GW-071

Annual Groundwater Monitoring Report

DATE:

MAY 23, 2011

ANNUAL GROUNDWATER MONITORING REPORT
DISCHARGE PLAN GW-071

Chaco Gas Plant
895 County Road 7100
Section 16, Township 26N, R12W
San Juan County, New Mexico

SWG Project No. 0410001B
May 23, 2011

Prepared for:
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Chaco Gas Plant
895 County Road 7100
Section 16, Township 26N, Range 12W
San Juan County, New Mexico

SWG Project No. 0410001B

1.0 INTRODUCTION

1.1 Site Description & Background

Southwest Geoscience (SWG) has conducted one (1) groundwater monitoring event at the Chaco Gas Plant, referred to hereinafter as the "Site" or "subject Site". The Enterprise Field Services, LLC (Enterprise) Chaco Gas Plant consists of approximately 190-acres of land developed with a cryogenic gas plant, amine treatment unit and natural gas compression facilities. The Site is located at 895 County Road (CR) 7100 in Section 16, Township 26N, Range 12W in San Juan County, New Mexico, approximately 17.5 miles south of Farmington.

The topography of the area, as shown in Figure 1, slopes to the west, towards the West Fork of Gallegos Canyon, which flows north to the San Juan River.

The Site is subject to regulatory oversight by the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Oil Conservation Division (OCD). To address activities related to releases at natural gas facilities, the New Mexico 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.

1.2 Chronology of Events

Below is a list of significant milestones or events associated with the Site.

May 13, 1993 – EPNG submitted a letter to the OCD requesting EPNG be permitted to continue the use of the unlined ponds for non-contact water based on the quality of the waste water discharged, depth to groundwater and Site geology.

August 2, 1993 – The OCD issued a letter requesting additional analysis of cooling tower effluent to the unlined ponds for cadmium. In addition, the OCD requested a groundwater monitoring program be developed in association with any unlined ponds.

November 1993 – Subsequent to the construction of two (2) lined evaporation/disposal ponds, petroleum contact water would be segregated from the non-

contact water and routed to the lined ponds. Four (4) monitoring wells (MW-1 through MW-4) were installed in the vicinity of the unlined ponds as part of a Groundwater Discharge Plan modification as requested by the OCD.

August 1, 1994 – EPNG submitted a modification to Groundwater Discharge Plan GW-071. The modification enabled the continued use of industrial ponds #3 through #6 and #8 as non-contact water ponds. At the request of the OCD, EPNG installed three (3) additional monitoring wells (MW-5 through MW-7) to further evaluate 1.) the direction of groundwater flow, 2.) poor groundwater quality in the vicinity of MW-4 and 3.) general groundwater quality characteristics.

August 16, 1994 – EPNG submitted a notification letter to the OCD indicating the intention to construct two (2) lined evaporation/disposal ponds to contain petroleum contact water at the Chaco Gas Plant.

November 22, 1994 – In a letter regarding "*Solid Waste Pit Closures*" the OCD approved the closure plan submitted by EPNG for the solid waste pit located on the southwestern portion of the Chaco Gas Plant provided the soil samples collected from the pit were analyzed for hazardous waste characteristics.

August 10, 1995 – The OCD approved the EPNG "Angel Peak and Chaco Plant *Solid Waste Pit Closure Sampling*" dated June 5, 1995 and the EPNG "*Solid Waste Pit Closures at EPNG's Angel Peak and Chaco Facilities*" dated June 5, 1995 based on EPNG's waste characterization sampling.

October 10, 1995 – EPNG submitted an "*Annual Report of Monitoring well Analyses & Request Approval of Work Plan for Chaco Industrial Ponds and Flare Pit*" to the OCD. EPNG proposed a closure plan for industrial ponds #1 and #2 and the earthen flare pit. The proposed closure plan included the advancement of seven (7) soil borings, including one (1) boring within each of the ponds (industrial pond #1 and #2) and the earthen flare pit. Soil samples would be collected from industrial pond #1 and #2 and the earthen flare pit from 3 to 5 feet bgs. In addition, soil samples would be collected from each boring at total depth. One (1) monitoring well (MW-8) would be installed to the north of the earthen flare pit, near the property boundary, to ensure contaminants were not migrating off-Site. The soil and groundwater samples would be analyzed for TPH GRO/DRO, BTEX, polynuclear aromatic hydrocarbons (PAH), RCRA metals and/or cations/anions.

October 13, 1995 – The OCD approved the EPNG "*Annual Report of Monitoring well Analyses & Request Approval of Work Plan for Chaco Industrial Ponds and Flare Pit*".

October 19, 1995 - EPNG submitted a "*Request Major Modification of Discharge Plan GW-071 – Chaco Processing Plant*" to the OCD. The modification was requested to facilitate the addition of a Cryogenic processing unit to the plant, which greatly increases the production of petroleum contact

water.

November 16, 1995 – EPNG submitted a "*Request for Closure of Chaco Industrial Ponds and Flare Pit*". During the completion of closure activities, seven (7) soil borings, including one (1) boring within each of the ponds (industrial pond #1 and #2) and the earthen flare pit were advanced at the Site. Groundwater was not encountered during the installation of monitoring well MW-8; so, the boring was abandoned and an additional monitoring well (MW-8b) was installed to the south, toward the former earthen flare pit. The soil sample collected from soil boring B-5, located within the central portion of industrial pond #1, exhibited a benzene concentration of 2.4 mg/Kg, a toluene concentration of 1.0 mg/Kg, an ethylbenzene concentration of 0.7 mg/Kg, a xylenes concentration of 4.5 mg/Kg and a TPH concentration of 38,400 mg/Kg. The groundwater sample collected from monitoring well MW-8b exhibited a benzene concentration of 29.5 µg/L.

November 17, 1995 – The OCD approved the EPNG "*Request for Closure of Chaco Industrial Ponds and Flare Pit*" pending receipt of a report documenting remediation and closure activities; delineation of groundwater contamination between MW-1 and MW-8b; and, semi-annual sampling of groundwater from monitoring wells MW-1 and MW-8b for BTEX and PAH analysis.

November 17, 1995 – EPNG notified the OCD that the "Ballard Pond" and the two (2) lined contact water evaporation/disposal ponds located at the Chaco Gas Plant had failed an integrity test. Eight (8) leaks were identified within the liner seams of the "Ballard Pond", nineteen (19) leaks in the north contact water ponds and fifteen (15) in the south contact water pond.

January 16, 1997 – El Paso Field Services (EPFS) submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "the analysis for monitoring wells MW-2 through MW-7 did not indicate any abnormally high reading for any analyte. We have been unable to collect a sample from monitoring well MW-1. That well as yet never collected any liquids.

The June 24 sample of the 20 inch waste water discharge line did show a chromium level slightly above the New Mexico Water Quality standards. The chromium level in the sample was 0.132 mg/L."

May 15, 1997 – EPNG submitted a letter work plan to the OCD detailing the results of liner repairs associated with the north and south contact water ponds at the Chaco Plant. The south contact water pond did not exhibit indications of leaks or integrity failures subsequent to repair. The north contact water pond repairs did not pass leak testing subsequent to repair; therefore, EPNG proposed to install two (2) monitoring wells (MW-9 and MW-10), remove the lined pond from service with use only in case of emergency and monitor groundwater from monitoring wells

MW-9 and MW-10 for TDS, pH and BTEX for one year (four (4) quarters), then annually for two (2) additional years.

June 13, 1997 – The OCD approved EPNG's letter work plan dated May 15, 1997 with regard to the proposed installation of two (2) monitoring wells (MW-9 and MW-10), the removal of the lined pond from service with use only in case of emergency and the monitoring of groundwater from monitoring wells MW-9 and MW-10 for TDS, pH and BTEX for one year (four (4) quarters), then annually for two (2) additional years.

August 22, 1997 – Two (2) soil borings/monitoring wells (MW-9 and MW-10) were installed adjacent to the north contact water pond by Philip Services Corporation (PSC) on behalf of EPNG.

February 6, 1998 – EPFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "the analysis for monitoring wells MW-2 through MW-7 did not indicate any abnormally high reading for any analyte.

The organic analyses for well 10 indicates high levels of several hydrocarbons. Since there is no hydrocarbon waste disposed on in the lined contact waste water ponds, the source of contamination in well 10 is most likely the old flare pit which was closed in 1994."

February 8, 1999 – EPNG submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "the analysis for monitoring wells MW-2 through MW-7 did not indicate any abnormally high reading for any analyte. Monitoring well MW-10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics."

September 9, 1999 – EPNG submitted a minor modification request with regard to Groundwater Discharge Plan GW-071 to the OCD. "Rather than make any further attempts to repair the liner, EPFS has decided to discontinue use of the contact water ponds."

March 22, 2000 – PSC, on behalf of EPFS, prepared a letter report documenting the removal of the plastic liner and closure of the South Chaco Pit. Subsequent to the removal of approximately 430 gallons of sludge from the bottom of the pit, each of the three (3) liners were removed. Soil samples were collected from each wall and the floor of the pit. In addition, soils in the central portion of the pit were excavated to an approximate depth of 12 feet bgs. A soil sample was collected from the bottom of the excavation. The pit was then backfilled and graded to conform to the surrounding topography.

The PSC letter report appears to be associated with the north contact water pond, not the south.

February 2, 2000 – EPFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to

the EPFS letter, "the analysis for monitoring wells MW-2 through MW-7 did not indicate any abnormally high reading for any analyte. Monitoring well MW-10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics.

Monitoring wells MW-1, MW-8b and MW-9 have not exceeded any state limits for organics during 1997, 1998 or 1999. Due to a change in plant operations during 1999, contact wastewater is no longer discharge to on-Site ponds. This waste stream is now disposed of off-Site in a class 1 underground injection well. The water quality of the non-contact wastewater discharge is such that it would not degrade any waters of the state if the wastewater did percolate to groundwater. Therefore, EPFS requests authorization to cease monitoring the non-contact wastewater and monitoring well MW-1 through MW-9. Due to high levels of BTEX, EPFS will continue to sample monitoring well MW-10 on a quarterly basis."

January 31, 2001 – EPFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "the analysis for monitoring wells MW-2 through MW-4, MW-6 and MW-7 did not indicate any abnormally high reading for any analyte. Monitoring well MW-5 tested higher for sulfate than in past sampling. Monitoring well MW-10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics."

January 16, 2002 – EPFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "the analysis for monitoring wells MW-2, MW-4, MW-6 and MW-7 did not indicate any abnormally high reading for any analyte. Monitoring well MW-3 was dry and could not be sampled. Monitoring well MW-10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics."

March 14, 2003 – EPFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams. According to the EPFS letter, "The analysis for monitoring well MW-2 showed an elevated level of chlorides. Monitoring wells MW-2, MW-4, MW-6 and MW-7 all had high readings for sulfates. Monitoring well MW-3 was dry and could not be sampled. Monitoring well MW-10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics."

March 28, 2005 – Enterprise Field Services, LLC (EFS) submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams.

April 5, 2006 – EFS submitted an annual letter report regarding the sampling of groundwater monitoring wells and waste water streams.

September 27, 2010 – EFS submitted a Closure Plan for the South Lined Contact

Water Pond detailing the proposed closure activities.

