December 8, 2008

Aminifilibadi Masood & Amini Sharbano
909 Blue Bell Drive
Livermore, CA 94551

Re: Transmittal Letter
Site Location: Springtown Gas
909 Blue Bell Drive, Livermore, CA 94551

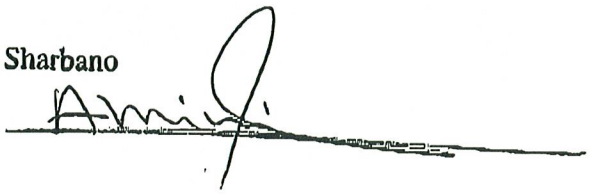
Dear Mr. Wickham:

On behalf of Aminifilibadi Masood & Amini Sharbano, Geological Technics Inc. (GTI) prepared the Hydrogen Peroxide Injection Pilot Test Report, dated December 5, 2008 that was sent to your office via electronic delivery per Alameda County's guidelines on December 8, 2008.

I declare under penalty of law that the information and/or recommendations contained in the above referenced document or report is true and correct to the best of my knowledge.

Respectfully submitted,

Aminifilibadi Masood/Amini Sharbano
Property Owner
909 Blue Bell Drive
Livermore, CA 94551



Geological Technics Inc. _____

Report

Hydrogen Peroxide Injection Pilot Test

Springtown Gas
909 Bluebell Drive
Livermore, California

Project No. 1409.2
December 5, 2008

Prepared for:
Masood Filibadi and Sharbano Amini
909 Bluebell Drive
Livermore, California 95353

Prepared by:
Geological Technics Inc.
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Modesto, California 95354
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December 5, 2008

Project No. 1409.2
Project Name: Springtown Gas (Blue Bell)

Masood Filibadi and Sharbano Amini
Springtown Gas
909 Bluebell Drive
Livermore, California 94551

RE: Report: Hydrogen Peroxide Injection Pilot Test
Location: Springtown Gas, 909 Bluebell Drive, Livermore, California

Dear Masood Filibadi and Sharbano Amini:

Geological Technics Inc. is pleased to present the attached Report, *Hydrogen Peroxide Injection Pilot Test*, conducted at Springtown Gas, 909 Bluebell Drive, Livermore, California (Site). The pilot test included weekly 7% hydrogen peroxide solution injection in selected wells, weekly groundwater monitoring for field parameters and groundwater sampling for metals and chemicals of concern at the site in two events. The pilot test started on September 29, 2008 and ended on November 6, 2008. The last groundwater sampling occurred on November 20, 2008.

Hydrogen Peroxide Injection Pilot Test was performed based on the work plan "*Site Conceptual Model, Hydrogen Peroxide Injectiopn, Groundwater Monitoring/Samoling and Analysis*" prepared by GTI on July 29, 2008 and approved by Alameda County Health Care Services Agency (ACHCSA) in their correspondence dated August 8, 2008.

If you have any questions or need additional information, please contact me. Thank you for this opportunity to serve your environmental needs.

Sincerely,

Raynold I. Kablanow II, Ph.D.
Vice President

cc: Jerry Wickham – ACEHS
USTCUF

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Geological Technics Inc.

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Report

Hydrogen Peroxide Injection Pilot Test

Springtown Gas
909 Bluebell Drive
Livermore, California

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1. INTRODUCTION

1.1 Purpose and Goal

The purpose of this pilot test is to examine an advanced oxidation technique, hydrogen peroxide injection, as an approach for residual contaminants removal from groundwater and soil at the subject site. By conducting the pilot test we tested the oxidation potential for chemicals of concern (Methyl tert Butyl Eater [MtBE] and Tert Butyl Alcohol [TBA]) that hydrogen peroxide could offer. In addition to investigating the contaminants effective removal, mobilization of metals in fluid phase (groundwater) was also explored to make sure that the remedial action would not have any adverse effect on groundwater quality.

The goal is to apply chemical oxidation in such a way to minimize the adverse effect on groundwater quality. Two important factors in optimizing the remedial action are quantity and frequency of injection at the site. In other words, intensity and frequency of oxidizers application in porous media would define the chemical to be oxidized based on their oxidation potentials and concentrations.

1.2 Site History

Gasoline range petroleum hydrocarbons associated with underground storage tanks (UST), underground waste oil tank systems, and piping/dispenser network have been documented in soil and groundwater at the above site (sees Figures 1 and 2 for vicinity and site maps). The site, former Springtown Arco Service Station was found as a potential contribution to soil and groundwater contamination in an August 1988 inspection by Alameda County Department of Environmental Health, Hazardous Materials Division (ACHCSA). During the course of inspection, the Division noted the presence of three 10,000 gallon underground storage tanks and one 1000 gallon underground waste oil tank. Springtown Arco Service Station was a part of Springtown Towing Business that was converted to a gasoline/retail minimart in 1988.

ACHCSA in their correspondence dated March 27, 1990 directed the removal of the underground waste oil tank and the cleanup of any soil or groundwater contamination that may have resulted from the tank system.

The underground waste oil tank was removed by Alpha Geo Services Inc. on February 7, 1992. Soil samples collected beneath the tank area at six feet deep showed elevated levels of total oil and grease (5,000 ppm), TPH-D (89 ppm) and lead (140 ppm).

The three 10,000 gallon underground storage tanks were removed on December 13, 1993. After excavation sheen was observed in groundwater, an indication of hydrocarbon contamination resulted from tank leakage. Groundwater analysis of the sample taken from the pit indicated a 33,000 µg/l of TPH-G, 160, 200, 220, and 1,200 µg/l BTEX respectively. Soil samples were collected from the side walls of the excavation. The samples contained up to 43 ppm TPH-G, 0.29, 0.33, 0.35 and 1.1 ppm BTEX respectively.

Upon demolition of the former minimart building and construction of the new one and upgrading the new UST, top soil and groundwater samples were collected from the product dispenser and delivery piping removal areas by H_2OGEOL in June 2005. The sampling was directed by the Livermore-Pleasanton Fire Department. Elevated concentrations of TPHd and TPHg were detected only in soil and groundwater samples collected at product dispenser 1-2. The impacted soil was removed by over-excavation. Elevated concentrations of MtBE and TBA were detected in soil samples collected at approximately 0.5 feet bgs from product dispenser 1-2, product dispenser 5-6, product dispenser 7-8, and the product delivery piping removal areas, with the highest concentrations detected in proximity to the UST cluster. The groundwater sample also contained elevated concentrations of MtBE and TBA.

One 1000-gallon capacity waste oil UST tank was removed from the south-central portion of the Site in February 1992 (Figure 2). Soil confirmation samples collected at 6 feet bgs contained minor concentrations of total petroleum hydrocarbons as diesel (TPHd), trace concentrations of toluene, ethylbenzene, total xylenes and tetrachloroethane (PCE), and elevated concentrations of total lead (Pb). In February 1995, the waste oil UST removal

excavation was reopened and over-excavated. Confirmation samples collected from the over-excavated areas did not contain analytically detectable concentrations of TPHd, TPH as gasoline (TPHg), TOG, or benzene toluene, ethylbenzene, total xylenes (BTEX).

In December 1993, three 10,000-gallon capacity gasoline USTs used to store gasoline were removed from the southwest portion of the Site (Figure 2).

- Following removal a noticeable sheen was observed on groundwater entering the excavation (ACHCS 2000). Initially, 1,000 gallons of groundwater was removed from the gasoline UST removal pit, with another 6,000 gallons removed later (ACHCS 2000).
- The groundwater in the removal excavation was found to contain elevated TPHg and BTEX concentrations. The water was subsequently transported and treated offsite in December 1993.
- Soil confirmation samples collected along the sidewalls and at each end of the removal excavation contained minor concentrations of TPHg and BTEX.
- The gasoline UST removal pit was over excavated twice to remove TPH impacted soils. Product delivery piping was also removed concurrent with the removal of the gasoline USTs.
- Soil confirmation samples collected from the delivery line removal trenches (Figure 3) contained trace to non-detect concentrations of TPH.

A total of 1,500 cubic yards of impacted soil were removed from the waste oil and gasoline UST removal excavations. The impacted soil was heat-treated on the Site for approximately 3 months. Approximately 20 cubic yards were found to contain elevated TPH concentrations at the end of the treatment period, and were transported and disposed offsite. The remaining 1,480 cubic yards were used to backfill the gasoline UST removal excavation.

In January 1996, three groundwater monitoring wells were installed at the Site (Figure 3). Groundwater samples collected from the monitoring wells in July 1996 and April 1999 contained a maximum of 180 micrograms per liter (µg/l) TPHg, 130 µg/l methyl-tertiary butyl ether (MtBE), 17 µg/l benzene and trace TEX. Halogenated volatile organic compounds (HVOCs) were not detected.

The Site received Remedial Action Completion Certification from the ACHCS on August 30, 2000 (ACHCS 2000). The ACHCS Case Closure Letter stated that up to 7,000 milligrams per kilogram (mg/kg) TPHg and 5.8 mg/kg benzene exists in soil beneath the gasoline UST removal excavation, and that up to 5,000 g/kg TOG exists in soil beneath the waste oil UST removal excavation. The three groundwater monitoring wells that were installed in January 1996 were subsequently abandoned later in 2000.

During the First and Second Quarters of 2005, the Site underwent extensive renovation. This included demolition of the former minimart building and construction of the existing minimart structure, undertaking a UST top upgrade to the three existing USTs on the Site, and removal and replacement of product delivery piping and product dispensers.

On June 29, 2005, soil samples were collected from the product dispenser and delivery piping removal areas (H_2OGEOL 2005). The samples were collected at the direction of the Livermore-Pleasanton Fire Department. A total of 14 soil samples, one groundwater sample, and three soil stockpile samples, were collected for laboratory analyses of TPHd, TPHg, BTEX, MtBE, tert-butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl-tert-butyl ether (EtBE) and tert-amyl-methyl ether (TAME). The soil stockpile samples were also analyzed for total lead (Pb). The soil and groundwater sample locations are illustrated on Figure 2 (Dispenser 1-2, Dispenser 3-4, Dispenser 5-6, Dispenser 7-8, PL1 through PL5, SCor1-2 and Ncor1-2, and PL1-1-2-GW). Table 4 in "Tables from previous works done by other consultants" lists the soil analytical results, and Table 2 lists the groundwater analytical results. Elevated concentrations of TPHd and TPHg were detected only in soil and groundwater samples collected at product dispenser 1-2. The impacted soil was removed by over-excavation. The soil stockpile samples contained trace amounts of TPHd and TPHg. BTEX compounds were not analytically detected in the soil samples, soil stockpile samples and the groundwater sample. Elevated concentrations of MtBE and TBA were detected in soil samples collected at approximately 0.5 feet bgs from product dispenser 1-2, product dispenser 5-6, product dispenser 7-8, and the product delivery piping removal areas, with the highest concentrations detected in proximity to the UST cluster. The groundwater sample also contained elevated concentrations of MtBE and TBA. The soil stockpile samples contained low to moderate levels of MtBE and TBA and low levels of total lead (Pb).

