
Preparation: 5030B

Lab Sample ID: MB 560-34836/3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/28/2009 1552
Date Prepared: 04/28/2009 1552

Analysis Batch: 560-34836
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
GRO	<0.15		0.15

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	92	70 - 130

Lab Control Sample - Batch: 560-34836

Method: 8015B
Preparation: 5030B

Lab Sample ID: LCS 560-34836/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/28/2009 1431
Date Prepared: 04/28/2009 1431

Analysis Batch: 560-34836
Prep Batch: N/A
Units: mg/L

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
GRO	0.500	0.445	89	70 - 130	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	96	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15286-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 560-34836

Method: 8015B
Preparation: 5030B

MS Lab Sample ID:	560-15286-1	Analysis Batch: 560-34836	Instrument ID: No Equipment Assigned
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	04/28/2009 1729		Final Weight/Volume: 40 mL
Date Prepared:	04/28/2009 1729		Injection Volume:
			Column ID: PRIMARY
MSD Lab Sample ID:	560-15286-1	Analysis Batch: 560-34836	Instrument ID: No Equipment Assigned
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	04/28/2009 1801		Final Weight/Volume: 40 mL
Date Prepared:	04/28/2009 1801		Injection Volume:
			Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
GRO	84	89	70 - 130	5	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	102	98	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Southwest Geoscience

Job Number: 560-15286-1

Method Blank - Batch: 560-34822

Method: 8021B
Preparation: 5030B

Lab Sample ID: MB 560-34822/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/29/2009 1856
Date Prepared: 04/29/2009 1856

Analysis Batch: 560-34822
Prep Batch: N/A
Units: mg/L

Instrument ID: VGC#5
Lab File ID: 04290904.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Benzene	<0.0020		0.0020
Toluene	<0.0020		0.0020
Ethylbenzene	<0.0020		0.0020
Xylenes, Total	<0.0060		0.0060

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	105	42 - 142
Trifluorotoluene (Surr)	85	57 - 138

Lab Control Sample - Batch: 560-34822

Method: 8021B
Preparation: 5030B

Lab Sample ID: LCS 560-34822/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/29/2009 1750
Date Prepared: 04/29/2009 1750

Analysis Batch: 560-34822
Prep Batch: N/A
Units: mg/L

Instrument ID: VGC#5
Lab File ID: 04290902.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	0.0200	0.0186	93	72 - 120	
Toluene	0.0200	0.0192	96	74 - 120	
Ethylbenzene	0.0200	0.0199	100	73 - 120	
Xylenes, Total	0.0400	0.0404	101	78 - 122	

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene (Surr)	90	42 - 142
Trifluorotoluene (Surr)	74	57 - 138

Calculations are performed before rounding to avoid round-off errors in calculated results.

Method Blank - Batch: 560-34758

Method: 8015B
Preparation: 3520C

Lab Sample ID: MB 560-34758/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/01/2009 0104
Date Prepared: 04/28/2009 1030

Analysis Batch: 560-35225
Prep Batch: 560-34758
Units: mg/L

Instrument ID: SVGC#5
Lab File ID: 04300945.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Diesel Range Organics [C10-C28]	<0.50		0.50

Surrogate	% Rec	Acceptance Limits
o-Terphenyl (Surr)	85	47 - 117

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 560-34758

Method: 8015B
Preparation: 3520C

LCS Lab Sample ID: LCS 560-34758/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/01/2009 0141
Date Prepared: 04/28/2009 1030

Analysis Batch: 560-35225
Prep Batch: 560-34758
Units: mg/L

Instrument ID: SVGC#5
Lab File ID: 04300947.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 560-34758/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/01/2009 0218
Date Prepared: 04/28/2009 1030

Analysis Batch: 560-35225
Prep Batch: 560-34758
Units: mg/L

Instrument ID: SVGC#5
Lab File ID: 04300949.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

		% Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Diesel Range Organics [C10-C28]	83	92	54 - 118	10.9	30.0		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl (Surr)	91	98	47 - 117

Calculations are performed before rounding to avoid round-off errors in calculated results.

15286

CHAIN OF CUSTODY RECORD

Southwest GEOSCIENCE
Environmental & Hydrogeologic Consultants

Office Location: SAN ANTONIO
Project Manager: C. MIRTELL

Laboratory: TEST AMERICA
Address: 1733 N. PADRE ISLAND DR. CORPUS CHRISTI, TX 79408
Contact: L. MAINGOT
Phone: (361) 289-2673
PO/SO #:

Lab use only
Due Date:
Temp. of coolers when received (C°): IR5 2.6C
1 | 2 | 3 | 4 | 5
Page 1 of 1

Sampler's Name: B. CHRIS MIRTELL
Sampler's Signature:

Proj. No.: 0105013
Project Name: HOBBS STATION

ANALYSIS REQUESTED: TPH DRO/GRO (SW-846 #8015) BTEX (SW-846 #8021B)

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No/Type of Containers: VOA	A/G 1 Lt.	250 ml	P/O	Lab Sample ID (Lab Use Only)
W	4.21.09	1215		✓	MW-7			9	2			
W	4.21.09	1145		✓	MW-8			9	2			

N2 PURGED ENTIRE

Turn around time: ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4.22.09	1200		4-22-09	12:00
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4-22-09	12:00		042309	0846
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:
NEW MEXICO
GLI 3052390143 Greyhound

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other _____

Login Sample Receipt Check List

Client: Southwest Geoscience

Job Number: 560-15286-1

Login Number: 15286
Creator: Magee, Alice J.
List Number: 1

List Source: TestAmerica Corpus Christi

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.6 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	