1.3 Scope of Work

The objective of the groundwater monitoring event was to further evaluate the concentrations of chemicals of concern (COCs) in groundwater and general groundwater chemistry in the vicinity of monitoring wells MW-1 through MW-10.

A Site Vicinity Map is included as Figure 2, and a Site Plan, which indicates the approximate locations of the soil borings and monitoring wells in relation to pertinent structures and general Site boundaries, is included as Figure 3 of Appendix A.

2.0 SAMPLING PROGRAM

The annual groundwater sampling event was conducted from December 14 to December 16, 2010 by Kyle Summers, a SWG environmental professional.

SWG's groundwater sampling program consisted of the following:

Monitoring Wells MW-1 through MW-10

- Collection of one groundwater sample from each monitoring well utilizing low-flow sampling techniques.

Prior to sample collection, SWG gauged the depth to fluids in each monitoring well using an interface probe capable of detecting light non-aqueous phase liquids (LNAPL). LNAPL was not observed in the monitoring wells during the sampling event.

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 is 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 L/min will be maintained during 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, clarity, pH, DO, ORP, temperature and conductivity.

Groundwater samples were collected in laboratory prepared containers, sealed with

custody tape and placed on ice in a cooler secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico.

3.0 LABORATORY ANALYTICAL PROGRAM

The groundwater samples collected from the monitoring wells during the groundwater sampling event were analyzed for select cations/anions (calcium, magnesium, chloride, sulfates, fluoride, nitrates, potassium and sodium) utilizing EPA method SW-846# 6010B/6020A or EPA method SW-846# 9056, phosphates utilizing SM 4500 PB.5/E and total dissolved solids (TDS) utilizing SM 2540C. In addition, the groundwater samples collected from monitoring wells MW-8b, MW-9 and MW-10 were analyzed for total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO) utilizing EPA method SW-846#8015M and benzene, toluene, ethylbenzene and xylenes (BTEX) utilizing EPA method SW-846 #8021B.

A summary of the analysis, sample type, sample frequency and EPA-approved methods are presented on the following page:

Analysis	Sample Type	No. of Samples	Method
Calcium	Groundwater	10	SW-846# 6010B/6020A
Magnesium	Groundwater	10	SW-846# 6010B/6020A
Chloride	Groundwater	10	SW-846# 9056A
Sulfates	Groundwater	10	SW-846# 9056A
Fluoride	Groundwater	10	SW-846# 9056A
Nitrates	Groundwater	10	SW-846# 9056A
Phosphates	Groundwater	10	SM 4500 PB.5/E
Potassium	Groundwater	10	SW-846# 6010B/6020A
Sodium	Groundwater	10	SW-846# 6010B/6020A
Total Dissolved Solids	Groundwater	10	SM 2540C
TPH GRO/DRO	Groundwater	3	SW-846# 8015M
BTEX	Groundwater	3	SW-846# 8021B

Laboratory results are summarized in Table 1 included in Appendix B. The executed chain-of-custody form and laboratory data sheets are provided in Appendix C.

4.0 GROUNDWATER FLOW DIRECTION

The monitoring wells were historically surveyed for top-of-casing (TOC) elevations. Prior to sample collection, SWG gauged the depth to fluids in each monitoring well. The groundwater flow direction at the Site is generally towards the northwest, at an average gradient of 0.020 ft/ft; however, an apparent groundwater mound was noted in the vicinity of monitoring well MW-3, which is likely attributable to infiltration from the unlined non-contact water ponds located at the Site.

Groundwater measurements collected during the most recent gauging event in December 2010 are presented with TOC elevations in Table 4, Appendix B. A groundwater gradient map is included as Figure 4 in Appendix A.

5.0 LIMITED NATURAL ATTENUATION SCREENING

A limited natural attenuation screening has been conducted at the Site to evaluate the occurrence of natural attenuation. The New Mexico OCD has not published guidance specific to natural attenuation; however, the New Mexico Environment Department (NMED) has approved the American Society for Testing and Materials (ASTM) *Guide for Remediation by Natural Attenuation at Petroleum Release Sites (E1943-9)* as its preferred method for assessing and monitoring sites for remediation by natural attenuation.

Natural attenuation is the process by which contaminants in the environment are degraded, or reduced in concentrations 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 determine the degree to which (if any) natural attenuation will 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. For the purposes of the limited natural attenuation screening, each of the parameters listed above were measured from the on-Site monitoring well utilizing low flow sampling techniques during each sampling event.

The limited natural attenuation screening included the following review of the "*Primary Lines of Evidence*" as well as select "*Secondary Lines of Evidence*".

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 historical groundwater data, TPH GRO/DRO and or BTEX concentrations have not been identified in groundwater samples collected from monitoring wells MW-1 through MW-7 or MW-9. BTEX concentrations historically identified in groundwater samples collected from

monitoring wells MW-8b and MW-10 have decreased over time. BTEX concentrations have not been identified above the Practical Quantitation Limits (PQLs) during the most recent groundwater sampling event.

Secondary Lines of Evidence

Secondary lines of evidence consist of geochemical indicators to document certain geochemical signatures or "footprints" in the groundwater that demonstrate (indirectly) the type of natural attenuation process(es) occurring at the affected property and the destruction of COCs.

- ***Temperature:*** Groundwater temperature affects the rate of many biological and chemical reaction rates. Effective biodegradation can generally occur within a temperature range of 5°C to 45°C; ideally, temperature should be above 15°C for optimal biological activity. Extreme temperatures (either hot or cold) prohibit microbial growth. Additionally, oxygen solubility is dependent on groundwater temperature. The average temperature associated with the on-Site groundwater was 13.51°C during the most recent sampling event, which is suitable for natural attenuation processes.

- ***pH:*** pH in groundwater can limit natural attenuation by inhibiting microbes from performing bioremedial processes if it drifts substantially from a neutral value of 7. A pH range of 5-9 is generally amenable to bioremediation. The pH associated with the on-Site groundwater ranges from 7.58 to 8.34.

- ***Dissolved Oxygen:*** Microbes can utilize dissolved oxygen (DO) in groundwater as an electron acceptor while undergoing aerobic respiration. Elevated DO levels suggest bioremediation has not occurred whereas depressed levels indicate that it has. Based on SWG's evaluation of the DO concentrations identified in the monitoring wells, dissolved oxygen in the on-Site groundwater in the vicinity of the affected area (former industrial ponds) is significantly lower when compared to up-gradient, unaffected areas, indicating the occurrence of biodegradation/natural attenuation.

- ***Oxidation-Reduction Potential (ORP):*** The ORP of groundwater is a measure of the relative tendency of a solution to accept or donate electrons. Although not always true, a positive value generally indicates that the solution is oxidizing (aerobic) while a negative value indicates that the solution is chemically reducing (anaerobic). If the ORP measurements taken outside the plume are higher than the ORP measurements in the plume, it is an indication that biodegradation may be occurring. Dissolved Oxygen and ORP readings should be in agreement. Dissolved Oxygen should be less than 1 ppm when ORP is negative. Based on the observed DO and ORP values, the initial groundwater-bearing zone within the affected area (former industrial ponds) has likely transitioned from an aerobic environment to an anaerobic environment as microbes have utilized the available dissolved oxygen during natural attenuation processes.

- ***Specific Conductivity:*** Specific conductivity is a measurement of an aqueous solution's ability to conduct or carry an electric current. This ability depends on the presence, total concentration, mobility and valence of charged ionic species (e.g., Ca+2, Na+, Mg+2, HCO3 -, Cl-), turbidity, and the solution's temperature. Specific conductivity can be used as an indicator that samples collected from separate sampling points are from the same groundwater-bearing zone. Based on the

observed conductivity, each of the monitoring wells are generally consistent and appear to be completed within the same groundwater-bearing zone.

Based on the available geochemical data, natural attenuation does appear to be occurring at the Site. Natural attenuation should continue to occur provided electron acceptors (NO_3^-, Mn^{4+}, and SO_4^{2-}) remain available in on-Site groundwater.

6.0 DATA EVALUATION

To address activities related to condensate 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 Groundwater Samples

SWG compared the identified constituent concentrations or PQLs associated with the groundwater samples collected from the monitoring wells to the New Mexico WQCC *Ground Water Standards*. The results of the groundwater sample analyses are summarized in Table 2 of Appendix B.

6.1.1 Petroleum Hydrocarbons

The groundwater samples collected from monitoring wells MW-8b, MW-9 and MW-10 did not exhibit TPH GRO/DRO and/or BTEX concentrations above the laboratory PQLs, which are below the New Mexico WQCC *Ground Water Standards*.

6.1.2 Groundwater Quality Parameters

The groundwater samples collected from monitoring wells MW-1 through MW-10 did exhibit chloride, sulfate, fluoride and/or total dissolved solids (TDS)[1] concentrations above the New Mexico WQCC *Ground Water Standards*. However, these constituents are likely attributable to one or a combination of the following factors:

1.) Sulfates and fluoride are commonly naturally occurring in groundwater as a result of the breakdown and weathering of the native geologic formation and soils.

2.) Sulfates and fluoride are most commonly identified at elevated levels in groundwater due to the infiltration of runoff of chemical fertilizers in agricultural production, which is consistent with the direction of groundwater flow, concentration gradient and historic and current use of the up-gradient adjacent property as agricultural production land by the Navajo Agricultural Products Industry (NAPI).

3.) Sulfates are a common electron acceptor utilized by microbes in the natural

[1] *Total Dissolved Solids (TDS) is a measure of the combined content of all inorganic and organic substances, which includes chloride, sulfate and fluoride, contained in a liquid in suspended form*

attenuation (anaerobic respiration) of petroleum hydrocarbons, which have historically been associated with on-Site subsurface soil and initial groundwater bearing unit. Sulfate concentrations are most elevated along the southern, hydro-geologically up-gradient, property boundary and decline toward the northwestern portion of the Site with groundwater flow, which was historically impacted by petroleum hydrocarbons.

7.0 FINDINGS

SWG has conducted one (1) groundwater monitoring event at the Enterprise Chaco Gas Plant. The Enterprise Chaco Gas Plant consists of approximately 190-acres of land developed with a cryogenic gas plant, amine treatment unit and natural gas compression facilities located at 895 CR 7100 in Section 16, Township 26N, Range 12W in San Juan County, New Mexico. The objective of the groundwater monitoring event was to further evaluate the concentrations of COCs in groundwater and general groundwater chemistry in the vicinity of monitoring wells MW-1 through MW-10.

- During the completion of the sampling event, one (1) groundwater sample was collected from each monitoring well (MW-1 through MW-10) utilizing low-flow sampling techniques.

- Prior to sample collection, SWG gauged the depth to fluids in each monitoring well. LNAPL was not observed during the completion of gauging activities.

- The groundwater flow direction at the Site is generally towards the northwest, at an average gradient of 0.020 ft/ft; however, an apparent groundwater mound was noted in the vicinity of monitoring well MW-3, which is likely attributable to infiltration from the unlined non-contact water ponds located at the Site.

- A limited natural attenuation screening has been conducted at the Site to evaluate the occurrence of natural attenuation. Based on the available geochemical data, natural attenuation does appear to be occurring at the Site. Natural attenuation should continue to occur provided electron acceptors (NO_3^-, Mn^{4+}, and SO_4^{2-}) remain available in on-Site groundwater.

- The groundwater samples collected from monitoring wells MW-8b, MW-9 and MW-10 did not exhibit TPH GRO/DRO and/or BTEX concentrations above the laboratory PQLs, which are below the New Mexico WQCC *Ground Water Standards*.