Based on the analytical results, an Underground Storage Tank Unauthorized Release Report for the Site was issued by the Livermore Pleasanton Fire Department on June 29, 2005. The Site was transferred to the ACHCS on August 10, 2005.

In February 2007, nine borings were advanced by direct-push methods (SB-1 thru SB-9) around the UST cluster and the product dispenser area (ESTC, March 2007). The locations of the borings are illustrated on Figure 2. The soil lithology encountered ranged from black stiff clay to gray silty clay to 20 feet bgs (maximum depth explored).

- Soil and groundwater samples were collected from each boring for laboratory analyses. Table 1 lists the soil analytical results, and Table 2 lists the groundwater analytical results (Tables from previous works done by other consultants).
- Concentrations of TPHd, TPHg and BTEX were not analytically detected in the soil samples. Elevated concentrations of MtBE and TBA were detected in soil samples collected between 5 feet and 15 feet bgs from boring SB-5 in the southwest portion of the product dispenser area, and borings SB-6, SB-7 and SB-8 in proximity to the north and west sides of the UST cluster, and the southwest portion of the dispenser area (SB-5).
- For the groundwater samples, elevated concentrations of TPHg were detected at borings SB-5 and SB-6 with the remaining borings all non-detect. Elevated concentrations of MtBE were detected in the groundwater samples collected from all of the borings except SB-1 and SB-8, with the highest concentrations at boring SB-5 and SB-6. Concentrations of TBA were elevated in groundwater samples collected from all of the borings except SB-3, SB-4 and SB-9, with the highest concentrations at borings SB-6, SB-7 and SB-8, all at the UST cluster.

In March 2007, a 2000-foot receptor well survey was conducted (ESTC, March 2007). A total of 51 wells were located within 2,000 feet of the site, of which 49 are monitoring wells for other contaminated sites. One domestic well and one supply well were located within 2,000 feet of the Site. The domestic well is located approximately 1950 feet southeast of the Site and the supply well is located approximately 1,400 feet southeast of the Site.

In June 2007, two Cone Penetrometer Test (CPT) boreholes were advanced hydraulically (CPT-1 and CPT-2) at the north side of the UST cluster and the southwest corner of the product dispenser area, to characterize the soil lithology underlying the Site, and collect grab groundwater samples from water-bearing zones to evaluate vertical extent of groundwater impact (ESTC July 2007). The locations of the two CPT boreholes are illustrated on Figure 2.

- At CPT-1, clay and silty clay was interpreted to approximately 30 feet bgs, followed by sand to approximately 40 feet, followed by sandy silt and clayey silt to approximately 63 feet bgs, followed by sand to approximately 68 feet bgs (maximum depth explored).
- At CPT-2, clay and silty clay followed by sandy silt and clayey silt were interpreted to approximately 16 feet bgs, followed by sand to approximately 22 feet bgs, followed by sandy silt and clayey silt to 28 feet bgs, followed by sand to 35 feet bgs, followed by sandy silt and clayey silt to 60 feet bgs, with a thin layer of sand at approximately 41 feet bgs (maximum depth explored).
- Grab Groundwater samples were collected from the CPT-interpreted sand zones. The analytical results are listed on Table 2. Concentrations of TPHg and BTEX were not detected in the samples collected. Concentrations of MtBE were detected in the samples collected from CPT-1 between 34 feet to 38 feet bgs (1.4 µg/l), and from CPT-2 between 18 feet and 22 feet bgs (89 µg/l).
- Trace concentrations of chloroform and PCE were detected in the sample collected from CPT-1 between 34 feet to 38 feet bgs, and at CPT-2 between 31 feet to 35 feet bgs.
- The analytical results established that only uppermost groundwater (<20 feet bgs) is impacted with dissolved-phase hydrocarbons.

In August 2007, four soil borings were advanced by direct-push methods (GP-1 thru GP-7), three of which were converted to 2-inch diameter groundwater monitoring wells (GP-5/STMW-1, GP-6/STMW-2, and GP-7/STMW-3). The locations of the borings and monitoring wells are illustrated on Figure 2, site map (ESTC October 2007).

- The soil lithology encountered ranged from black stiff clay to gray silty clay to 20 feet bgs (maximum depth explored) in borings GP-1 and GP-6/STMW-2.
- At GP-5/STMW-1 light brown clayey sand was encountered between approximately 13 feet and 16 feet bgs. At borings GP-2, GP-3, GP-4 and GP-7/STMW-3, a light brown to gray sand ranging from fine-grained to gravelly was encountered between approximately 13 feet to 20 feet bgs, and was inferred to correlate with the CPT-interpreted sand between 16 feet and 22 feet bgs in CPT-2 (June 2007). The sand bed was interpreted to occur only along the north end of the Site.

- Soil samples were collected from each boring for laboratory analyses. Table 1 lists the soil analytical results. Concentrations of TPHg and BTEX were not detected in the samples collected. Concentrations of MtBE and TBA were detected in samples collected from GP-1 at 5 feet bgs and 20 feet bgs, from GP-2 at 10 feet bgs, from GP-3 at 10 feet and 20 feet bgs, from GP-5/STMW-1 at 10 feet, 15 feet and 20 feet bgs, and from GP-6/STMW-2 at 5 feet and 10 feet bgs. The highest concentrations were detected at GP-5/STMW-1 and GP-6/STMW-2 north and south of the UST cluster (Figure 2), and GP-2 at the northwest comer of the product dispenser area. Correlating the soil analytical results from this investigation with the February and June 2007 investigations identified the highest soil impact in proximity to the UST cluster and the northwest portion of the product dispenser area.
- Grab groundwater samples were collected from borings GP-1 thru GP-4. Table 2 lists the grab groundwater analytical results. Concentrations of TPHg and BTEX were not detected in the grab groundwater samples, with the exception of the sample from boring GP-3, the analyses of which did not indicate a gasoline pattern. Elevated concentrations of MtBE and TBA were detected in the grab groundwater samples collected from borings GP-1 thru GP-3, with the highest MtBE concentration detected in boring GP-3, and the highest TBA concentration detected in boring GP-2. A trace concentration of methanol was detected in boring GP-2. Correlating the grab groundwater analytical results from this investigation with the February and June 2007 investigations identified the highest MtBE impact in proximity to the UST cluster and the northwest portion of the product dispenser area, coinciding with the combined soil analytical results in these two areas of the Site.
- Offsite migration of MtBE with groundwater to the north and northwest was also apparent.
- The UST cluster was inferred to be the MtBE Source Area (ESTC, October 2007).

The three groundwater monitoring wells were developed and surveyed in late August 2007, and groundwater samples collected on September 4, 2007. A rainbow sheen was observed on the groundwater sample collected from monitoring well STMW-1 (ESTC January 2008).

- Table 2 lists the analytical results. Concentrations of TPHg were detected only in the groundwater samples collected from monitoring wells STMW-1 (220 µg/l) and STMW-3 (59 µg/l). Concentrations of BTEX were not detected. Concentrations of MtBE were detected only in the groundwater samples collected from monitoring wells STMW-1 (850 µg/l) and STMW-3 (160 µg/l). Concentrations of TBA were detected in each monitoring well, with the highest concentration detected in the sample collected from STMW-1 (6,500 µg/l).
- Depth to water measurements ranged from 6.58 feet bgs (510.97 feet above mean sea level [amsl]) at STMW-1, 8.30 feet bgs (511.29 feet amsl) at STMW-2, to 9.52 feet bgs (510.85 feet amsl) at STMW-3.
- Based on the depth to water measurements, groundwater was determined to be flowing northwest at a gradient of 0.006 ft/ft.
- Table 3 lists the monitoring data. The well screens in the wells were drowned (groundwater surface above the top of well screen) at the time depth to water measurements and groundwater samples were collected from the wells.

In December 2007, the monitoring wells were monitored and sampled, with the event reported as the Fourth Quarter 2007 Groundwater Monitoring and Sampling Event (ESTC, January 2008). Groundwater samples were collected on December 10, 2007. No sheen or product odor was observed on the samples collected from the three monitoring wells.

- Table 2 lists the analytical results. Concentrations of TPHg were detected only in the groundwater sample collected from monitoring wells STMW-1 (210 µg/l). Concentrations of BTEX were not detected. Concentrations of MtBE were detected only in the groundwater samples collected from monitoring wells STMW-1 (540 µg/l) and STMW-3 (17 µg/l). Concentrations of TBA were detected in each monitoring well, with the highest concentration detected in the sample collected from STMW-1 (4,200 µg/l). Methanol was detected at 10,000 µg/l in the groundwater sample collected from STMW-1.
- Depth to water measurements ranged from 6.26 feet bgs (511.29 feet amsl) at STMW-1, 8.02 feet bgs (511.57 feet amsl) at STMW-2, to 9.12 feet bgs (511.25 feet amsl) at STMW-3.
- Based on the depth to water measurements, groundwater was determined to be flowing northwest at a gradient of 0.004 ft/ft.
- Table 3 lists the monitoring data. The well screens in the wells were drowned at the time depth to water measurements and groundwater samples were collected from the wells.

In May 2008, four borings were advanced by direct-push methods on a commercial parcel on the north side of Bluebell Drive directly north of the Site (GP-7 thru GP-10), and one boring (GP-5) advanced on a commercial parcel adjoining the Site to the east (ESTC, July 2008). The locations of the borings are illustrated on Figure 2.

- The soil lithology encountered at GP-5 ranged from black stiff clay to gray silty clay to 20 feet bgs (maximum depth explored). At borings GP-7 thru GP-8, a light brown to gray to white sand ranging from coarse-grained to gravelly in texture was encountered between approximately 10 feet to 20 feet bgs, and was inferred to correlate with the CPT-interpreted sand between 16 feet and 22 feet bgs in CPT-2 (June 2007).
- Soil and groundwater samples were collected from each boring for laboratory analyses. Table 1 lists the soil analytical results, and Table 2 lists the groundwater analytical results. Concentrations of TPHg and BTEX were not analytically detected in the soil samples. Concentrations of MtBE were detected in the soil samples collected from boring GP-7 at 10 feet bgs (6.5 µg/l), boring GP-8 at 10 feet and 15 feet bgs (440 µg/l and 44 µg/l, respectively), and boring GP-9 at 15 feet bgs (14 µg/l). Concentrations of TBA were detected only in the soil samples collected from boring GP-8 at 10 feet bgs (2,300 µg/l) and 15 feet bgs (270 µg/l).
- For the groundwater samples, concentrations of TPHg were detected at borings GP-6 (560 µg/l) and GP-8 (530 µg/l) with the remaining borings non-detect. Elevated concentrations of MtBE were detected in the groundwater samples collected from all of the borings except GP-6 and GP-10, with the highest concentration at boring GP-8

(970 µg/l). Concentrations of TBA were detected in the groundwater sample collected from boring GP-8 at 4,100 µg/l.