- The groundwater samples collected from monitoring wells MW-1 through MW-10 did exhibit chloride, sulfate, fluoride and/or TDS concentrations above the New Mexico WQCC *Ground Water Standards*. However, these constituents are likely attributable to the natural breakdown and weathering of the native geologic formation and soils and/or the infiltration of runoff of chemical fertilizers from agricultural production, which is consistent with the direction of groundwater flow, concentration gradient and historic and current use of the up-gradient adjacent property as agricultural production land by the NAPI.

8.0 RECOMMENDATIONS

Based on the results of groundwater monitoring activities no additional investigation or remediation appears warranted at this time. SWG recommends the monitoring well network (MW-1 through MW-10) be plugged and abandoned in accordance with NMAC 19.27.4.30 *RULES AND REGULATIONS GOVERNING WELL DRILLER LICENSING; CONSTRUCTION, REPAIR AND PLUGGING OF WELLS* following New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division and Office of the State Engineer authorization.

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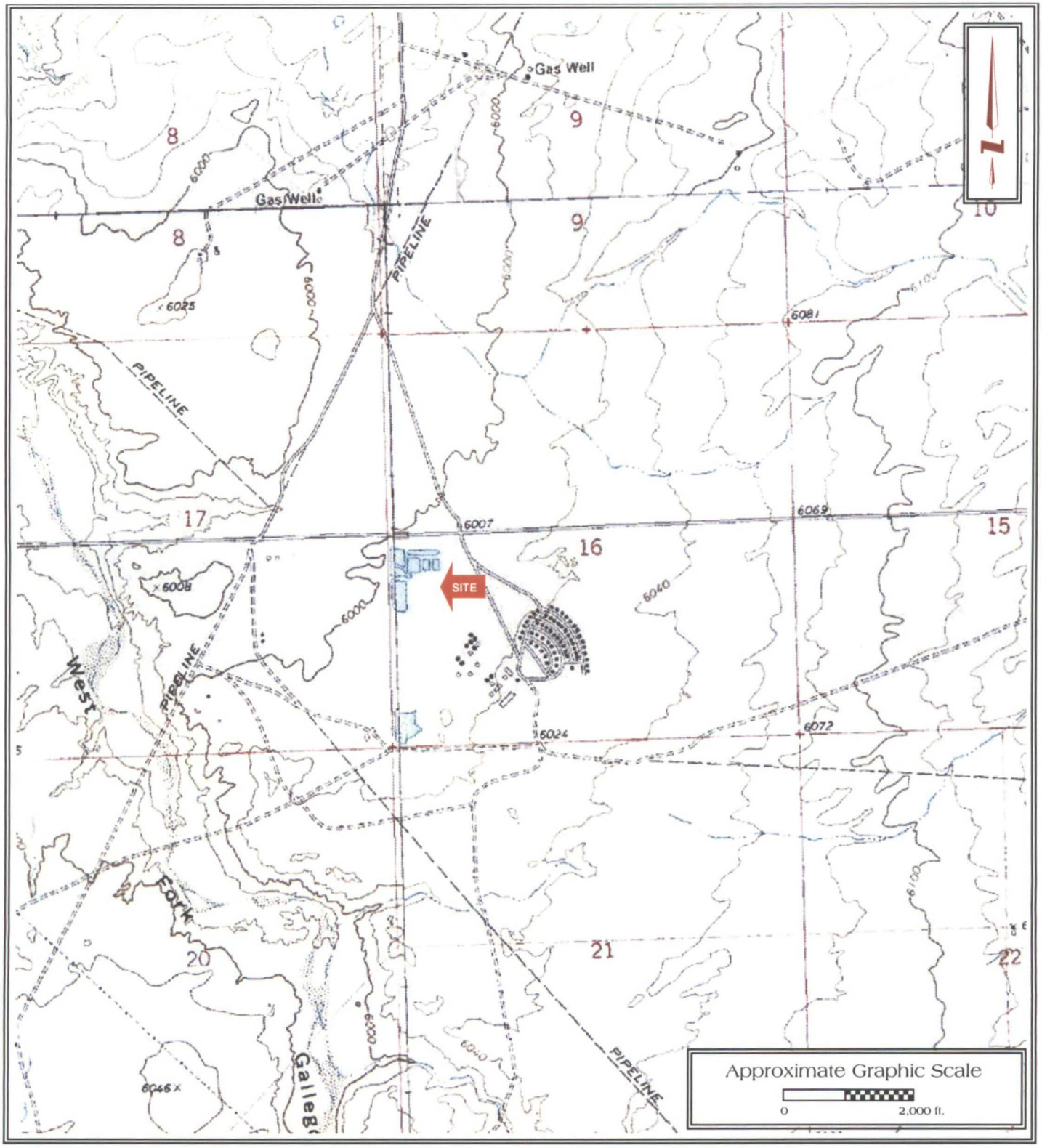
APPENDIX A

Figures



Annual Groundwater Monitoring Report

Lined Contact Water Pond

Chaco Gas Plant

N36° 29' 09.27"; W108° 07' 28.19"

Off CR 7100

San Juan County, New Mexico

SWG Project No. 0410001B

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FIGURE 1

Topographic Map

Moncisco Wash & Carson

Trading Post, NM Quadrangles

Contour Interval - 10 Feet

Annual Groundwater Monitoring Report

Lined Contact Water Pond

Chaco Gas Plant

N36° 29' 09.27"; W108° 07' 28.19"

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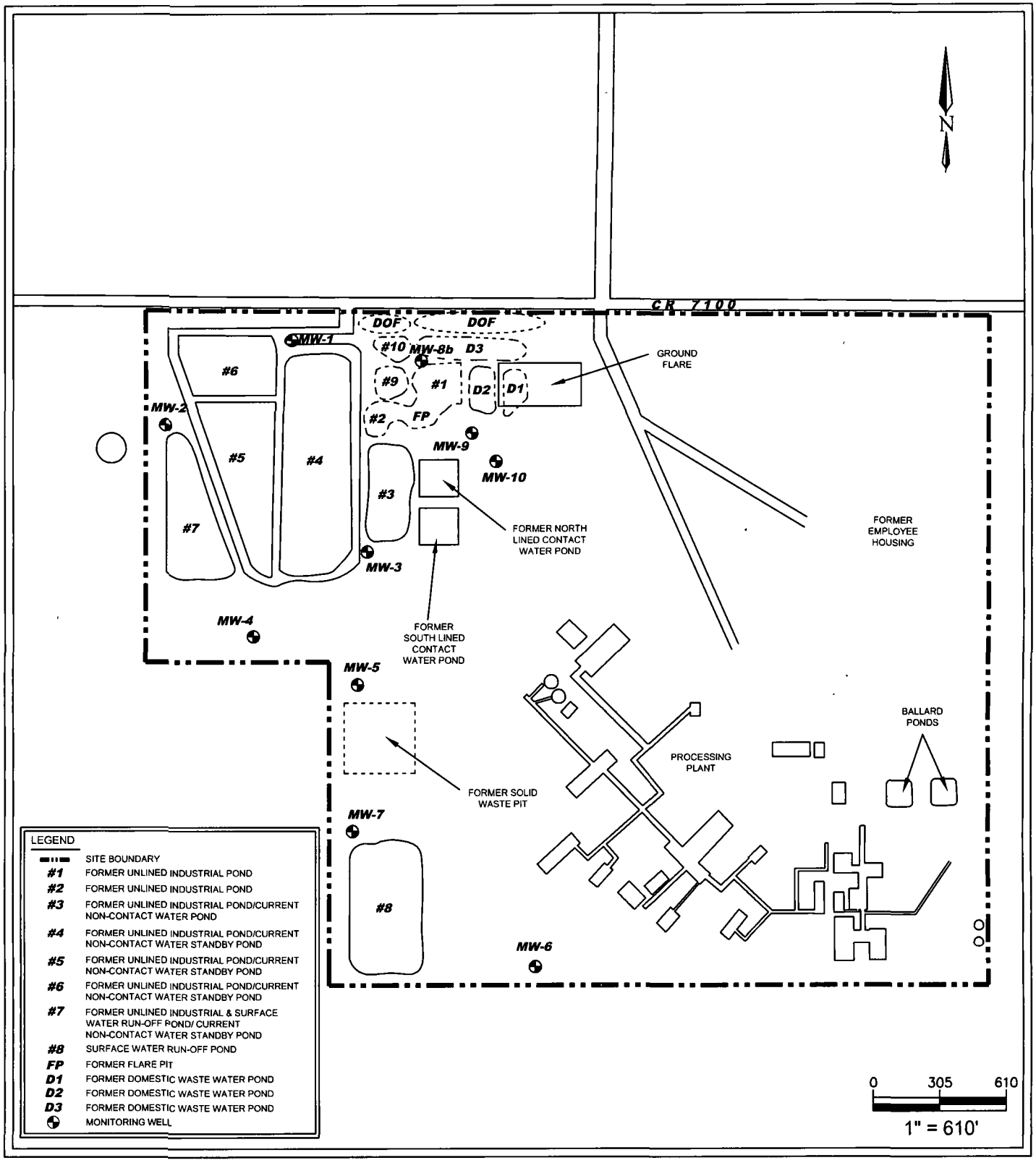
FIGURE 2

Site Vicinity Map

2009 Aerial Photograph



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N36° 29' 09.27"; W108° 07' 28.19"
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FIGURE 3

SITE MAP

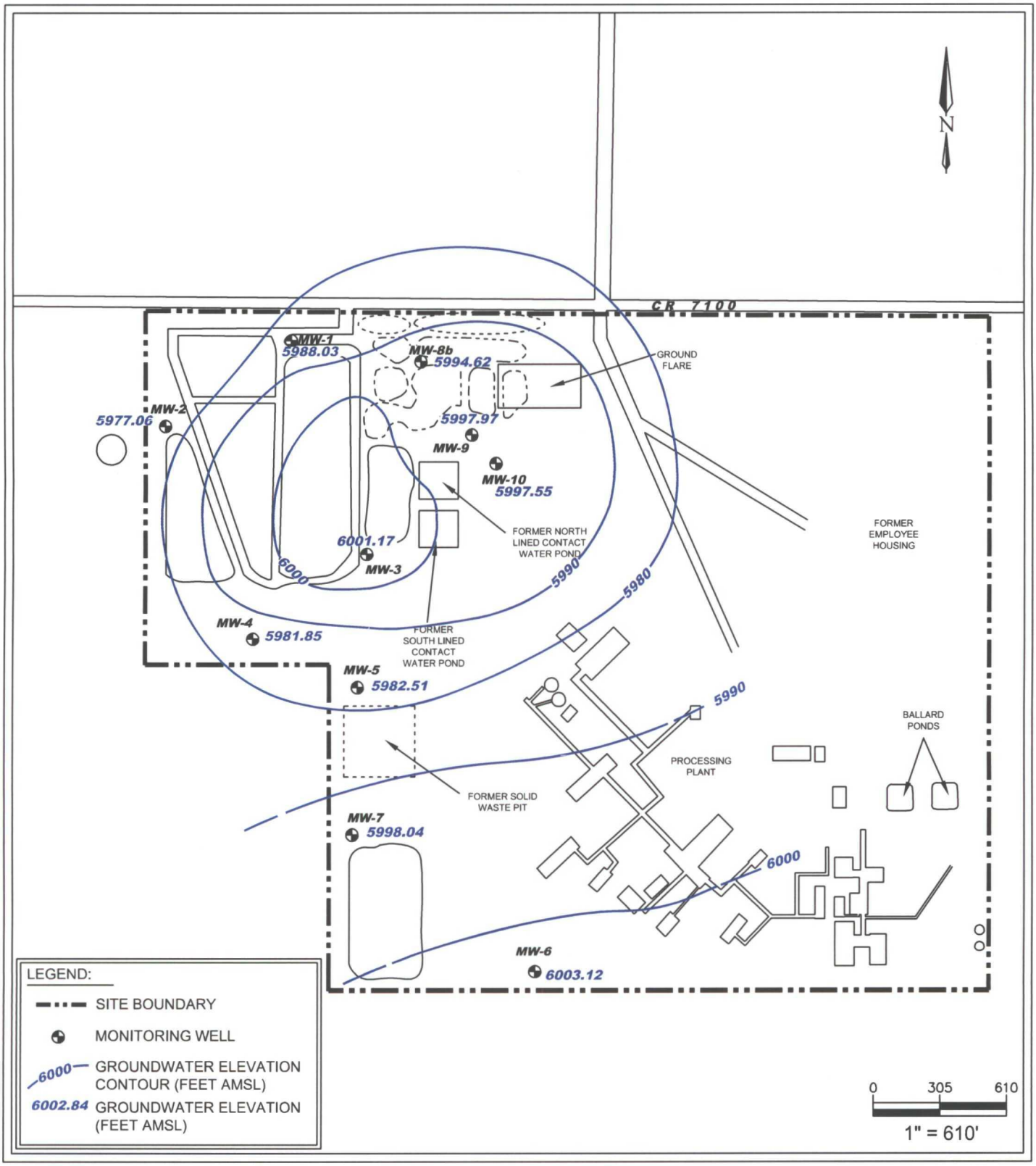

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FIGURE 4

GROUNDWATER GRADIENT MAP

GAUGING DATE:
12.9.2010

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APPENDIX B

Tables

TABLE 1
CHACO GAS PLANT
GROUNDWATER ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total Naphthalenes (µg/L)	Total Benzopyrenes (µg/L)	Methyltert-butyl Ether (MTBE) (µg/L)	1,2,4-trimethylbenzene (µg/L)	1,3,5-trimethylbenzene (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
NM WQCC Standard for Groundwater of 10,000 mg/L TDS or Less		10.0	750	750	620	30	0.7	NE	NE	NE	NE	NE
MW-1	6 24 96	NOT SAMPLED - INSUFFICIENT SAMPLE VOLUME										
	3 11 97	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 30 97	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 15 98	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 21 99	<0.5	<0.5	<0.5	<0.5	ND	ND	NA	NA	NA	NA	NA
	9 12 00	<0.5	<0.5	<0.5	<0.5	ND	ND	NA	NA	NA	NA	NA
	10 16.01	1.4	<0.5	<0.5	2.8	ND	ND	NA	NA	NA	NA	NA
	9 20 02	<0.5	<0.5	<0.5	<1.0	ND	ND	NA	NA	NA	NA	NA
	8 18 04	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
	9 30 05	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
	10 30 06	ND	ND	ND	ND	NA	NA	ND	NA	NA	NA	NA
	6 19 07	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 24 09	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-2	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-3	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-4	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-5	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-6	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-7	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
MW-8b	3 12 96	10.0	<1.0	<1.0	<3.0	75	<0.3	NA	NA	NA	NA	NA
	5 29 96	6.62	<1.0	<1.0	<3.0	NA	NA	NA	NA	NA	NA	NA
	7 2 96	<1.0	<1.0	<1.0	<3.0	NA	NA	NA	NA	NA	NA	NA
	9 9 96	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	11 1 96	<1.0	<1.0	<1.0	<3.0	NA	NA	NA	NA	NA	NA	NA
	3 11 97	<1.0	<1.0	<1.0	<3.0	ND	0.34	NA	NA	NA	NA	NA
	9 30 97	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 15 98	<1.0	<1.0	<1.0	<3.0	2.3	ND	NA	NA	NA	NA	NA
	9 21 99	<0.5	<0.5	<0.5	<0.5	ND	ND	NA	NA	NA	NA	NA
	9 12 00	<0.5	<0.5	<0.5	<0.5	ND	ND	NA	NA	NA	NA	NA
	10 16 01	<0.5	<0.5	<0.5	<0.5	ND	ND	NA	NA	NA	NA	NA
	9 20 02	<0.5	<0.5	<0.5	<1.0	ND	ND	NA	NA	NA	NA	NA
	8 18 04	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
	9 30 05	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
	10 30 06	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 19 07	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 24 09	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	12 15 10	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	<0.5	<1.0
MW-9	9 30 97	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 15 98	<1.0	<1.0	<1.0	<3.0	ND	ND	NA	NA	NA	NA	NA
	9 21 99	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA
	9 12 00	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA
	10 16 01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA
	9 20 02	<0.5	<0.5	<0.5	<1.0	NA	NA	NA	NA	NA	NA	NA
	8 18 04	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
	9 30 05	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
	10 30 06	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 19 07	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 30 08	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	6 24 09	ND	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA
	12 16 10	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	<0.5	<1.0
MW-10	9 30 97	**702**	493	34.6	241	**100**	ND	NA	NA	NA	NA	NA
	9 15 98	**923**	432	47	312	ND	ND	NA	NA	NA	NA	NA
	9 21 99	**20**	9	41	105	NA	NA	NA	NA	NA	NA	NA
	9 12 00	**150**	6	53	170	NA	NA	NA	NA	NA	NA	NA
	10 16 01	**74**	<5.0	40	170	NA	NA	NA	NA	NA	NA	NA
	9 20 02	**91**	0.93	32	94	NA	NA	NA	NA	NA	NA	NA
	8 18 04	2.0	ND	19	42	NA	NA	NA	NA	NA	NA	NA
	9 30 05	2.0	ND	9.1	17	ND	ND	NA	NA	NA	NA	NA
	10 30 06	7.1	ND	5.9	ND	NA	NA	ND	ND	ND	NA	NA
	6 19 07	2.3	ND	4.9	3.4	NA	NA	ND	2.5	ND	NA	NA
	6 30 08	1.0	ND	1.3	ND	NA	NA	ND	ND	ND	NA	NA
	6 24 09	ND	ND	1.2	ND	NA	NA	ND	ND	ND	NA	NA
	12 16 10	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	NA	NA	0.062	<1.0

mg/L - milligrams per liter µg/L - microgram per liter

< - Denotes analyte concentration was not detected above the method detection limit

Note: Concentrations in **bold** and yellow exceed the applicable New Mexico WQCC Standard