On June 6, 2008, a soil vapor pilot test (SVPT) was conducted on the Site using two vapor extraction wells (VE-1 and VE-2) and the existing monitoring wells on the Site as vacuum monitoring wells (STMW-1, STMW-2 and STMW-3). The purpose of the SVPT was to evaluate soil vapor extraction as an alternative for remediating soil impact in the vadose zone above uppermost groundwater at the Site. The locations of the SVPT extraction wells and vacuum monitoring wells are illustrated on Figure 2, site map (ESTC, July 2008). The extraction wells were installed in May 2008 to a depth of 10 feet bgs, and completed with 7 feet of well screen casing between 3 feet and 10 feet bgs. The test was conducted using an internal combustion engine (ICE) driving a positive displacement blower. The SVPT was run in steps to optimize air flow/vacuum characteristics for potential design purposes. Magnahellic gauges were used to measure vacuum in the vacuum monitoring wells. Unfortunately, the groundwater monitoring well screens were drowned during the SVPT, effectively precluding their use as vacuum monitoring wells. No vacuum was observed in the extraction wells when used as vacuum monitoring wells. Therefore, the results of the SVPT were inconclusive.

On September 19, 2008 an injection well (P1) was installed at the site to be used in hydrogen peroxide injection pilot test between September 29 and November 6, 2008. The hydrogen peroxide injection included weekly hydrogen peroxide injection at STMW-1, STMW-3 and P1, and DO, ORP, EC and pH parameters measurement. The three monitoring wells, vapor extraction wells and STMW-2 were sampled for 21 metals, TPH-G, BTEX and Fuel Oxygenates analysis on September 24 and November 20, 2008 to test the effect of hydrogen peroxide injection on groundwater contamination.

The 2008 third quarter groundwater monitoring event took place on September 25, 2008. Groundwater gradient in this event was found to be 0.003 ft/ft in N54ºW direction. Total Petroleum Hydrocarbons as Gasoline (TPHg) was only detected in STMW-1 (230µg/l). MtBE was detected in STMW-1 and 3 in the amount of 204 and 67 µg/l, respectively. TBA was detected in STMW-1, 2 and 3 in the amount of 704, 71 and 31.7 µg/l, respectively.

2.0 HYDROGEN PEROXIDE INJECTION

As required by the Occupational Health and Safety Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120), and by the Cal-OSHA "Hazardous Waste Operations and Emergency Response" guidelines (CCR Title 8, Section 5192), a site-specific Project Safety Plan (PSP) was prepared prior to the commencement of field activities (Appendix D). The PSP was reviewed by the field staff on a daily basis before beginning field activities at the Site.

In order to design the number and spacing/location of the Injection Wells at the site the radius of influence of hydrogen peroxide injection process is required. One way to measure the

radius of influence of hydrogen peroxide injection process is to inject hydrogen peroxide in an injection well and measure the DO in the neighboring wells. The dramatic change in DO or ORP of groundwater in the monitoring well will indicate that the hydrogen peroxide injection at the injection well has influence on groundwater and soil by such a distance.

To implement the testing of hydrogen peroxide injection radius of influence an injection well (P1) was installed half way between VE-1 and STMW-1 on September 19, 2008 (Figure 2). As we proceeded with preliminary weekly injection in STMW-1, STMW-3 and P1, weekly monitoring of DO and ORP in groundwater was done in all three injection wells plus STMW-2, VE-1 and VE-2. Dramatic increase of DO and ORP at STMW-1, STMW-3 and P1 indicates that the hydrogen peroxide injection is effective in increasing the DO level in injection wells or in the immediate vicinity of injection wells. The 3 monitoring wells STMW-2 and VE-1 were located either far away from injection wells or up gradient of the injection points; therefore hydrogen peroxide injection influence was not expected on these two wells. However, VE-2 is about 10 feet down gradient of P1 and therefore it could be counted as a monitoring point for the hydrogen peroxide injection influence. Dramatic increase in DO level in VE-2 indicates that the radius of influence for hydrogen peroxide is at least 10 feet. Referring to Table 4 the increase level of DO in VE-2 is somewhat less than that of increase in injection wells DO levels. The radius of influence of hydrogen peroxide injection at the site exceeds 10 feet and therefore injection wells spacing to be installed at the site should be based on a radius of influence greater than 10 feet. The pilot test was run for 6 weeks, from September 29 to November 6, 2008. The well construction for P1 is given below:

Well No.	**Dia./TD**	**Screen**	**Slot**	**Sand Pack**	**Trans. Seal**	**Grout Seal**
P1	4"/20’	10-20’	0.020”	#3 sand 8-20’	6-8’	6’-surface

Hydrogen peroxide was injected into each injection well (STMW-1, STMW-3 and P1) during each weekly visit to the site. First the groundwater level was measured in all 6 injection and monitoring wells and subsequently at least 3 volumes of water column was purged in each well to measure the groundwater field parameters including DO, ORP, pH, groundwater temperature, and Electrical Conductivity (EC). After collecting groundwater field parameters, approximately 100 gallons of 2 to 5% hydrogen peroxide solution was injected in each injection well.

Because of low hydraulic conductivity in the formation during most events just half of the expected hydrogen peroxide was injected in injection wells. The injection was conducted by gravity. To eliminate the problem associated with low recharge, the hydrogen peroxide injection must be continuous and low flow. By automating the injection process we will be able to inject a much higher volume over a week than that was injected in a batch mode with the frequency of once a week. In this approach each injection well will have a dedicated hose

that goes to the top of injection well and the other end is connected to a tank full of hydrogen peroxide 2% solution. A control panel will regulate the flow and pressure of hydrogen peroxide injection at each well.

3.0 GROUNDWATER FIELD DATA

Table 4 shows the groundwater field data collected during the hydrogen peroxide injection pilot test. The field data were not collected on October 9, 2008 because of instrument malfunction. On October 23, 30 and November 6, 2008 the field data were collected in VE-2 only to leave more time for hydrogen peroxide injection at injection wells. VE-2 was selected for this purpose because it represents the monitoring well role more than others, it is located at around 10 feet down gradient of P1 that is an injection well and therefore it is a good point to monitor the effect of hydrogen peroxide injection at P1.

PH in injection wells increased by 0.3, 1 and 0.8 on average, in STMW-1, STMW-3 and P1 respectively. pH didn't change significantly in monitoring wells except for VE-2 that showed a change in pH around 0.1 to 0.7 in different monitoring events. No significant change in groundwater temperature was observed either in injection wells or monitoring wells. The Alameda Country Health Care Services directed GTI to monitor vapor on top of injection wells using an OVM (Organic Vapor Meter) and water temperature during hydrogen peroxide injection in their letter dated August 8, 2008. Groundwater temperature monitoring was not possible because the water column at the injection well would be influenced by the injected solution. Vapor monitorin is not applicable in this case because the reaction between contaminants and hydrogen peroxide doesn't result in much of volatile compounds but water and carbon dioxide. DO and ORP are two parameters that show the oxidation state of the system, they increased in all injection wells and monitoring well VE-2.

4.0 GROUNDWATER ANALYTICAL DATA

Prior to any hydrogen peroxide injection at the site, groundwater samples were collected and sent to Excelchem Environmental Labs of Roseville, California (Certification No. 2119) for the following analysis (samples were initially collected from 3 groundwater monitoring wells, STMW-1, STMW-2 and STMW-3, at the site and vapor extraction wells, VE-1 and VE-2, newly installed injection well P1):

Metals [Sb, As, Ba, Be, Cd, Cr (III), Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn], TPH-G, BTEX, MtBE, TBA, TAME, EtBE, DIPE, 1,2-EDB, 1,2-DCA, methanol and Ethanol. All hydrocarbons were analyzed using EPA 8260B and all metals were analyzed using EPA 6010B except for Mercury that was analyzed using EPA 7470A.

The first groundwater sampling occurred on September 25, 2008. Two weeks after hydrogen peroxide injection pilot test ended, on November 20, 2008 groundwater samples were again collected and sent to Argon Laboratories (ELAP# 2359), of Ceres, California for the following analyses:

Metals: Sb, As, Ba, Be, Cd, Cr (III and VI), Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Ti, V and Zn using EPA 200.8 method and Cr VI using E218.6 method. TPH-G, BTEX, TBA, MtBE, DIPE, EtBE, and TAME using EPA 8260B method.

The results and detection limits for the above analyses are listed in Tables 2 and 3 included in Appendix A. Certified analytical reports are included in Appendix B.

Samples were collected for metals analyses to inspect the effect of hydrogen peroxide injection on metals oxidation in the aquifer system. It is believed that metals have very low concentrations in groundwater and soil and therefore their chance of oxidation by hydrogen peroxide decreases dramatically although they have very high potential in comparison with hydrocarbons to be oxidized by an agent like hydrogen peroxide. The first set of analysis shown in Table 3 was based on EPA 6010B method with much higher detection limit than that of EPA 200.8 that was used in the second set of analyses. Metals concentrations given in the first set of results are much higher than that of the second set. Such a big difference in metals concentrations in groundwater in a short period of time is not expected.

Moreover, the first set of results is rather high and not representative of typical groundwater. Probably the first set of analytical data are total metals, the water was not filtered prior to analysis, even though our chain of custody requested filtering. EPA 200.8 method with lower detection limit applied after hydrogen peroxide injection pilot test indicates that none of the metals will be a source of risk of oxidation and mobilization since after six weeks of hydrogen peroxide injection relatively low concentrations of metals is still observed. Most of the metals concentration in the second round of analysis are much lower than primary and secondary MCLs except for one which is very close to primary MCL (Arsenic concentration is slightly higher than MCL). For Arsenic to have such a level of concentration in groundwater it is usually in the area based on our previous experience. Most of the sites have much higher concentration of Arsenic but oxidation state in the aquifer system doesn't cause any mobilization of this metal from solid to liquid phase.

TPH-G and MTBE decreased in two injection wells STMW-1 and STMW-3. However, TBA decreased in STMW-3 and increased in STMW-1. The increase in TBA can be an indication of MtBE breakdown to intermediate products such as TBA. Unfortunately P1 was not sampled for the analysis of contaminants of concern for the pre-pilot test conditions and therefore it is not possible to find the effect of hydrogen peroxide injection on hydrocarbons concentration in this well.

5.0 DISCUSSION

In Sections 2, 3 and 4 the effect of hydrogen peroxide injection on aquifer system was explained from different perspectives. In summary the effect of hydrogen peroxide injection was explored by hydrocarbons and metals concentration in groundwater as well as groundwater field parameters including DO and ORP before and after hydrogen peroxide injection pilot test. All these groups of data verify the useful effect of hydrogen peroxide in contaminants removal.

Based on groundwater field and analytical data given in Sections 3 and 4 the hydrogen peroxide injection has at least a radius of influence of 10 feet since injection in P1 resulted in an increase in DO level in VE-2, which is located at around 10 feet down gradient of this injection well. The increase in DO level is also observed in all 3 injection wells. Increase in DO level is a byproduct of hydrogen peroxide injection in groundwater that will result in higher rate of biodegradation. ORP indicates the level of oxidation state in the aquifer system and the data in injection wells and VE-2 show a dramatic increase in ORP level in these four wells.