Southwest GEOSCIENCE

TABLE 2
CHACO GAS PLANT
GROUNDWATER ANALYTICAL RESULTS - GEOCHEMICAL PARAMETERS

Sample I.D.	Date	pH (units)	Alkalinity (CO3) (mg/L)	Alkalinity (HCO3) (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Total Hardness (mg/L)	Chloride (mg/L)	Sulfate (SO4) (mg/L)	Fluoride (mg/L)	Nitrate (NO3) (mg/L)	Nitrate (NO3) (mg/L)	Ammonia (NH4) (mg/L)	Bromide (mg/L)	Phosphate (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Total Dissolved Solids (mg/L)	Conductivity (umhos/cm)	Cadmium (mg/L)	Chromium (mg/L)	Mercury (mg/L)
NM WQCC Standard for Groundwater of 10,000 mg/L TDS or Less		6 to 9	NE	NE	NE	NE	NE	250.0	600	1.6	10	NE	NE	NE	NE	NE	NE	1,000	NE	0.010	0.050	0.002
MW-1	9 30 97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 002	<0 004	<0 002
	9 15 98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0002	<0 004	<0 0002
	9 21 99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	9 12 00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	10 16 01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0004	0 0010	**0 0174**
	9 20 02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	8 18 04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	9 30 05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 19 07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 30 08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 24 09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	12 15 10	NA	NA	NA	280	48	NA	100	1,100	1 5	1 9		NA	NA	0 64	21	280	**2,110**	NA	NA	NA	NA
MW-2	6 24 96	7 7	0 0	426	112	22 5	372	162	**714**	1 8	<0 1			NA	<0 1	1 1	403	**1,772**	2 500	0 0008	0 008	<0 00024
	6 24 97	8 2	0 0	365	135	30 0	461	264	**819**	**3.3**	<0 6	<0 6	<0 2	NA	<0 6	2 3	510	**1,990**	2,800	<0 0002	<0 004	<0 00002
	6 9 98	7 3	0 0	420	99	24 0	346	197	**768**	**2.2**	0 6	0 6	0 2	NA	0 6	2 9	504	**1,836**	2 640	0 001	0 005	0 002
	7 19 99	7 2	0 0	621	87	24 0	316	546	346	1 9	<0 6	<0 6	<0 2	NA	<0 6	4	616 0	**1,992**	2 920	ND	ND	ND
	6 20 00	7 4	0 0	530	110	33 0	410	1 400	27	**170**	<0 1	<0 1	<0 05	NA	0	1 9	820	**2,800**	4 800	<0 005	<0 005	<0 0002
	6 25 01	8 1	490	480	110	37 0	425	1 700	23	**4.2**	0 12	ND	0 42	NA	0 18	2 7	1 100	**3,000**	5 400	<0 005	<0 005	**0 0031**
	6 11 02	7 6	430	430	91	32 0	360	1,500	19	**2 7**	<0 10	<0 10	0 22	NA	0 21	2 0	890	**2,800**	5 000	<0 005	<0 005	<0 0002
	8 18 04	8 1	ND	270	130	30 0	510	47	**1,000**	**2.2**	ND	ND	ND	NA	ND	ND	440	**1,800**	2 200	ND	ND	ND
	6 16 05	7 3	280	NS	210	47 0	730	52	**1,200**	**1.8**	ND	NA	NA	NA	ND	1 7	350	**2,200**	2 700	ND	ND	ND
	10 30 06	NA	NA	NA	180	44 0	NA	64	**1,200**	**2 3**	ND		NA	NA	ND	ND	470	NA	NA	ND	ND	ND
	6 19 07	NA	ND	230	190	42 0	NA	51	**1,200**	**1 9**	ND		NA	2 3	ND	ND	380	**2,000**	2,800	ND	ND	ND
	6 24 09	NA	ND	230	210	45 0	NA	61	**1,300**	**1 8**	ND		NA	NA	ND	ND	370	**2,000**	2 500	ND	ND	ND
	12 15 10	NA	NA	NA	250	51	NA	64	**1,400**	**1 8**	<1 0		NA	NA	<0 5	ND	370	**2,260**	NA	NA	NA	NA
MW-3	6 24 96	7 7	0 0	670	85	20 2	296	42	532	1 0	<0 5			NA	<0 5	0 9	443	**1,464**	2 170	<0 0005	0 002	<0 00024
	6 24 97	8 2	0 0	519	78	18 0	269	63	396	1 0	<0 6	<0 6	<0 1	NA	<0 6	2 9	315	**1,160**	1 667	0 0050	0 004	<0 00002
	6 9 98	7 3	0 0	328	120	24 0	398	31	474	0 9	0 6	0 6	0 2	NA	0 6	2 4	216	**1,080**	1 562	0 001	0 005	0 0002
	7 19 99	7 3	0 0	383	124	28 0	425	27	435	<0 1	<0 2	<0 2	<0 2	NA	<0 2	3 0	205	**1,126**	1 391	ND	ND	ND
	6 20 00	NOT SAMPLED - INSUFFICIENT SAMPLE VOLUME																				
	6 25 01	NOT SAMPLED - INSUFFICIENT SAMPLE VOLUME																				
	6 11 02	NOT SAMPLED - INSUFFICIENT SAMPLE VOLUME																				
	8 18 04	7 4	ND	740	940	86 0	2 700	41	**880**	0 7	ND	ND	ND	NA	ND	5 4	260	**1,600**	1 800	ND	ND	0 00024
	6 16 05	7 4	280	NS	530	55 0	1 400	62	**870**	0 7	ND	NA	NA	NA	ND	4 1	250	**1,700**	2 200	ND	ND	ND
	10 30 06	NA	NA	NA	500	58 0	NA	67	**670**	1 1	5 7		NA	NA	ND	5 0	190	NA	NA	ND	ND	ND
	6 19 07	NA	ND	280	330	59 0	NA	170	**1,200**	0 9	ND		NA	12 0	ND	4 8	270	**3,200**	3,000	ND	ND	ND
	6 24 09	NA	ND	260	280	55 0	NA	160	**1,700**	0 9	ND		NA	NA	ND	4 7	420	**2,700**	3 000	ND	ND	ND
	12 15 10	NA	NA	NA	410	78	NA	180	**1,800**	0 84	<1 0		NA	NA	<0 5	4 3	470	**3,310**	NA	NA	NA	NA
MW-4	6 24 96	7 3	0 0	550	458	79 7	1 472	464	**2,654**	1 7	<1 6			NA	<1 6	8 3	1 249	**5,430**	6 610	0 0011	0 003	<0 00024
	6 24 97	7 0	0 0	570	395	62 0	1 242	272	**2,470**	**1.9**	7 8	<1 1	<0 3	NA	<1 1	11 6	1 110	**4,710**	5 560	<0 0002	<0 004	<0 00002
	6 9 98	6 9	0 0	566	447	78 0	1 437	398	**2,701**	**1 9**	6 4	0 6	0 2	NA	0 6	11 3	1 133	**5,250**	5 930	0 001	0 005	0 0002
	7 19 99	6 9	0 0	561	467	79 0	1 491	374	**2,637**	1 6	2 9	<1 1	<0 2	NA	<0 6	12 0	1 179	**5,610**	5 530	ND	ND	ND
	6 20 00	7 0	0 0	410	110	81 0	1 400	420	**2,500**	1 4	2 5	<0 1	0 07	NA	0	20 0	930	**4,900**	5 900	<0 005	0 010	<0 0002
	6 25 01	7 5	400	400	530	83 0	1 700	450	**2,400**	1 6	2 3	ND	0 12	NA	0 8	20 0	950	**4,700**	5,600	<0 005	0 008	**0 0057**
	6 11 02	7 3	350	350	430	85 0	1 400	450	**2,300**	1 5	2 9	<0 10	0 11	NA	0 21	18 0	840	**4,700**	5 500	<0 005	0 008	<0 0002
	8 18 04	8 04	ND	380	420	58 0	1 300	150	**2,200**	1 6	ND	ND	ND	NA	ND	7 5	690	**3,800**	4 100	ND	ND	ND
	6 16 05	7 0	370	NA	350	55 0	1 100	120	**2,200**	1 3	0 5G	NA	NA	NA	ND	7 9	600	**3,500**	4 300	ND	ND	ND
	10 30 06	NA	NA	NA	380	63 0	NA	140	**2,000**	**1.8**	ND		NA	NA	ND	10 0	650	NA	NA	ND	ND	ND
	6 19 07	NA	ND	310	340	51	NA	100	**1,900**	1 6	ND		NA	4 6	ND	7 5	560	**3,200**	4 000	ND	0 016	ND
	6 24 09	NA	ND	280	330	50	NA	130	**2,000**	1 5	ND		NA	NA	ND	7 3	520	**3,100**	3 400	ND	ND	ND
	12 15 10	NA	NA	NA	370	55	NA	130	**1,800**	1 6	<1 0		NA	NA	<0 5	7 6	490	**3,100**	NA	NA	NA	NA
MW-5	6 24 96	7 5	0 0	374	216	33 2	676	19	**670**	0 7	<0 1			NA	<0 1	1 1	173	**1,332**	1,709	<0 0005	0 004	<0 00024
	6 24 97	8 2	0 0	391	177	39 0	603	47	559	0 7	<0 2	<0 2	<0 1	NA	<0 2	1 8	192	**1,260**	1 702	<0 0002	<0 004	<0 00002
	6 9 98	7 2	0 0	361	318	58 0	1 033	60	**1,378**	0 9	1 4	0 6	0 2	NA	0 6	3 0	405	**2,524**	3 050	0 001	0 005	0 0002
	7 19 99	7 2	0 0	316	213	40 0	697	65	**987**	0 9	0 5	<0 2	<0 2	NA	<0 2	3 0	363	**2,060**	2 300	ND	ND	ND
	6 20 00	7 0	0 0	220	370	68 0	1 200	200	**2,200**	0 8	0 8	<0 1	<0 05	NA	0 20	13 0	670	**3,900**	4,700	<0 005	0 023	<0 0002
	6 25 01	6 1	100	100	400	59 0	1 239	190	**1,900**	0 61	0 4	ND	0 15	NA	0 13	8 6	530	**3,500**	4 000	<0 005	0 006	**0 0025**
	6 11 02	7 5	68	68	460	84 0	1 400	360	**2,500**	0 84	0 85	<0 10	0 10	NA	0 18	13 0	660	**4,500**	5 000	<0 005	0 016	<0 0002
	8 18 04	8 1	ND	160	500	72 0	1 600	160	**2,500**	0 52	ND	ND	ND	NA	ND	6 2	660	**4,200**	4 200	ND	0 037	ND
	6 16 05	6 9	150 0	NS	500	83 0	1 600	240	**2,600**	0 54	1	NA	NA	NA	ND	8 0	640	**4,400**	5 300	ND	0 020	ND
	10 30 06	NA	NA	NA	540	85 0	NA	330	**2,500**	0 51	ND		NA	NA	ND	7 2	710	NA	NA	ND	0 0062	ND
	6 19 07	NA	ND	140	490	87 0	NA	350	**2,600**	0 57	ND		NA	2 6	ND	7 0	680	**4,200**	5 400	ND	0 22	ND
	6 24 09	NA	ND	140	500	89 0	NA	400	**3,000**	0 57	ND		NA	NA	ND	7 9	740	**4,600**	4 700	ND	ND	ND
	12 16 10	NA	NA	NA	520	91 0	NA	380	**2,900**	0 67	0 13		NA	NA	<0 5	8 2	720	**4,630**	NA	NA	NA	NA
MW-6	6 24 96	8 2	0 0	399	37	10 4	135	139	**1,216**	**2.3**	<1 0			NA	<1 0	0 7	850	**2,440**	3,550	0 0009	0 007	<0 00024
	6 24 97	8 3	16 4	394	80	15 0	286	277	**1,520**	**8 0**	<0 6	<0 6	<0 6	NA	<0 6	1 9	1 010	**3,180**	4 280	<0 0002	<0 004	<0 00002
	6 9 98	8 0	0 0	425	93	18 0	306	257	**1,826**	**2.7**	1 8	0 6	0 2	NA	0 6	6 2	1 095	**3,612**	5 090	0 001	0 005	0 0002
	7 19 99	8 1	0 0	438	51	9 0	164	130	**1,176**	**2.3**	0 8	<0 6	<0 2	NA	<0 6	3 0	790	**2,568**	3,410	ND	ND	ND
	6 20 00	8 1	0 0	390	34	5 8	1 110	130	**630**	**6 3**	1 1	<0 1	<0 05	NA	0	2 4	610	**1,800**	2 800	<0 005	<0 005	<0 0002
	6 25 01	8 2	430	420	48	8 2	150	120	**290**	**5 9**	2 1	ND	0 10	NA	0 09	4 8	820	**2,300**	3 300	<0 005	0 009	0 00037
	6 11 02	8 3	450	440	48	7 7	150	170	**1,300**	**7.7**	3 2	<0 10	0 11	NA	0 12	2 4	780	**2,600**	3 600	<0 005	0 007	<0 0002
	8 18 04	8 4	16 0	640	140	18 0	480	150	**1,400**	**5.4**	ND	ND	ND	NA	ND	3 6	890	**2,800**	3 600	ND	0 021	0 00041
	6 16 05	7 9	150 0	NA	500	83 0	1 600	240	**2,600**	0 5	1 0	NA	NA	NA	ND	8 0	640	**4,400**	5 300	ND	0 020	ND
	10 30 06	NA	NA	NA	56	7 6	NA	76	**960**	**5.5**	2 4		NA	NA	ND	1 1	690	NA	NA	ND	0 019	ND
	6 19 07	NA	ND	560	44	6 8	NA	84	**1,100**	**4.6**	2 6		NA	0 6	ND	ND	720	**2,800**	3 500	ND	**0 092**	ND
	6 24 09	NA	ND	410	98	15 0	NA	210	**2,100**	**4.5**	5		NA	NA	ND	1 5	1 100	**3,900**	4 600	ND	0 007	ND
	12 14 10	NA	NA	NA	170	24 0	NA	260	**3,100**	**3 8**	6 1		NA	NA	<0 5	1 4	1 400	**4,960**	NA	NA	NA	NA

Southwest GEOSCIENCE

TABLE 2
CHACO GAS PLANT
GROUNDWATER ANALYTICAL RESULTS - GEOCHEMICAL PARAMETERS

Sample I.D.	Date	pH (unitless)	Alcalinity (CO_3) (mg/L)	Alcalinity (HCO_3) (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Total Hardness (mg/L)	Chloride (mg/L)	Sulfate (SO_4) (mg/L)	Fluoride (mg/L)	Nitrate (NO_3) (mg/L)	Nitrate (NO_2) (mg/L)	Ammonia (NH_4) (mg/L)	Bromide (mg/L)	Phosphate (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Total Dissolved Solids (mg/L)	Conductivity (umhos/cm)	Cadmium (mg/L)	Chromium (mg/L)	Mercury (mg/L)
NM WQCC Standard for Groundwater of 10,000 mg/L TDS or Less		6 to 9	NE	NE	NE	NE	NE	250.0	600	1 6	10	NE	NE	NE	NE	NE	NE	1,000	NE	0 010	0 050	0.002
MW-7	6 24 96	7 4	0 0	329	302	42 9	931	295	**1,336**	**2.0**	<0 6			NA	<0 6	3 6	547	**2,860**	3 550	0 0007	0 002	<0 00024
	6 24 97	8 0	0 0	311	273	43 0	858	152	**1,180**	**3 4**	<0 6	<0 6	<0 1	NA	<0 6	5 7	386	**2,290**	2 880	0 0040	<0 004	<0 00002
	6 9 98	7 2	0 0	343	188	36 0	618	126	**998**	**2 4**	0 6	0 6	0 2	NA	0 6	5 1	414	**2,048**	2 690	0 001	0 005	0 0002
	7 19 99	7 2	0 0	406	219	42 0	720	176	**1,171**	**2 0**	<0 6	<0 6	<0 2	NA	<0 6	4 0	556	**2,700**	3,170	ND	ND	ND
	6 20 00	7 3	0 0	370	260	53 0	880	220	**1,300**	**2.7**	<0 1	<0 1	0 60	NA	0 10	7 3	620	**3,000**	3 900	<0 005	0 012	<0 0002
	6 25 01	7 3	310	310	380	74 0	1 250	180	**2,100**	**2 5**	0 14	ND	1 10	NA	0 06	7 2	610	**3,700**	2 200	<0 005	<0 005	**0 004**
	6 11 02	7 6	340	340	330	64 0	1 100	160	**2,100**	**2 9**	0 26	<0 10	0 87	NA	0 12	7 4	610	**3,500**	4 000	<0 005	0 008	<0 0002
	8 18 04	8 1	ND	550	330	50 0	1 000	120	**1,600**	**2 8**	ND	ND	0 56	NA	ND	4 4	550	**2,900**	3 300	ND	0 015	0 00024
	6 16 05	7 5	350 0	NA	270	44 0	820	140	**1,400**	**2.4**	ND	NA	NA	NA	ND	3 9	530	**2,800**	3.700	ND	ND	ND
	10 30 06	NA	NA	NA	300	52 0	NA	170	**1,500**	**3.0**	ND		NA	NA	ND	3 8	600	NA	NA	ND	0 007	ND
	6.19 07	NA	ND	320	280	47 0	NA	170	**1,700**	**2.4**	ND		NA	0 76	ND	2 2	570	**3,000**	4 000	ND	0 11	ND
	6 24 09	NA	ND	210	370	60 0	NA	420	**2,500**	**2.4**	ND		NA	NA	ND	3 2	750	**4,100**	4 400	ND	ND	ND
	12 14 10	NA	NA	NA	400	60	NA	350	**2,500**	**2.4**	<1 0		NA	NA	<0 5	3 5	810	**4,180**	NA	NA	NA	NA
MW-8b	9 9 96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0002	<0 0057	<0 002
	9 30 97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 002	<0 004	<0 002
	9 15 98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0002	<0 004	<0 0002
	9 21 99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	9 12 00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	10 16 01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 004	0 001	0 0002
	9 20 02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 11 02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	8 18 04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	9 30 05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 19 07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 30 08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	6 24 09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	12 15 10	NA	NA	NA	110	41	NA	80	**850 0**	1 1	<1 0		NA	NA	<0 5	2 2	330	**1,570**	NA	NA	NA	NA
MW-9	9 30 97	7 8	0 0	508	60	17 2	222	60	325	**2.0**	<0 1	<0 1	<0 1	NA	<0 1	1 5	277	**1,010**	1 450	<0 002	<0 004	<0 0002
	9 15 98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0002	<0 004	<0 0002
	12 16 10	NA	NA	NA	160	32	NA	82	**800**	1 4	<1 0		NA	NA	<0 5	1 7	280	**1,540**	NA	NA	NA	NA
MW-10	9 30 97	7 3	0 0	1 105	79	31 4	325	561	168	1 6	<0 6	<0 6	<0 3	NA	<0 6	1 7	678	**2,150**	3 190	<0 0002	<0 004	<0 0002
	9 15 98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0 0002	<0 004	<0 0002
	12 16 10	NA	NA	NA	99	44	NA	79	**810**	1 3	<1 0		NA	NA	<0 5	<1 0	320	**1,510**	NA	NA	NA	NA
NON CONTACT WASTE WATER	6 24 96	8 2	0 0	118	211	40 8	695	60	**740**	**2.1**	0 5			NA	4	26	128	**1,454 0**	1 744	<0 0005	**0 132**	<0 0024
	6 24 97	8 8	44 0	266	261	47 0	845	83	**754**	**2.0**	1	<0 6	<0 1	NA	<0 6	37 9	178	**1,670**	2 010	<0 002	0 034	<0 00002
	6 9 98	8 2	0 0	171	228	44 0	751	27	**766**	**1.9**	0 3	0 2	0 2	NA	0 2	27 0	110	**1,462**	1,721	0 0010	0 005	0 0002
	7 19 99	8 0	0 0	100	234	57 0	819	47	**933**	**1.9**	1	<0 01	<0 02	NA	<0 02	37 0	165	**1,814**	1 807	ND	ND	ND

mg/L - milligrams per liter   µg/L - micrograms per liter

< Denotes a concentration was not detected above the method detection limit

Note: Concentrations in **bold** and yellow exceed the applicable New Mexico WQCC Standard

Southwest GEOSCIENCE

TABLE 3

NATURAL ATTENUATION PARAMETER RESULTS

Sample I.D.	Date	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)	Nitrate (mg/L)	Sulfate (mg/L)
MW-1	12.15.10	13.39	7.73	4.21	19.4	2.672	1.9	1,100
MW-2	12.15.10	14.4	8.06	0.26	-175.4	2.938	<1.0	1,400
MW-3	12.15.10	12.89	7.58	0.58	-135.8	3.971	<1 0	1,800
MW-4	12.15.10	13.06	7.7	0.8	-26.6	3.791	<1.0	1,800
MW-5	12.16.10	NA	NA	NA	NA	NA	0.13	2,900
MW-6	12.14.10	16.27	7.85	5.36	98.5	6.3	6.1	3,100
MW-7	12.14.10	17.28	7.85	1.95	87.5	5 181	<1.0	2,500
MW-8b	12.15.10	12.35	7.88	0.27	-51.3	2 23	<1.0	850
MW-9	12.16.10	9.52	8.2	0.36	-142.5	2.12	<1.0	800
MW-10	12.16.10	12 46	8.34	0.21	-317.3	2.14	<1.0	810

TABLE 4
Chaco Gas Plant
FLUID LEVEL GAUGING DATA

Well ID	Measurement Date	Top-of-Casing Elevation (feet)	Depth to PSH (feet)	Depth to Water (feet)	PSH Thickness (feet)	Corrected Groundwater Elevation
Monitoring Wells						
MW-1	1994**	**	no data	no data	no data	5987 85
	1995*	6002 70		22 9	0 00	5979 80
	08 20 09**	**	no data	no data	no data	5987 46
	12 09 10***	6002 92		14.89	0 00	5988 03
MW-2	1994**	**	no data	no data	no data	5982 20
	1995*	5997 40		15 3	0 00	5982 10
	08 20 09**	**	no data	no data	no data	5976 71
	12 09 10***	5997 60		20 54	0 00	5977 06
MW-3	1994**	**	no data	no data	no data	6002 23
	1995*	6011 68		11 16	0 00	6000 52
	08 20 09**	**	no data	no data	no data	5995 11
	12 09 10***	6011 82		10 65	0 00	6001 17
MW-4	1994**	**	no data	no data	no data	5985.29
	1995*	6004 44		19 14	0 00	5985.30
	08.20 09**	**	no data	no data	no data	5981 90
	12 09 10***	6004 67		22 82	0 00	5981.85
MW-5	1994**	**	no data	no data	no data	5986 02
	1995*	6011.07		24.62	0 00	5986 45
	08 20 09**	**	no data	no data	no data	5982 66
	12 09 10***	6011 07		28 56	0 00	5982 51
MW-6	1994**	**	no data	no data	no data	6009 98
	1995*	6021 43		11 67	0 00	6009 76
	08 20 09**	**	no data	no data	no data	6002 84
	12.09 10***	6021 43		18 31	0 00	6003 12
MW-7	1994**	**	no data	no data	no data	6006 09
	1995*	6013.79		9 25	0 00	6004 54
	08 20 09**	**	no data	no data	no data	5997 96
	12 09 10***	6013 79		15 75	0 00	5998 04
MW-8b	1994**	**	no data	no data	no data	not installed
	1995*	6010 63		17 39	0 00	5993 24
	08 20 09**	**	no data	no data	no data	5999 87
	12 09 10***	6005 00		10 38	0 00	5994 62
MW-9	1994**	no data	no data	no data	no data	not installed
	1995*	no data	no data	no data	no data	not installed
	08 20.09**	**	no data	no data	no data	no data
	12 09 10***	6010 06		12 09	0 00	5997 97
MW-10	1994**	no data	no data	no data	no data	not installed
	1995*	no data	no data	no data	no data	not installed
	08 20 09**	**	no data	no data	no data	no data
	12 09 10***	6009.41		11 86	0 00	5997 55

*= using 1995 survey data

**= using unknown survey data

***= using 12/15/1997 survey data

Southwest GEOSCIENCE

APPENDIX C

Laboratory Data Reports & Chain-of-Custody Documentation

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Tuesday, January 04, 2011

Kyle Summers
Southwest Geoscience
606 S. Rio Grande Unit A
Aztec, NM 87410

TEL: (903) 821-5603
FAX

RE: Chaco Gas Plant

Order No.: 1012701

Dear Kyle Summers:

Hall Environmental Analysis Laboratory, Inc. received 10 sample(s) on 12/17/2010 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites.

Reporting limits are determined by EPA methodology.

Please do not hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Laboratory Manager

NM Lab # NM9425 NM0901
AZ license # AZ0682
ORELAP Lab # NM100001
Texas Lab# T104704424-08-TX