Low level of almost all metals in groundwater samples collected from all 6 injection and monitoring wells at the site show that there is no risk associated with hydrogen peroxide injection at the site in terms of metals mobilization from one phase to another. We should continue collecting samples for metals analysis during continuous low flow injection of hydrogen peroxide also to make sure that no metal mobilization occurs in the aquifer system throughout the injection process. If any dramatic change in metals concentrations is observed we should adjust the hydrogen peroxide injection flow rate and frequency to bring down the oxidation of metals in the aquifer.

The primary contaminants of concern include MtBE and TBA decreased in STMW-3. In STMW-1 MtBE and TPH-G decreased but TBA increased. The increase in TBA level can be an indication of MtBE breakdown into intermediate products or can be sourced from up gradient. The level of MtBE, TBA and TPH-G all increased in STMW-2. The injection at injection wells was not effective on STMW-2 because first of all this well is up gradient of the injection wells and secondly it is far away from the injection points (more than 50 feet) while the radius of influence of hydrogen peroxide injection is estimated to be a little over 10 feet. Unfortunately, no groundwater sample was collected from P1 prior to hydrogen peroxide injection started and therefore it is not possible to evaluate the effect hydrogen peroxide injection on hydrocarbons concentrations in this well. P1 in the second round of groundwater sampling event showed a high level of TBA. The level of TBA in this well is close to 13 times of MtBE concentration. Higher concentration of TBA than MtBE is observed in all wells and soil borings during 2007 and 2008. This can be an indication of MtBE natural attenuation and biodegradation that result in intermediate products including TBA. The intermediate products tend to be more resistant to natural attenuation and biodegradation than MtBE. Other intermediate products that we should consider for analysis are: Tert-Butyl Formate (TBF), 2-Methoxy-2-Methyl Propionaldehyde (MMP), Acetone (AC), Methyl acetate (MA), Hydroxyisobutyraldehyde (HiBA), and Formaldehyde (FA).

If the first 3 to 5 months of continuous low flow hydrogen peroxide injection doesn't cause a considerable decrease in TBA in groundwater we should add a catalyst to hydrogen peroxide solution as the intermediate products might be resistant to oxidation by hydrogen peroxide. The catalyst that is usually used in this case is Iron ($FeSO_4$) to make Fenton agent. In this case another alternative would be RegenOx, a product from Regenesis Advanced Technologies for groundwater Remediation. The cost for RegeOx is almost 25% more than that of hydrogen peroxide.

6.0 CONCLUSIONS

Conclusions from hydrogen peroxide injection pilot test are listed below:
Dissolved Oxygen (DO) level observed in VE-2 indicates that hydrogen peroxide injection has a radius of influence at least 10 feet.

1. Metals concentration in injection and monitoring wells suggest that the effect of hydrogen peroxide in metals mobilization between solid and liquid phases is minimal.

2. MtBE, TBA and TPHg concentration in injection wells and VE-2 as a monitoring well shows that the effect of hydrogen peroxide injection on contaminants removal is considerable.

3. The intermediate products of MtBE oxidation including TBA might be resistant to oxidation state imposed by hydrogen peroxide. The data we have now are not enough to make this hypothesis conclusive.

4. Application of a catalyst might be needed along with hydrogen peroxide to have an efficient MTBE oxidation intermediate products removal. The first 3 to 5 months of continuous low flow hydrogen peroxide injection at the site during remedial action will reveal this issue.

7.0 RECOMMENDATIONS

The following actions are recommended toward groundwater and soil remediation at the site:

1. Prepare a Remedial Action Plan and include any extra investigations needed for completing the site characterization upon the Alameda County Health care Services Agency review of this report and their direction. A brief citation of these investigations is given in Site Conceptual Model prepared by Geological Technics Inc. in December 2008.

2. Continuous low flow injection of 3% solution of hydrogen peroxide in injection wells to be installed at the site. The injection must be divided into two horizons: 5 to 10 feet of depth and 10 to 20 feet of depth to make the remediation more efficient both in the silty clay and sandy units.

3. Evaluation of the first 3 months of continuous injection and in case of low effectiveness of contaminant mass removal adding a kind of catalyst for better efficiency in contaminant removal.

4. Evaluate metals concentrations in monitoring wells every 2 months and take necessary action if needed.

8.0 LIMITATIONS

This report was prepared in accordance with the generally accepted standard of care and practice in effect at the time Services were rendered. It should be recognized that definition and evaluation of environmental conditions is an inexact science and that the state or practice of environmental geology/hydrology is changing and evolving and that standards existing at the present time may change as knowledge increases and the state of the practice continues to improve. Further, that differing subsurface soil characteristics can be experienced within a small distance and therefore cannot be known in an absolute sense. All conclusions and recommendations are based on the available data and information**.**

The tasks proposed and completed during this project were reviewed and approved by the local regulatory agency for compliance with the law. No warranty, expressed or implied, is made.

9.0 SIGNATURE & CERTIFICATION

Geological Technics Inc. will perform this project in accordance with accepted geologic and hydrologic standards of the State of California accepted and in effect at the time of this investigation. Geological Technics Inc. is not responsible for undisclosed conditions.

8.0 LIMITATIONS

This report was prepared in accordance with the generally accepted standard of care and practice in effect at the time Services were rendered. It should be recognized that definition and evaluation of environmental conditions is an inexact science and that the state or practice of environmental geology/hydrology is changing and evolving and that standards existing at the present time may change as knowledge increases and the state of the practice continues to improve. Further, that differing subsurface soil characteristics can be experienced within a small distance and therefore cannot be known in an absolute sense. All conclusions and recommendations are based on the available data and information.

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This report was prepared by:

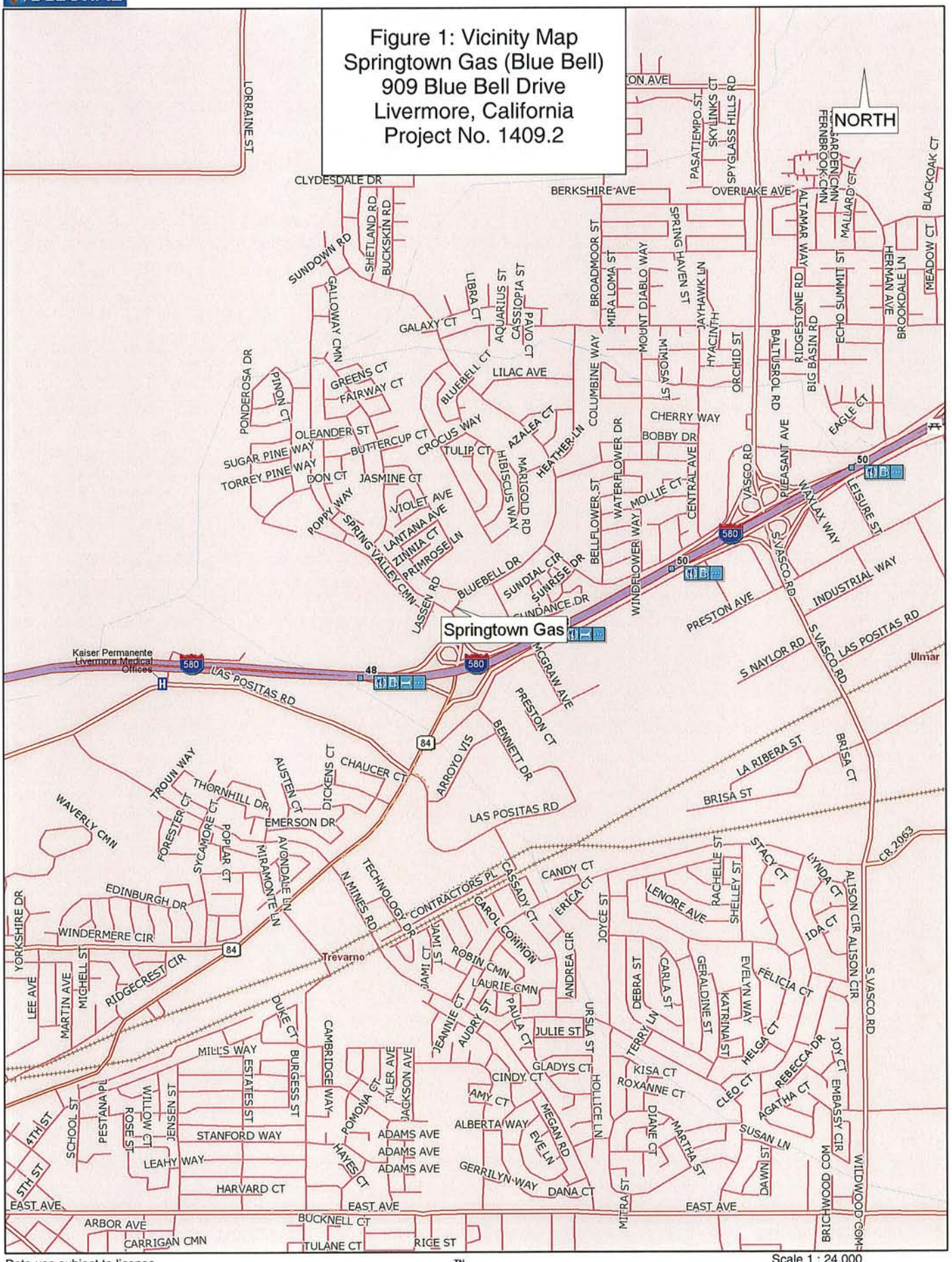
R. N. Ghanbari

Reza Namdar Ghanbari, Ph.D.
Project Manager

This report was reviewed by:

Raynold Kablanow II, Ph.D.
California Professional Geologist #5234
Certified Hydrogeologist #442

Figure 1: Vicinity Map
Springtown Gas (Blue Bell)
909 Blue Bell Drive
Livermore, California
Project No. 1409.2



Data use subject to license.

www.delorme.com

TN
MN (14.3°E)

Scale 1 : 24,000

1" = 2,000.0 ft Data Zoom 13-1

N

0 10 20 30
SCALE 1"=30'

GP-7
GP-8
GP-10
GP-9

BLUEBELL DRIVE

SPRINGTOWN BLVD

VE-2
STMW-1
GP-2
GP-1
GP-5
STMW-3
GP-3
CPT-1
SB-6
P1
WATER/AIR STATION
R-2
CPT-2
SB-4
GP-4
SB-5
VE-1
EXISTING USTs
EX.PUMP AREA
SB-8
SB-7
SB-3
SB-9
R-1
STMW-2
SB-2
SB-1

EX.BLDG

TRASH ENCL

LEGEND

- SOIL BORING
- MONITORING WELL
- UST MONITORING WELL
- EXTRACTION WELL
- CPT BORING
- PROPOSED PILOT TEST INJECTION WELL

By:	TB
Job No:	1409.2 Date: 11/26/08
Scale:	1"=30'
File:	14092 site plan

Geological Technics, Inc.
1101 7th Street
Modesto, CA
95354
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209.522.4227 (fax)

FIGURE 2: Site Map

SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA

N

0 10 20 30
SCALE 1"=30'

Groundwater Gradient:
N54°W @ 0.003 ft/ft

BLUEBELL DRIVE

SPRINGTOWN BLVD

STMW-1
510.69

STMW-3
510.65

510.66
510.68
510.7
510.72
510.74
510.76
510.78
510.8
510.82
510.84
510.86
510.88