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-1
Lab Order:	1012701	**Collection Date:**	12/15/2010 2:20:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.5	0.10		mg/L	1	12/22/2010 11:47:53 PM
Chloride	100	10		mg/L	20	12/23/2010 12:05:17 AM
Nitrate (As N)+Nitrite (As N)	1.9	1.0		mg/L	5	12/28/2010 11:31:57 AM
Phosphorus, Orthophosphate (As P)	0.64	0.50	H	mg/L	1	12/22/2010 11:47:53 PM
Sulfate	1100	25		mg/L	50	12/27/2010 10:28:21 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	280	5.0		mg/L	5	12/23/2010 3:57:55 PM
Magnesium	48	1.0		mg/L	1	12/23/2010 2:53:51 PM
Potassium	21	1.0		mg/L	1	12/23/2010 2:53:51 PM
Sodium	280	5.0		mg/L	5	12/23/2010 3:57:55 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	2110	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-2
Lab Order:	1012701	**Collection Date:**	12/15/2010 12:00:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-02	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.8	0.10		mg/L	1	12/23/2010 1:14:57 AM
Chloride	64	10		mg/L	20	12/23/2010 12:22:42 AM
Nitrate (As N)+Nitrite (As N)	ND	1.0		mg/L	5	12/28/2010 11:49:23 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 1:14:57 AM
Sulfate	1400	25		mg/L	50	12/27/2010 10:45:46 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	250	5.0		mg/L	5	12/23/2010 4:00:53 PM
Magnesium	51	1.0		mg/L	1	12/23/2010 2:59:38 PM
Potassium	ND	1.0		mg/L	1	12/23/2010 2:59:38 PM
Sodium	370	5.0		mg/L	5	12/23/2010 4:00:53 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	2260	40.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-3
Lab Order:	1012701	**Collection Date:**	12/15/2010 10:40:00 AM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-03	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	0.84	0.10		mg/L	1	12/23/2010 1:32:22 AM
Chloride	180	10		mg/L	20	12/23/2010 1:49:47 AM
Nitrate (As N)+Nitrite (As N)	ND	1.0		mg/L	5	12/28/2010 6:18:29 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 1:32:22 AM
Sulfate	1800	50		mg/L	100	12/27/2010 11:03:11 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	410	10		mg/L	10	12/23/2010 4:03:51 PM
Magnesium	78	1.0		mg/L	1	12/23/2010 3:03:30 PM
Potassium	4.3	1.0		mg/L	1	12/23/2010 3:03:30 PM
Sodium	470	10		mg/L	10	12/23/2010 4:03:51 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3310	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-4
Lab Order:	1012701	**Collection Date:**	12/15/2010 12:00:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-04	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.6	0.10		mg/L	1	12/23/2010 2:07:11 AM
Chloride	130	10		mg/L	20	12/23/2010 2:59:24 AM
Nitrate (As N)+Nitrite (As N)	ND	1.0		mg/L	5	12/28/2010 6:36:54 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 2:07:11 AM
Sulfate	1800	50		mg/L	100	12/27/2010 11:20:36 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	370	10		mg/L	10	12/23/2010 4:08:32 PM
Magnesium	55	1.0		mg/L	1	12/23/2010 3:07:36 PM
Potassium	7.6	1.0		mg/L	1	12/23/2010 3:07:36 PM
Sodium	490	10		mg/L	10	12/23/2010 4:08:32 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	3100	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-5
Lab Order:	1012701	**Collection Date:**	12/16/2010 10:50:00 AM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-05	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	0.67	0.10		mg/L	1	12/17/2010 10:34:19 PM
Chloride	380	10		mg/L	20	12/17/2010 10:51:44 PM
Nitrogen, Nitrate (As N)	0.13	0.10		mg/L	1	12/17/2010 10:34:19 PM
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	12/17/2010 10:34:19 PM
Sulfate	2900	50		mg/L	100	12/27/2010 11:38:01 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	520	10		mg/L	10	12/23/2010 4:11:32 PM
Magnesium	91	1.0		mg/L	1	12/23/2010 3:11:42 PM
Potassium	8.2	1.0		mg/L	1	12/23/2010 3:11:42 PM
Sodium	720	10		mg/L	10	12/23/2010 4:11:32 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	4630	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-6
Lab Order:	1012701	**Collection Date:**	12/14/2010 1:25:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-06	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	3.8	2.0		mg/L	20	12/23/2010 3:51:40 AM
Chloride	260	10		mg/L	20	12/23/2010 3:51:40 AM
Nitrate (As N)+Nitrite (As N)	6.1	1.0		mg/L	5	12/28/2010 8:02:58 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 4:43:55 AM
Sulfate	3100	50		mg/L	100	12/27/2010 11:55:26 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	170	5.0		mg/L	5	12/23/2010 1:35:38 PM
Magnesium	24	1.0		mg/L	1	12/21/2010 7:01:29 PM
Potassium	1.4	1.0		mg/L	1	12/21/2010 7:01:29 PM
Sodium	1400	50		mg/L	50	12/23/2010 1:39:45 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	4960	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-7
Lab Order:	1012701	**Collection Date:**	12/14/2010 2:48:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-07	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						**Analyst: SRM**
Fluoride	2.4	0.10		mg/L	1	12/23/2010 5:01:20 AM
Chloride	350	10		mg/L	20	12/23/2010 5:18:45 AM
Nitrate (As N)+Nitrite (As N)	ND	1.0		mg/L	5	12/28/2010 8:20:23 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 5:01:20 AM
Sulfate	2500	50		mg/L	100	12/28/2010 12:12:51 AM
EPA 6010B: TOTAL RECOVERABLE METALS						**Analyst: RAGS**
Calcium	400	10		mg/L	10	12/23/2010 1:42:54 PM
Magnesium	60	1.0		mg/L	1	12/21/2010 7:05:37 PM
Potassium	3.5	1.0		mg/L	1	12/21/2010 7:05:37 PM
Sodium	810	10		mg/L	10	12/23/2010 1:42:54 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						**Analyst: KS**
Total Dissolved Solids	4180	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-8b
Lab Order:	1012701	**Collection Date:**	12/15/2010 3:20:00 PM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-08	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **JB**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	12/22/2010 11:35:19 PM
Surr: DNOP	115	86.9-151		%REC	1	12/22/2010 11:35:19 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	12/20/2010 1:55:06 PM
Surr: BFB	101	84.5-118		%REC	1	12/20/2010 1:55:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	12/20/2010 1:55:06 PM
Toluene	ND	1.0		µg/L	1	12/20/2010 1:55:06 PM
Ethylbenzene	ND	1.0		µg/L	1	12/20/2010 1:55:06 PM
Xylenes, Total	ND	2.0		µg/L	1	12/20/2010 1:55:06 PM
Surr: 4-Bromofluorobenzene	110	81.3-151		%REC	1	12/20/2010 1:55:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.1	0.10		mg/L	1	12/23/2010 5:36:09 AM
Chloride	80	10		mg/L	20	12/23/2010 5:53:34 AM
Nitrate (As N)+Nitrite (As N)	ND	1.0		mg/L	5	12/28/2010 8:37:48 AM
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	12/23/2010 5:36:09 AM
Sulfate	850	10		mg/L	20	12/23/2010 5:53:34 AM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	110	5.0		mg/L	5	12/23/2010 4:25:25 PM
Magnesium	41	1.0		mg/L	1	12/23/2010 3:15:58 PM
Potassium	2.2	1.0		mg/L	1	12/23/2010 3:15:58 PM
Sodium	330	5.0		mg/L	5	12/23/2010 4:25:25 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	1570	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Estimated value
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- MCL Maximum Contaminant Level
- NC Non-Chlorinated
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitation Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-9
Lab Order:	1012701	**Collection Date:**	12/16/2010 9:00:00 AM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-09	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **JB**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	12/23/2010 12:09:10 AM
Surr: DNOP	123	86.9-151		%REC	1	12/23/2010 12:09:10 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	12/20/2010 2:25:06 PM
Surr: BFB	86.2	84.5-118		%REC	1	12/20/2010 2:25:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	12/20/2010 2:25:06 PM
Toluene	ND	1.0		µg/L	1	12/20/2010 2:25:06 PM
Ethylbenzene	ND	1.0		µg/L	1	12/20/2010 2:25:06 PM
Xylenes, Total	ND	2.0		µg/L	1	12/20/2010 2:25:06 PM
Surr: 4-Bromofluorobenzene	88.4	81.3-151		%REC	1	12/20/2010 2:25:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.4	0.10		mg/L	1	12/17/2010 9:59:30 PM
Chloride	82	10		mg/L	20	12/17/2010 10:16:55 PM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	12/17/2010 9:59:30 PM
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	12/17/2010 9:59:30 PM
Sulfate	800	10		mg/L	20	12/17/2010 10:16:55 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	160	5.0		mg/L	5	12/23/2010 4:28:24 PM
Magnesium	32	1.0		mg/L	1	12/23/2010 3:20:08 PM
Potassium	1.7	1.0		mg/L	1	12/23/2010 3:20:08 PM
Sodium	280	5.0		mg/L	5	12/23/2010 4:28:24 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	1540	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Estimated value
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- MCL Maximum Contaminant Level
- NC Non-Chlorinated
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitation Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *04-Jan-11*

CLIENT:	Southwest Geoscience	**Client Sample ID:**	MW-10
Lab Order:	1012701	**Collection Date:**	12/16/2010 10:10:00 AM
Project:	Chaco Gas Plant	**Date Received:**	12/17/2010
Lab ID:	1012701-10	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **JB**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	12/23/2010 12:43:00 AM
Surr: DNOP	125	86.9-151		%REC	1	12/23/2010 12:43:00 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	0.062	0.050		mg/L	1	12/21/2010 1:52:20 PM
Surr: BFB	97.4	84.5-118		%REC	1	12/21/2010 1:52:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	12/21/2010 1:52:20 PM
Toluene	ND	1.0		µg/L	1	12/21/2010 1:52:20 PM
Ethylbenzene	ND	1.0		µg/L	1	12/21/2010 1:52:20 PM
Xylenes, Total	ND	2.0		µg/L	1	12/21/2010 1:52:20 PM
Surr: 4-Bromofluorobenzene	115	81.3-151		%REC	1	12/21/2010 1:52:20 PM
EPA METHOD 300.0: ANIONS						Analyst: **SRM**
Fluoride	1.3	0.10		mg/L	1	12/17/2010 11:09:09 PM
Chloride	79	10		mg/L	20	12/17/2010 11:26:34 PM
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	12/17/2010 11:09:09 PM
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	12/17/2010 11:09:09 PM
Sulfate	810	10		mg/L	20	12/17/2010 11:26:34 PM
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **RAGS**
Calcium	99	1.0		mg/L	1	12/23/2010 3:24:13 PM
Magnesium	44	1.0		mg/L	1	12/23/2010 3:24:13 PM
Potassium	ND	1.0		mg/L	1	12/23/2010 3:24:13 PM
Sodium	320	5.0		mg/L	5	12/23/2010 4:31:22 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	1510	20.0		mg/L	1	12/21/2010 2:47:00 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Southwest Geoscience
Project: Chaco Gas Plant **Work Order:** 1012701

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 300.0: Anions											
Sample ID: 1012701-04AMSD		*MSD*				**Batch ID: R42834**		**Analysis Date: 12/23/2010 2:41:59 AM**			
Fluoride	2.007	mg/L	0.10	0.5	1.596	82.2	71.7	114	0.0459	20	
Sample ID: MB		*MBLK*				**Batch ID: R42754**		**Analysis Date: 12/17/2010 10:23:10 AM**			
Fluoride	ND	mg/L	0.10								
Chloride	ND	mg/L	0.50								
Nitrogen, Nitrate (As N)	ND	mg/L	0.10								
Phosphorus, Orthophosphate (As P)	ND	mg/L	0.50								
Sulfate	ND	mg/L	0.50								
Sample ID: MB		*MBLK*				**Batch ID: R42834**		**Analysis Date: 12/22/2010 6:17:03 PM**			
Fluoride	ND	mg/L	0.10								
Chloride	ND	mg/L	0.50								
Nitrogen, Nitrate (As N)	ND	mg/L	0.10								
Nitrate (As N)+Nitrite (As N)	ND	mg/L	0.20								
Phosphorus, Orthophosphate (As P)	ND	mg/L	0.50								
Sulfate	ND	mg/L	0.50								
Sample ID: MB		*MBLK*				**Batch ID: R42882**		**Analysis Date: 12/27/2010 2:38:14 PM**			
Fluoride	ND	mg/L	0.10								
Chloride	ND	mg/L	0.50								
Nitrogen, Nitrate (As N)	ND	mg/L	0.10								
Nitrate (As N)+Nitrite (As N)	ND	mg/L	0.20								
Phosphorus, Orthophosphate (As P)	ND	mg/L	0.50								
Sulfate	ND	mg/L	0.50								
Sample ID: LCS		*LCS*				**Batch ID: R42754**		**Analysis Date: 12/17/2010 10:40:34 AM**			
Fluoride	0.5166	mg/L	0.10	0.5	0	103	90	110			
Chloride	5.076	mg/L	0.50	5	0	102	90	110			
Nitrogen, Nitrate (As N)	2.565	mg/L	0.10	2.5	0	103	90	110			
Phosphorus, Orthophosphate (As P)	5.234	mg/L	0.50	5	0	105	90	110			
Sulfate	10.22	mg/L	0.50	10	0	102	90	110			
Sample ID: LCS		*LCS*				**Batch ID: R42834**		**Analysis Date: 12/22/2010 6:34:28 PM**			
Fluoride	0.5082	mg/L	0.10	0.5	0	101	90	110			
Chloride	4.719	mg/L	0.50	5	0	94.4	90	110			
Nitrogen, Nitrate (As N)	2.431	mg/L	0.10	2.5	0	97.3	90	110			
Nitrate (As N)+Nitrite (As N)	3.434	mg/L	0.20	3.5	0	98.1	90	110			
Phosphorus, Orthophosphate (As P)	5.019	mg/L	0.50	5	0	100	90	110			
Sulfate	9.871	mg/L	0.50	10	0	98.7	90	110			
Sample ID: LCS		*LCS*				**Batch ID: R42882**		**Analysis Date: 12/27/2010 2:55:39 PM**			
Fluoride	0.5040	mg/L	0.10	0.5	0	101	90	110			
Chloride	4.908	mg/L	0.50	5	0	98.2	90	110			
Nitrogen, Nitrate (As N)	2.520	mg/L	0.10	2.5	0.0208	100	90	110			
Nitrate (As N)+Nitrite (As N)	3.546	mg/L	0.20	3.5	0	101	90	110			
Phosphorus, Orthophosphate (As P)	4.818	mg/L	0.50	5	0	96.4	90	110			
Sulfate	9.990	mg/L	0.50	10	0	99.9	90	110			
Sample ID: 1012701-04AMS		*MS*				**Batch ID: R42834**		**Analysis Date: 12/23/2010 2:24:35 AM**			
Fluoride	2.007	mg/L	0.10	0.5	1.596	82.0	71.7	114			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Southwest Geoscience
Project: Chaco Gas Plant **Work Order:** 1012701

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8015B: Diesel Range											
Sample ID: MB-24969		*MBLK*				Batch ID:	**24969**	Analysis Date:		12/22/2010 9:52:57 PM	
Diesel Range Organics (DRO)	ND	mg/L	1.0								
Motor Oil Range Organics (MRO)	ND	mg/L	5.0								
Sample ID: LCS-24969		*LCS*				Batch ID:	**24969**	Analysis Date:		12/22/2010 10:27:05 PM	
Diesel Range Organics (DRO)	5.337	mg/L	1.0	5	0	107	74	157			
Sample ID: LCSD-24969		*LCSD*				Batch ID:	**24969**	Analysis Date:		12/22/2010 11:01:12 PM	
Diesel Range Organics (DRO)	5.348	mg/L	1.0	5	0	107	74	157	0.204	23	
Method: EPA Method 8015B: Gasoline Range											
Sample ID: 1012701-09C MSD		*MSD*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 4:28:15 PM	
Gasoline Range Organics (GRO)	0.5316	mg/L	0.050	0.5	0	106	74.6	134	3.80	17	
Sample ID: 5ML RB		*MBLK*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 9:02:20 AM	
Gasoline Range Organics (GRO)	ND	mg/L	0.050								
Sample ID: 2.5UG GRO LCS		*LCS*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 4:58:24 PM	
Gasoline Range Organics (GRO)	0.5428	mg/L	0.050	0.5	0	109	83.7	124			
Sample ID: 1012701-09C MS		*MS*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 3:55:33 PM	
Gasoline Range Organics (GRO)	0.5118	mg/L	0.050	0.5	0	102	74.6	134			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Southwest Geoscience
Project: Chaco Gas Plant **Work Order:** 1012701

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 1012701-08C MSD		*MSD*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 5:58:30 PM	
Methyl tert-butyl ether (MTBE)	18.72	µg/L	2.5	20	0	93.6	55.6	139	0.460	20.9	
Benzene	19.88	µg/L	1.0	20	0	99.4	87.7	108	1.67	13.8	
Toluene	20.32	µg/L	1.0	20	0	102	84.2	115	0.999	17.1	
Ethylbenzene	20.15	µg/L	1.0	20	0	101	81.3	115	1.36	15.3	
Xylenes, Total	62.18	µg/L	2.0	60	0	104	83	118	1.24	13	
1,2,4-Trimethylbenzene	18.53	µg/L	1.0	20	0	92.6	77.1	114	2.91	6.57	
1,3,5-Trimethylbenzene	20.61	µg/L	1.0	20	0	103	88.4	115	1.54	7.92	
Sample ID: 5ML RB		*MBLK*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 9:02:20 AM	
Methyl tert-butyl ether (MTBE)	ND	µg/L	2.5								
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
1,2,4-Trimethylbenzene	ND	µg/L	1.0								
1,3,5-Trimethylbenzene	ND	µg/L	1.0								
Sample ID: 100NG BTEX LCS		*LCS*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 6:28:37 PM	
Methyl tert-butyl ether (MTBE)	19.26	µg/L	2.5	20	0	96.3	75.5	124			
Benzene	21.24	µg/L	1.0	20	0	106	84.7	118			
Toluene	21.67	µg/L	1.0	20	0	108	82	123			
Ethylbenzene	21.39	µg/L	1.0	20	0	107	83	118			
Xylenes, Total	65.41	µg/L	2.0	60	0	109	85.4	119			
1,2,4-Trimethylbenzene	20.23	µg/L	1.0	20	0	101	82.1	113			
1,3,5-Trimethylbenzene	21.87	µg/L	1.0	20	0	109	89.6	119			
Sample ID: 1012701-08C MS		*MS*				Batch ID:	**R42770**	Analysis Date:		12/20/2010 5:28:24 PM	
ethyl tert-butyl ether (MTBE)	18.63	µg/L	2.5	20	0	93.2	55.6	139			
enzene	20.21	µg/L	1.0	20	0	101	87.7	108			
oluene	20.52	µg/L	1.0	20	0	103	84.2	115			
thylbenzene	20.42	µg/L	1.0	20	0	102	81.3	115			
ylenes, Total	62.95	µg/L	2.0	60	0	105	83	118			
1,2,4-Trimethylbenzene	19.07	µg/L	1.0	20	0	95.4	77.1	114			
1,3,5-Trimethylbenzene	20.93	µg/L	1.0	20	0	105	88.4	115			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Southwest Geoscience
Project: Chaco Gas Plant **Work Order:** 1012701

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA 6010B: Total Recoverable Metals											
Sample ID: MB-24935		*MBLK*				Batch ID:	**24935**	Analysis Date:	12/21/2010 3:09:13 PM		
Calcium	ND	mg/L	1.0								
Magnesium	ND	mg/L	1.0								
Potassium	ND	mg/L	1.0								
Sodium	ND	mg/L	1.0								
Sample ID: MB-24936		*MBLK*				Batch ID:	**24936**	Analysis Date:	12/23/2010 11:45:44 AM		
Calcium	ND	mg/L	1.0								
Magnesium	ND	mg/L	1.0								
Potassium	ND	mg/L	1.0								
Sodium	ND	mg/L	1.0								
Sample ID: LCS-24935		*LCS*				Batch ID:	**24935**	Analysis Date:	12/21/2010 3:12:35 PM		
Calcium	49.20	mg/L	1.0	50	0	98.4	80	120			
Magnesium	50.07	mg/L	1.0	50	0.0309	100	80	120			
Potassium	52.68	mg/L	1.0	50	0.2592	105	80	120			
Sodium	49.55	mg/L	1.0	50	0.1008	98.9	80	120			
Sample ID: LCS-24936		*LCS*				Batch ID:	**24936**	Analysis Date:	12/23/2010 11:49:04 AM		
Calcium	50.78	mg/L	1.0	50	0	102	80	120			
Magnesium	51.69	mg/L	1.0	50	0	103	80	120			
Potassium	53.71	mg/L	1.0	50	0.0762	107	80	120			
Sodium	50.41	mg/L	1.0	50	0.0339	101	80	120			
Method: SM2540C MOD: Total Dissolved Solids											
Sample ID: 1012701-06AMSD		*MSD*				Batch ID:	**24933**	Analysis Date:	12/21/2010 2:47:00 PM		
Total Dissolved Solids	5980	mg/L	20.0	1000	4955	103	80	120	0.0502	20	
Sample ID: MB-24933		*MBLK*				Batch ID:	**24933**	Analysis Date:	12/21/2010 2:47:00 PM		
Total Dissolved Solids	ND	mg/L	20.0								
Sample ID: LCS-24933		*LCS*				Batch ID:	**24933**	Analysis Date:	12/21/2010 2:47:00 PM		
Total Dissolved Solids	1010	mg/L	20.0	1000	0	101	80	120			
Sample ID: 1012701-06AMS		*MS*				Batch ID:	**24933**	Analysis Date:	12/21/2010 2:47:00 PM		
Total Dissolved Solids	5977	mg/L	20.0	1000	4955	102	80	120			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name SOUTHWEST GEOSCIENCE | Date Received: 12/17/2010

Work Order Number 1012701 | Received by: LNM

Checklist completed by: Michelle Cpa 12/17/10 (Signature / Date) | Sample ID labels checked by: (Initials)

Matrix: | Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☑ AA 12/17	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☑	No ☐	N/A ☐	
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐	

Number of preserved bottles checked for pH: 20 (2) >12 unless noted below.

Container/Temp Blank temperature? **5.8°** <6° C Acceptable If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: Trip Blanks arrived broken 12/17/10

Corrective Action _____

CHAIN OF CUSTODY RECORD

Southwest GEOSCIENCE
Environmental & Hydrogeologic Consultants

Office Location: Aztec
Project Manager: K. Summers

Laboratory: Hall
Address: 4901 Hawkins NE, ABQ, NM 87109
Contact: Andy Freeman
Phone: 505-345-3975
PO/SO #: 04100016

Sampler's Name: Kyle Summers
Sampler's Signature: [signature]

Proj. No.: 04100018
Project Name: Chaco Gas Plant

Lab use only
Due Date:
Temp. of coolers when received (C°): 5.8
1 | 2 | 3 | 4 | 5
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1012701

ANALYSIS REQUESTED: 8015M TPH GRO/DRO; 8021B BTEX; 6010/6020-Ca, K, Na, Mg; 9056A-Chloride, Sulfates, Fluoride, Nitrates, Phosphates; SM 4500 PH, S/E; TDS SM2540C

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O	8015M TPH GRO/DRO	8021B BTEX	6010/6020-Ca, K, Na, Mg	9056A-Chloride, Sulfates, Fluoride, Nitrates, Phosphates		SM 4500 PH, S/E	TDS SM2540C				Lab Sample ID (Lab Use Only)
W	12/15/10	1420		X	MW-1						3			X	X		X	X				-1
↓	12/15/10	1200		↓	MW-2						3			↓	↓		↓	↓				-2
	12/15/10	1040			MW-3						3											-3
	12/15/10	1200			MW-4						3											-4
	12/16/10	1050			MW-5						3											-5
	12/14/10	1325			MW-6						3											-6
	12/14/10	1448			MW-7						3											-7
	12/15/10	1520			MW-8b			(2) 3 NS			3	X	X									-8
	12/16/10	0900			MW-9			(2) 3 NS			3	X	X									-9
↓	12/16/10	1010		↓	MW-10			(2) 3 NS			3	X	X	↓	↓		↓	↓				-10

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

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	12/16/10	1330	[signature]	12/17	1100
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES: ON TPH samples DRO/GRO only.
Metals - see attached

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