EX.PUMP
AREA

EXISTING
USTs

510.91
STMW-2

WATER/AIR
STATION

EX.BLDG

TRASH
ENCL

LEGEND

⊕ MONITORING WELL

By:	MV
Job No:	1409.2 Date: 12/04/08
Scale:	1"=30'
File:	3Q08 Springtown GWG

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Figure 3-a Groundwater Gradient Map
SEPTEMBER 2008
SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA

N

0 10 20 30

SCALE 1"=30'

Groundwater Gradient:
N60°W @ 0.004 ft/ft

BLUEBELL DRIVE

SPRINGTOWN BLVD

510.80
510.82
510.84
510.86
510.88
510.90
510.92
510.94
510.98
511.02
511.06
511.10
511.14

STMW-1
510.81

STMW-3
510.82

STMW-2
511.17

EX.PUMP
AREA

EXISTING
USTs

WATER/AIR
STATION

EX.BLDG

TRASH
ENCL

LEGEND

⊕ MONITORING WELL

By:	MV
Job No:	1409.2 Date: 12/04/08
Scale:	1"=30'
File:	3Q08 Springtown GWG

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Figure 3–b Groundwater Gradient Map
November 2008
SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA

	Date	Slope	Bearing
1.	09/04/07	0.006 ft/ft	N66°W
2.	12/10/07	0.004 ft/ft	N62°W
3.	09/25/08	0.003 ft/ft	N54°W
4.	11/20/08	0.004 ft/ft	N60°W

N

0 10 20 30
SCALE 1"=30'

Gradient Scale Feet/Feet

0.0000 0.002

BLUEBELL DRIVE

SPRINGTOWN BLVD

1

2 4

3

STMW-1
510.69

STMW-3
510.65

WATER/AIR
STATION

EX.PUMP
AREA

EXISTING
USTs

STMW-2

EX.BLDG

TRASH
ENCL

LEGEND

⊕ MONITORING WELL

By:	RG
Job No:	1409.2 Date: 12/04/08
Scale:	1"=30'
File:	4Q08 Rose Springtown

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Figure 4 Groundwater Gradient Rose Diagram

SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA

N

0 10 20 30
SCALE 1"=30'

GP-7
GP-8
GP-10
GP-9

BLUEBELL DRIVE

SPRINGTOWN BLVD

STMW-1
VE-2
GP-5
GP-1
GP-2
STMW-3
GP-3
CPT-1
SB-6
WATER/AIR STATION
700
600
500
400
300
R-2
GP-4
CPT-2
SB-4
SB-5
200
150
VE-1
EXISTING USTs
EX.PUMP AREA
100
SB-8
SB-7
SB-3
SB-9
50
FORMER WASTE OIL UST
R-1
STMW-2
ND<20
SB-2
SB-1
FORMER UST
EX.BLDG
TRASH ENCL

LEGEND

- SOIL BORING
- MONITORING WELL
- UST MONITORING WELL
- EXTRACTION WELL
- CPT BORING
- PROPOSED PILOT TEST INJECTION WELL

By:	TB
Job No:	1409.2 Date: 12/04/08
Scale:	1"=30'
File:	14092 site plan

Geological Technics, Inc.
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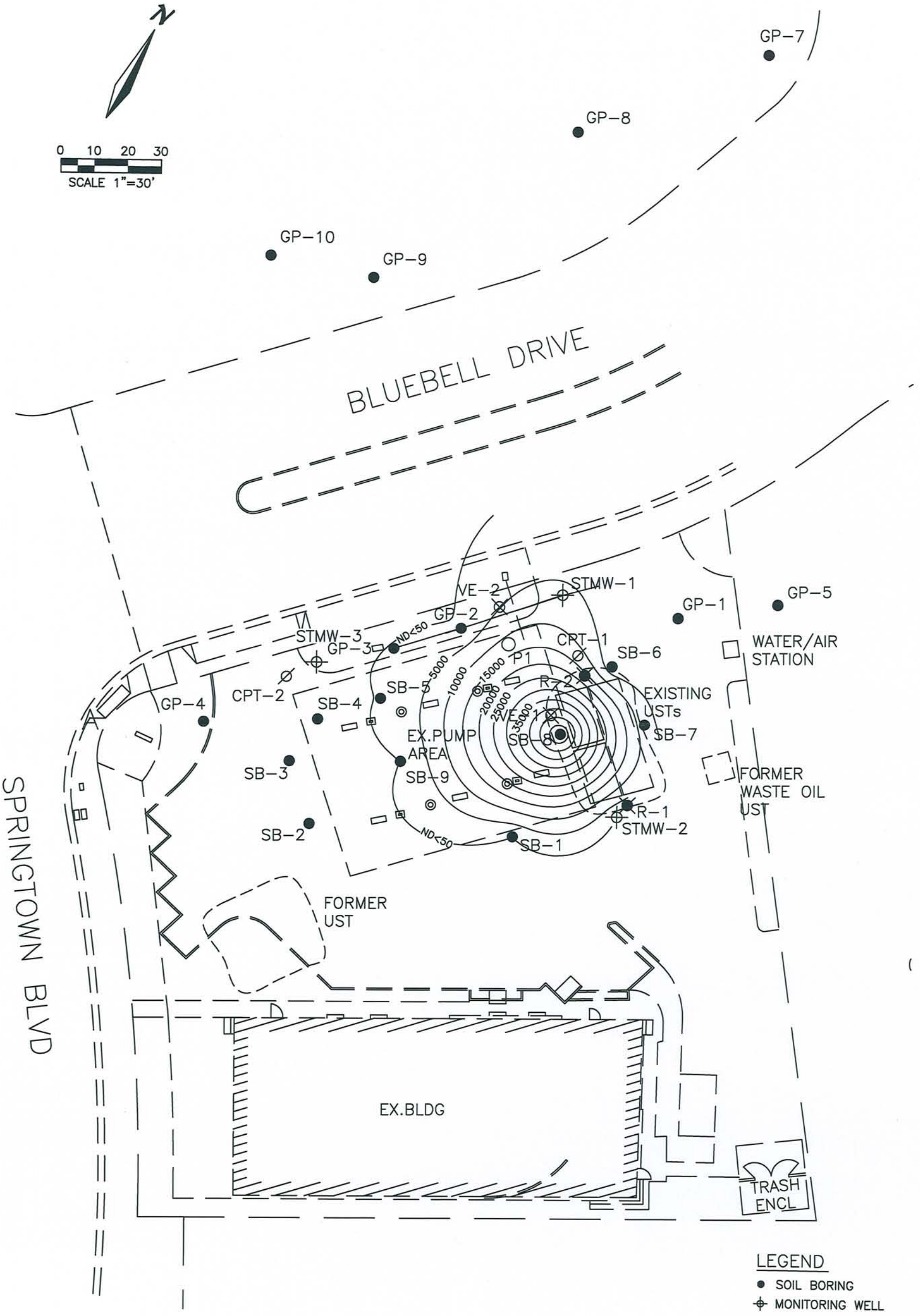
209.522.4227 (fax)

FIGURE 5: MTBE Plume in Groundwater

SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA



LEGEND

- ● SOIL BORING
- ⊕ MONITORING WELL
- ⊠ UST MONITORING WELL
- ⊠ EXTRACTION WELL
- ⌀ CPT BORING
- ○ PROPOSED PILOT TEST INJECTION WELL

By:	TB
Job No:	1409.2 Date: 12/04/08
Scale:	1"=30'
File:	14092 site plan

Geological Technics, Inc.
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FIGURE 6: TBA Plume in Groundwater

SPRINGTOWN GAS (BLUEBELL)
909 BLUEBELL DRIVE
LIVERMORE, CA

Appendix A

Summary Tables

Table 1
Summary of Groundwater Elevation

Springtown Gas
909 Bluebell Drive
Livermore, California

Date		STMW-1	STMW1	STMW-2	STMW2	STMW-3	STMW3	Avg GW	GW Gradient	
		GW Elev	DTW	GW Elev	DTW	GW Elev	DTW	Elev	Slope	Direction
	*top of casing**	517.55		519.59		520.37			ft/ft	
9/4/2007		510.97	6.58	511.59	8.00	510.85	9.52	511.14	0.006	N66°W
12/10/07		511.29	6.26	511.59	8.00	511.25	9.12	511.38	0.004	N62°W
09/25/08		510.69	6.86	510.9	8.69	510.65	9.72	510.75	0.003	N54°W
11/20/08		510.81	6.74	511.17	8.42	510.82	9.55	510.93	0.004	N60°W
Historical								511.05	0.004	N61°W

*TOC elevations surveyed in on 9/06/07 by Muir Consutling Inc. NAD 83 and NGVD 29
**Gradient and slope determined from computer generated contours

Table 2
Summary of Groundwater Analytical Data

Springtown Gas
909 Bluebell Drive
Livermore, California

MONITORING WELL	Date	TPHg	B	T	E	X	MtBE	TBA	DIPE	EtBE	TAME	1,2-DCA	EDB	Methanol	Ethanol
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
STMW-1	9/4/2007	**220**	<10	<10	<10	<10	**850**	**6,500**	-	-	-	-	-	-	-
	12/10/2007	**210**	<5	<5	<5	<5	**540**	**4,200**	-	-	-	-	-	-	-
	9/25/2008	**230**	<0.5	<0.5	<0.5	<1.0	**204**	**704**	<0.5	<0.5	**0.6**	<0.5	<0.5	<5	<20
	11/20/2008	<50	<0.5	<0.5	<0.5	<1.0	**14**	**930**	<0.5	<0.5	<0.5	-	-	-	-
STMW-2	9/4/2007	<50	<0.5	<0.5	<0.5	<0.5	<1	**42**	-	-	-	-	-	-	-
	12/10/2007	<50	<0.5	<0.5	<0.5	<0.5	<1	**83**	-	-	-	-	-	-	-
	9/25/2008	<50	<0.5	<0.5	<0.5	<1	<0.5	**71**	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<20
	11/20/2008	**90**	**1.7**	**6.9**	**1.7**	**7.6**	**2.2**	**190**	<0.5	<0.5	<0.5	-	-	-	-
STMW-3	9/4/2007	**59**	<1	<1	<1	<1	**160**	**120**	-	-	-	-	-	-	-
	12/10/2007	<50	<0.5	<0.5	<0.5	<0.5	**17**	**86**	-	-	-	-	-	-	-
	9/25/2008	<50	<0.5	<0.5	<0.5	<0.5	**67**	**31.7**	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<20
	11/20/2008	<50	<0.5	<0.5	<0.5	<1.0	**12**	<5	<0.5	<0.5	<0.5	-	-	-	-
P1	11/20/2008	<50	<5	<5	<5	<10	**180**	**2300**	<5	<5	<5	-	-	-	-

notes:

TPHg	Total petroleum hydrocarbons as gasoline
TPHd	Total petroleum hydrocarbon
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
MtBE	Methyl tertiary butyl ether
TBA	Tert-butyl alcohol
DIPE	Di-isopropyl ether
EtBE	Ethyl-tertiary butyl ether
TAME	Tert-amyl-methyl ether
1,2-DCA	1,2-Dichloroethane
EDB	1,2-Dibromoethane
bgs	below ground surface
ug/l	micrograms per liter
-	Not analyzed or not reported

Table 3
Summary of Groundwater Metal Data

Springtown Gas
909 Bluebell Drive
Livermore, California

MONITORING WELL	Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium III	Chromium VI	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Primary MCLs		6	0	2,000	4	5	100	-	-	1,300	0	2	-	-	50	-	50	-	-
Secondary MCLs		-	-	-	-	-	-	-	-	1,000	-	-	-	-	-	100	-	-	5,000
STMW-1	9/25/2008	ND<10	**44.6**	**1360**	**7**	**40.8**	**691**	-	**116**	**358**	**61.9**	**18.9**	ND<10	**709**	ND<20	ND<10	ND<20	**535**	**726**
	11/20/2008	ND<2	**3.7**	**150**	ND<1	ND<1	**2.7**	**14**	ND<5	ND<5	ND<1	ND<0.25	**23**	**7.4**	**2.7**	ND<1	ND<1	**5.3**	**19**
STMW-2	9/25/2008	ND<10	**27.2**	**1860**	**6.3**	**32**	**561**	-	**103**	**257**	**58.9**	**5.18**	ND<10	**533**	ND<20	ND<10	ND<20	**407**	**558**
	11/20/2008	ND<2	**4.7**	**41**	ND<1	ND<1	**8.8**	**1.7**	ND<5	ND<5	ND<1	ND<0.25	**61**	ND<5	**2.4**	ND<1	ND<1	**13**	**6.5**
STMW-3	9/25/2008	ND<10	**20.4**	**789**	ND<5	**24.7**	**390**	-	**101**	**187**	**48.9**	**2.7**	ND<10	**440**	ND<20	ND<10	ND<20	**335**	**425**
	11/20/2008	ND<2	**2.6**	**67**	ND<1	ND<1	**2.6**	**22**	ND<5	ND<5	ND<1	ND<0.25	**23**	ND<5	**1.1**	**2**	ND<1	**3.1**	**12**
P1	9/25/2008	ND<10	ND<10	**206**	ND<5	ND<10	**75.4**	-	ND<50	**30.2**	ND<10	ND<0.25	ND<10	**76.7**	ND<20	ND<10	ND<20	**62.5**	**68.5**
	11/20/2008	ND<2	**5.3**	**82**	ND<1	ND<1	**3**	**12**	ND<5	ND<5	ND<1	ND<0.25	**13**	ND<5	**1.4**	ND<1	ND<1	**7.3**	**8.1**
VE-1	9/25/2008	ND<10	**274**	**16400**	**53.1**	**323**	**4330**	-	**857**	**2750**	**458**	ND<0.25	ND<10	**3450**	ND<20	ND<10	ND<20	**3790**	**4970**
	11/20/2008	ND<2	**3.2**	**210**	ND<1	ND<1	**8**	ND<0.2	ND<5	ND<5	ND<1	ND<0.25	**20**	**7.8**	**1.8**	ND<1	ND<1	**5.8**	**43**
VE-2	9/25/2008	ND<10	**12.2**	**257**	ND<5	ND<10	**91.8**	-	ND<50	**42.8**	**10.8**	ND<0.25	**11**	**87.2**	ND<20	ND<10	ND<20	**88.7**	**107**
	11/20/2008	ND<2	**5.6**	**62**	ND<1	ND<1	**7.2**	**12**	ND<5	**6.1**	ND<1	ND<0.25	**10**	**10**	**3.1**	ND<1	ND<1	**6.1**	**34**

notes:

TPHg	Total petroleum hydrocarbons as gasoline
TPHd	Total petroleum hydroca
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
MtBE	Methyl tertiary butyl ether
TBA	Tert-butyl alcohol
DIPE	Di-isopropyl ether
EtBE	Ethyl-tertiary butyl ether
TAME	Tert-amyl-methyl ether
1,2-DCA	1,2-Dichloroethane
EDB	1,2-Dibromoethane
bgs	below ground surface
ug/l	micrograms per liter
-	Not analyzed or not reported

Table 4
Summary of Water Quality Parameter Data

Springtown Gas
909 Bluebell Drive
Livermore, California

Monitoring Well	STMW-1						STMW-2						STMW-3					
Date	pH	E.C.	°C	°F	ORP	DO	pH	E.C.	°C	°F	ORP	DO	pH	E.C.	°C	°F	ORP	DO
9/4/2007	6.37	1462	21.4	70.5	NM	NM	6.43	1405	21.1	70.0	NM	NM	6.14	2115	20	68.0	NM	NM
12/10/2007	6.92	1090	18.5	65.3	NM	NM	7.02	1074	19.8	67.6	NM	NM	6.77	1267	NM	NM	NM	NM
9/25/2008	7.22	1706	21.63	70.9	48.3	0.38	7.15	1652	21.26	70.3	34	0.7	6.84	1838	20.32	68.6	60.2	0.84
10/2/2008	7.16	1701	21.57	70.8	45.6	0.68	7.07	1650	21.14	70.1	51.8	0.58	6.82	1892	20.47	68.8	156	1.81
10/9/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10/16/2008	7.53	970	21.48	70.7	71.6	36.39	7.07	1611	21.35	70.4	56.7	0.21	7.38	656	20.64	69.2	66.6	37.4
10/23/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10/30/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11/6/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11/20/2008	7.36	1554	20.74	69.3	208.3	11.17	7.2	1782	21.21	70.2	211.4	1.13	7.88	771	20.63	69.1	194.6	15.53
Monitoring Well	**p1**						**VE-1**						**VE-2**					
Date	**pH**	**E.C.**	**°C**	**°F**	**ORP**	**DO**	**pH**	**E.C.**	**°C**	**°F**	**ORP**	**DO**	**pH**	**E.C.**	**°C**	**°F**	**ORP**	**DO**
9/4/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
9/25/2008	7.16	1941	20.6	69.1	50.3	1.19	6.9	2072	22.8	73.0	-44.9	3.07	7.1	1933	21.67	71.0	-13.6	6.48
10/2/2008	7.1	1893	20.44	68.8	59.6	1.18	7.18	1780	22.02	71.6	2.1	8.29	NM	NM	NM	NM	NM	NM
10/9/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10/16/2008	7.75	1285	20.61	69.1	85.9	18.23	6.84	1668	22.29	72.1	3.3	1.53	7.16	1912	21.38	70.5	-1.1	7.25
10/23/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.42	1924	19.91	67.8	49.6	8.48
10/30/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.81	1052	20.05	68.1	164.0	172.1
11/6/2008	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.13	1329	19.94	67.9	183.5	9.77
11/20/2008	7.99	1392	19.96	67.9	180	8.19	6.99	1960	18.91	66.0	38.6	4.82	6.89	1593	19.47	67.0	224.5	9.09

notes:

E.C.	Electricval conductivity
°C	Degrees centigrade
°F	Degrees fahrenheit
ORP	Oxygen reduction potential
DO	Dissolved oxygen
NM	Not measured

Table 5
Summary of Monitoring Well Completion Data

Springtown Gas
909 Bluebell Drive
Livermore, California

Well Number	Status	Date Drilled	Total Depth (ft)	Boring Diameter (in)	Well Casing Diameter (in)	Casing Type	Slot Size (in)	Sand Type	Well Screen		Filter Pack		Annular Seal		Grout Seal	
									From	To	From	To	From	To	From	To
STMW-1	Active	8/23/2007	20.00	10	2	PVC	0.02	#2/12	10	20	20	8	8	7	7	0
STMW-2	Active	8/23/2007	20.00	10	2	PVC	0.02	#2/12	10	20	20	8	8	7	7	0
STMW-3	Active	8/23/2007	20.00	10	2	PVC	0.02	#2/12	10	20	20	8	8	7	7	0
P1	Active	9/19/2008	20.00	10	4	PVC	0.02	#3/12	10	20	20	8	8	7	7	0

Appendix B

Analytical Laboratory Reports

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EXCELCHEM
Environmental Labs

1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

10 October 2008

Geological Technics

Geological Technics

1101 7th Street

Modesto, CA 95354

RE: Springtown Gas

Workorder number:0809198

Enclosed are the results of analyses for samples received by the laboratory on 09/26/08 13:20. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

John Somers, Lab Director

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
STMW-3	0809198-01	Water	09/25/08 09:10	09/26/08 13:20
STMW-2	0809198-02	Water	09/25/08 09:50	09/26/08 13:20
VE-2	0809198-03	Water	09/25/08 10:20	09/26/08 13:20
STMW-1	0809198-04	Water	09/25/08 11:00	09/26/08 13:20
P-1	0809198-05	Water	09/25/08 11:50	09/26/08 13:20
VE-1	0809198-06	Water	09/25/08 12:15	09/26/08 13:20

Excelchem Environmental Lab

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-3
0809198-01 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	**20.4**	10.0	"	"	"	"	"	
Barium	**789**	20.0	"	"	"	"	"	
Beryllium	ND	5.0	"	"	"	"	"	
Cadmium	**24.7**	10.0	"	"	"	"	"	
Chromium	**390**	10.0	"	"	"	"	"	
Cobalt	**101**	50.0	"	"	"	"	"	
Copper	**187**	20.0	"	"	"	"	"	
Lead	**48.9**	10.0	"	"	"	"	"	
Molybdenum	ND	10.0	"	"	"	"	"	
Nickel	**440**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**335**	20.0	"	"	"	"	"	
Zinc	**425**	20.0	"	"	"	"	"	
Mercury	**2.70**	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	
Volatile Organic Compounds by GC/MS								
Gasoline Range Hydrocarbons	ND	50.0	ug/l	ARJ0022	10/02/08	10/02/08	EPA 8260B	
Ethanol	ND	20.0	"	"	"	"	"	
TBA	**31.7**	5.0	"	"	"	"	"	
Methyl tert-Butyl Ether	**67.0**	0.5	"	"	"	"	"	
Di-isopropyl ether	ND	0.5	"	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	"	
Tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	"	
1,2-Dichloroethane	ND	0.5	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.5	"	"	"	"	"	
Benzene	ND	0.5	"	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	"	
Ethylbenzene	ND	0.5	"	"	"	"	"	
m,p-Xylene	ND	0.5	"	"	"	"	"	
o-Xylene	ND	0.5	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*94.0 %*	% Recovery Limits		*70-130*		"	
Surrogate: Toluene-d8		*102 %*	% Recovery Limits		*70-130*		"	
Surrogate: 4-Bromofluorobenzene		*102 %*	% Recovery Limits		*70-130*		"	

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-3
0809198-01 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Methanol								
Methanol	ND	5.0	mg/L	ARJ0061	10/08/08	10/08/08	8015M	

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-2
0809198-02 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	**27.2**	10.0	"	"	"	"	"	
Barium	**1860**	20.0	"	"	"	"	"	
Beryllium	**6.3**	5.0	"	"	"	"	"	
Cadmium	**32.0**	10.0	"	"	"	"	"	
Chromium	**561**	10.0	"	"	"	"	"	
Cobalt	**103**	50.0	"	"	"	"	"	
Copper	**257**	20.0	"	"	"	"	"	
Lead	**58.9**	10.0	"	"	"	"	"	
Molybdenum	ND	10.0	"	"	"	"	"	
Nickel	**533**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**407**	20.0	"	"	"	"	"	
Zinc	**558**	20.0	"	"	"	"	"	
Mercury	**5.18**	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	
Volatile Organic Compounds by GC/MS								
Gasoline Range Hydrocarbons	ND	50.0	ug/l	ARJ0022	10/02/08	10/02/08	EPA 8260B	
Ethanol	ND	20.0	"	"	"	"	"	
TBA	**71.0**	5.0	"	"	"	"	"	
Methyl tert-Butyl Ether	ND	0.5	"	"	"	"	"	
Di-isopropyl ether	ND	0.5	"	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	"	
Tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	"	
1,2-Dichloroethane	ND	0.5	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.5	"	"	"	"	"	
Benzene	ND	0.5	"	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	"	
Ethylbenzene	ND	0.5	"	"	"	"	"	
m,p-Xylene	ND	0.5	"	"	"	"	"	
o-Xylene	ND	0.5	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*95.6 %*	% Recovery Limits		*70-130*		"	
Surrogate: Toluene-d8		*99.6 %*	% Recovery Limits		*70-130*		"	
Surrogate: 4-Bromofluorobenzene		*102 %*	% Recovery Limits		*70-130*		"	

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-2
0809198-02 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Methanol								
Methanol	ND	5.0	mg/L	ARJ0061	10/08/08	10/08/08	8015M	

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

VE-2
0809198-03 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	**12.2**	10.0	"	"	"	"	"	
Barium	**257**	20.0	"	"	"	"	"	
Beryllium	ND	5.0	"	"	"	"	"	
Cadmium	ND	10.0	"	"	"	"	"	
Chromium	**91.8**	10.0	"	"	"	"	"	
Cobalt	ND	50.0	"	"	"	"	"	
Copper	**42.8**	20.0	"	"	"	"	"	
Lead	**10.8**	10.0	"	"	"	"	"	
Molybdenum	**11.0**	10.0	"	"	"	"	"	
Nickel	**87.2**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**88.7**	20.0	"	"	"	"	"	
Zinc	**107**	20.0	"	"	"	"	"	
Mercury	ND	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-1
0809198-04 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	**44.6**	10.0	"	"	"	"	"	
Barium	**1360**	20.0	"	"	"	"	"	
Beryllium	**7.0**	5.0	"	"	"	"	"	
Cadmium	**40.8**	10.0	"	"	"	"	"	
Chromium	**691**	10.0	"	"	"	"	"	
Cobalt	**116**	50.0	"	"	"	"	"	
Copper	**358**	20.0	"	"	"	"	"	
Lead	**61.9**	10.0	"	"	"	"	"	
Molybdenum	ND	10.0	"	"	"	"	"	
Nickel	**709**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**535**	20.0	"	"	"	"	"	
Zinc	**726**	20.0	"	"	"	"	"	
Mercury	**18.9**	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	
Volatile Organic Compounds by GC/MS								
Gasoline Range Hydrocarbons	**230**	50.0	ug/l	ARJ0022	10/02/08	10/02/08	EPA 8260B	
Ethanol	ND	20.0	"	"	"	"	"	
Di-isopropyl ether	ND	0.5	"	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	"	
Tert-Amyl Methyl Ether	**0.6**	0.5	"	"	"	"	"	
1,2-Dichloroethane	ND	0.5	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.5	"	"	"	"	"	
Benzene	ND	0.5	"	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	"	
Ethylbenzene	ND	0.5	"	"	"	"	"	
m,p-Xylene	ND	0.5	"	"	"	"	"	
o-Xylene	ND	0.5	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*105 %*	% Recovery Limits		*70-130*		"	
Surrogate: Toluene-d8		*100 %*	% Recovery Limits		*70-130*		"	
Surrogate: 4-Bromofluorobenzene		*105 %*	% Recovery Limits		*70-130*		"	
Methanol								

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-1
0809198-04 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Methanol								
Methanol	ND	5.0	mg/L	ARJ0061	10/08/08	10/08/08	8015M	

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Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

STMW-1
0809198-04RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
Volatile Organic Compounds by GC/MS								
TBA	**704**	50.0	ug/l	ARJ0022	10/02/08	10/03/08	EPA 8260B	
Methyl tert-Butyl Ether	**204**	5.0	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*	% Recovery Limits		*70-130*		"	
Surrogate: Toluene-d8		*96.7 %*	% Recovery Limits		*70-130*		"	
Surrogate: 4-Bromofluorobenzene		*97.8 %*	% Recovery Limits		*70-130*		"	

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Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

P-1
0809198-05 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	ND	10.0	"	"	"	"	"	
Barium	**206**	20.0	"	"	"	"	"	
Beryllium	ND	5.0	"	"	"	"	"	
Cadmium	ND	10.0	"	"	"	"	"	
Chromium	**75.4**	10.0	"	"	"	"	"	
Cobalt	ND	50.0	"	"	"	"	"	
Copper	**30.2**	20.0	"	"	"	"	"	
Lead	ND	10.0	"	"	"	"	"	
Molybdenum	ND	10.0	"	"	"	"	"	
Nickel	**76.7**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**62.5**	20.0	"	"	"	"	"	
Zinc	**68.5**	20.0	"	"	"	"	"	
Mercury	ND	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	

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Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

VE-1
0809198-06 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	10.0	ug/l	ARJ0067	10/02/08	10/08/08	EPA 6010B	
Arsenic	**274**	10.0	"	"	"	"	"	
Barium	**16400**	20.0	"	"	"	"	"	
Beryllium	**53.1**	5.0	"	"	"	"	"	
Cadmium	**323**	10.0	"	"	"	"	"	
Chromium	**4330**	10.0	"	"	"	"	"	
Cobalt	**857**	50.0	"	"	"	"	"	
Copper	**2750**	20.0	"	"	"	"	"	
Lead	**458**	10.0	"	"	"	"	"	
Molybdenum	ND	10.0	"	"	"	"	"	
Nickel	**3450**	10.0	"	"	"	"	"	
Selenium	ND	20.0	"	"	"	"	"	
Silver	ND	10.0	"	"	"	"	"	
Thallium	ND	20.0	"	"	"	"	"	
Vanadium	**3790**	20.0	"	"	"	"	"	
Zinc	**4970**	20.0	"	"	"	"	"	
Mercury	ND	0.250	"	ARJ0026	10/02/08	10/03/08	EPA 7470A	

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Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

METALS BY 6000/7000 SERIES - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ARJ0026 - EPA 7470A										
Blank (ARJ0026-BLK1)				Prepared & Analyzed: 10/02/08						
Mercury	ND	0.250	ug/l							
LCS (ARJ0026-BS1)				Prepared & Analyzed: 10/02/08						
Mercury	6.97	0.250	ug/l	6.67		105	75-125			
LCS Dup (ARJ0026-BSD1)				Prepared & Analyzed: 10/02/08						
Mercury	6.56	0.250	ug/l	6.67		98.3	75-125	6.17	20	
Matrix Spike (ARJ0026-MS1)		**Source: 0809215-01**		Prepared & Analyzed: 10/02/08						
Mercury	7.74	0.250	ug/l	6.67	0.332	111	75-125			
Matrix Spike Dup (ARJ0026-MSD1)		**Source: 0809215-01**		Prepared & Analyzed: 10/02/08						
Mercury	7.67	0.250	ug/l	6.67	0.332	110	75-125	0.882	20	
Batch ARJ0067 - EPA 6010B										
Blank (ARJ0067-BLK1)				Prepared: 10/02/08 Analyzed: 10/08/08						
Antimony	ND	10.0	ug/l							
Arsenic	ND	10.0	"							
Barium	ND	20.0	"							
Beryllium	ND	5.0	"							
Cadmium	ND	10.0	"							
Chromium	ND	10.0	"							
Cobalt	ND	50.0	"							
Copper	ND	20.0	"							
Lead	ND	10.0	"							
Molybdenum	ND	10.0	"							
Nickel	ND	10.0	"							
Selenium	ND	20.0	"							
Silver	ND	10.0	"							
Thallium	ND	20.0	"							
Vanadium	ND	20.0	"							
Zinc	ND	20.0	"							

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

METALS BY 6000/7000 SERIES - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ARJ0067 - EPA 6010B										
LCS (ARJ0067-BS1)				Prepared: 10/02/08 Analyzed: 10/08/08						
Antimony	942	10.0	ug/l	1000		94.2	80-120			
Arsenic	951	10.0	"	1000		95.1	80-120			
Barium	981	20.0	"	1000		98.1	80-120			
Beryllium	934	5.0	"	1000		93.4	80-120			
Cadmium	943	10.0	"	1000		94.3	80-120			
Chromium	958	10.0	"	1000		95.8	80-120			
Cobalt	966	50.0	"	1000		96.6	80-120			
Copper	979	20.0	"	1000		97.9	80-120			
Lead	932	10.0	"	1000		93.2	80-120			
Molybdenum	974	10.0	"	1000		97.4	80-120			
Nickel	972	10.0	"	1000		97.2	80-120			
Selenium	934	20.0	"	1000		93.4	80-120			
Silver	932	10.0	"	1000		93.2	80-120			
Thallium	951	20.0	"	1000		95.1	80-120			
Vanadium	950	20.0	"	1000		95.0	80-120			
Zinc	965	20.0	"	1000		96.5	80-120			
LCS Dup (ARJ0067-BSD1)				Prepared: 10/02/08 Analyzed: 10/08/08						
Antimony	1020	10.0	ug/l	1000		102	80-120	7.48	25	
Arsenic	1010	10.0	"	1000		101	80-120	5.78	25	
Barium	1050	20.0	"	1000		105	80-120	6.81	25	
Beryllium	1010	5.0	"	1000		101	80-120	8.05	25	
Cadmium	1000	10.0	"	1000		100	80-120	6.06	25	
Chromium	1030	10.0	"	1000		103	80-120	7.65	25	
Cobalt	1040	50.0	"	1000		104	80-120	7.06	25	
Copper	1040	20.0	"	1000		104	80-120	6.14	25	
Lead	999	10.0	"	1000		99.9	80-120	6.94	25	
Molybdenum	1030	10.0	"	1000		103	80-120	5.59	25	
Nickel	1030	10.0	"	1000		103	80-120	5.65	25	
Selenium	994	20.0	"	1000		99.4	80-120	6.24	25	
Silver	996	10.0	"	1000		99.6	80-120	6.62	25	
Thallium	1010	20.0	"	1000		101	80-120	6.12	25	
Vanadium	1010	20.0	"	1000		101	80-120	5.88	25	
Zinc	1040	20.0	"	1000		104	80-120	7.06	25	

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

METALS BY 6000/7000 SERIES - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ARJ0067 - EPA 6010B										
Matrix Spike (ARJ0067-MS1)	**Source: 0809198-01**			Prepared: 10/02/08		Analyzed: 10/08/08				
Antimony	555	10.0	ug/l	1000	ND	55.5	75-125			QL-01
Arsenic	951	10.0	"	1000	20.4	93.1	75-125			
Barium	1680	20.0	"	1000	789	89.0	75-125			
Beryllium	925	5.0	"	1000	4.34	92.1	75-125			
Cadmium	923	10.0	"	1000	24.7	89.9	75-125			
Chromium	1290	10.0	"	1000	390	90.4	75-125			
Cobalt	1000	50.0	"	1000	101	90.1	75-125			
Copper	1210	20.0	"	1000	187	102	75-125			
Lead	931	10.0	"	1000	48.9	88.3	75-125			
Molybdenum	885	10.0	"	1000	ND	88.5	75-125			
Nickel	1300	10.0	"	1000	440	86.1	75-125			
Selenium	901	20.0	"	1000	ND	90.1	75-125			
Silver	962	10.0	"	1000	ND	96.2	75-125			
Thallium	880	20.0	"	1000	8.11	87.2	75-125			
Vanadium	1250	20.0	"	1000	335	91.8	75-125			
Zinc	1340	20.0	"	1000	425	91.4	75-125			
Matrix Spike Dup (ARJ0067-MSD1)	**Source: 0809198-01**			Prepared: 10/02/08		Analyzed: 10/08/08				
Antimony	550	10.0	ug/l	1000	ND	55.0	75-125	1.08	25	QL-01
Arsenic	959	10.0	"	1000	20.4	93.9	75-125	0.875	25	
Barium	1680	20.0	"	1000	789	89.3	75-125	0.181	25	
Beryllium	926	5.0	"	1000	4.34	92.2	75-125	0.0923	25	
Cadmium	903	10.0	"	1000	24.7	87.9	75-125	2.18	25	
Chromium	1280	10.0	"	1000	390	88.9	75-125	1.13	25	
Cobalt	1010	50.0	"	1000	101	90.6	75-125	0.508	25	
Copper	1220	20.0	"	1000	187	103	75-125	0.583	25	
Lead	937	10.0	"	1000	48.9	88.8	75-125	0.624	25	
Molybdenum	878	10.0	"	1000	ND	87.8	75-125	0.832	25	
Nickel	1300	10.0	"	1000	440	86.0	75-125	0.0860	25	
Selenium	899	20.0	"	1000	ND	89.9	75-125	0.163	25	
Silver	957	10.0	"	1000	ND	95.7	75-125	0.432	25	
Thallium	883	20.0	"	1000	8.11	87.5	75-125	0.343	25	
Vanadium	1240	20.0	"	1000	335	90.2	75-125	1.33	25	
Zinc	1340	20.0	"	1000	425	91.1	75-125	0.211	25	

Excelchem Environmental Lab

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	.1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ARJ0022 - EPA 8260B										
Blank (ARJ0022-BLK1)				Prepared & Analyzed: 10/02/08						
Surrogate: Dibromofluoromethane	*12.2*		*ug/l*	*12.5*		*97.8*	*70-130*			
Surrogate: Toluene-d8	*12.7*		*"*	*12.5*		*102*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*13.6*		*"*	*12.5*		*109*	*70-130*			
Gasoline Range Hydrocarbons	ND	50.0	"							
TBA	ND	5.0	"							
Methyl tert-Butyl Ether	ND	0.5	"							
Di-isopropyl ether	ND	0.5	"							
Ethyl tert-Butyl Ether	ND	0.5	"							
Tert-Amyl Methyl Ether	ND	0.5	"							
1,2-Dichloroethane	ND	0.5	"							
Benzene	ND	0.5	"							
Toluene	ND	0.5	"							
Ethylbenzene	ND	0.5	"							
m,p-Xylene	ND	0.5	"							
o-Xylene	ND	0.5	"							
Xylenes, total	ND	1.0	"							
LCS (ARJ0022-BS1)				Prepared & Analyzed: 10/02/08						
Surrogate: Dibromofluoromethane	*12.3*		*ug/l*	*12.5*		*98.6*	*70-130*			
Surrogate: Toluene-d8	*12.6*		*"*	*12.5*		*101*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*13.4*		*"*	*12.5*		*107*	*70-130*			
Benzene	18.0	0.5	"	21.0		85.6	80-120			
Toluene	18.1	0.5	"	21.0		86.3	80-120			
1,1-Dichloroethene	19.2	0.5	"	21.0		91.5	80-120			
Trichloroethene	18.2	0.5	"	21.0		86.5	80-120			
Chlorobenzene	18.4	0.5	"	21.0		87.4	80-120			
LCS Dup (ARJ0022-BSD1)				Prepared & Analyzed: 10/02/08						
Surrogate: Dibromofluoromethane	*12.7*		*ug/l*	*12.5*		*102*	*70-130*			
Surrogate: Toluene-d8	*12.5*		*"*	*12.5*		*99.8*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*13.4*		*"*	*12.5*		*107*	*70-130*			
Benzene	20.0	0.5	"	21.0		95.2	80-120	10.7	15	
Toluene	20.1	0.5	"	21.0		95.9	80-120	10.5	15	
1,1-Dichloroethene	21.4	0.5	"	21.0		102	80-120	10.6	15	
Trichloroethene	20.0	0.5	"	21.0		95.1	80-120	9.44	15	
Chlorobenzene	20.6	0.5	"	21.0		98.0	80-120	11.5	15	

Excelchem Environmental Lab

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

Methanol - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ARJ0061 - 8015M										
Blank (ARJ0061-BLK1)				Prepared & Analyzed: 10/08/08						
Methanol	ND	5.0	mg/L							
LCS (ARJ0061-BS1)				Prepared & Analyzed: 10/08/08						
Methanol	500	5.0	mg/L	500		99.9	70-130			
LCS Dup (ARJ0061-BSD1)				Prepared & Analyzed: 10/08/08						
Methanol	499	5.0	mg/L	500		99.8	70-130	0.195	20	
Matrix Spike (ARJ0061-MS1)		**Source: 0809198-01**		Prepared & Analyzed: 10/08/08						
Methanol	512	5.0	mg/L	500	2.6	102	70-130			
Matrix Spike Dup (ARJ0061-MSD1)		**Source: 0809198-01**		Prepared & Analyzed: 10/08/08						
Methanol	515	5.0	mg/L	500	2.6	102	70-130	0.569	20	

Excelchem Environmental Lab

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Environmental Labs

Geological Technics	Project:	Springtown Gas	
1101 7th Street	Project Number:	1409.2	Date Reported:
Modesto, CA 95354	Project Manager:	Geological Technics	10/10/08 16:45

Notes and Definitions

QL-01 Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.

ND - Analyte not detected at reporting limit

NR - Not reported

Geological Technics Inc.

1101 7th Street
Modesto, CA
(209) 522-4119 Fax 522-4227
E-mail: gti@geologicaltechnics.com

(908197)

WO# 0809198
due 10/3/08
P:15, B4A

Page 1 of 1

ORIGINAL

Chain of Custody

Project #:	Client/Project Name:
1409.2	Springtown Gas

Site Address: 909 Bluebell Drive, Livermore, CA

Global ID No.: T0601971697

Sampled By: (print and sign name) Ezaria Nona Ezaria Nona

Date	Time	Field I.D.	Sample I.D.	No. of Containers	Matrix (Soil, Water, Gas, Other)	Preservation Type	Analysis Requested: TPH-G, BTEX & 7 oxys* by method (8260b)	Analysis Requested: Test for the 22 metals▲
9/25/08	0910		STMW-3	5	W	variable	X	X
	0950		STMW-2	5	W	variable	X	X
	1020		VE-2	1	W	HNO_3		X
	1100		STMW-1	5	W	variable	X	X
	1150		P-1	1	W	HNO_3		X
▼	1215		VE-1	1	W	HNO_3		X

Laboratory: Argon Labs

Temp. @ Shipping: C°

Temp. @ Lab Receipt: C°

Purchase Order # 1409 - 162529

EDF Report: ☒ Yes ☐ No

Turnaround Time: **S** = Standard
1 day **2** day **5** day

Remarks

* The 7 oxys include MTBE, ETBE, DIPE, TAME, TBA, 1,2-DCA, EDB, Ethanol and Methanol (by method 8260b)

TPH-G: RL = 50 µg/L
BTEX: RL = 0.5 µg/L
MTBE, ETBE, DIPE, TAME, TBA, 1,2-DCA, EDB, Methanol and Ethanol: RL = 0.5 µg/L

▲ Have the lab filter & Preserve

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
Ezaria Nona	9/25/08	1525	Nicola Sun	9/26/08	853
Nicola Sun	9/26/08	12:00	Elizabeth Emmons	9/26/08	12:00
Elizabeth Emmons	9/26/08	1:20	[signature]	9/26/08	1:20

Please return cooler/ice chest to Geological Technics Inc.

Rev. 7/2007

argon laboratories

26 November 2008

Reza Namdar Ghanbari
Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

RE: Springtown Gas Project Data

Enclosed are the results for sample(s) received on 11/20/08 15:42 by Argon Laboratories. The sample(s) were analyzed according to instructions in accompanying chain-of-custody. Results are summarized on the following pages.

Please see quality control report for a summary of QC data pertaining to this project.

The sample(s) will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Sample(s) may be archived by prior arrangement.

Thank you for the opportunity to service the needs of your company.

Sincerely,

Hiram Cueto
Lab Manager

2905 Railroad Avenue, Ceres, CA 95307 • Phone (209) 581-9280 • Fax (209) 581-9282
email: main@argonlabs.com

Geological Technics Inc.
1101 7th Street
Modesto, CA
(209) 522-4119 Fax 522-4227
E-mail: gti@gtienv.com

Chain of Custody

Project #:	Client/Project Name:
1409.2	SPRINGTOWN GAS

Site Address: 909 BLUEBELL DR, LIVERMORE, CA.

Global ID No.: T0601971617

Sampled By: (print and sign name) RICHARD ESTICKO Richard Estick

Date	Time	Field I.D.	Sample I.D.	No. of Containers	Matrix (Soil, Water, Gas, Other)	Preservation Type	BTEX, TPH-g, 5 OXYS, EPA 8260B (METHOD 5260B)	STANDARD METALS *										
11-20-08	1055		STMW-2	6	W	VARIABLE	X	X										
	1125		VE-2	2				X										
	12 NOON		STMW-1	6			X	X										
	1335		VE-1	2				X										
	1400		STMW-3	6			X	X										
	1420		P-1	6			X	X										

Analysis Requested

Laboratory: ARGON LABS

Temp. @ Shipping: C°

Temp. @ Lab Receipt: C°

Purchase Order # 1409-162529

EDF Report: ☒ Yes ☐ No

Turnaround Time (S = Standard) 1 day 2 day 5 day

Remarks

* Sb, As, Ba, Be, Cd, Cr^{+3} & Cr^{+6}, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, V, & Zn.

Run as Dissolved metals.

per Reza 11/20/08 *

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
Richard Estick	11-20-08	1542		11/20/08	1542
Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:

Please return cooler/ice chest to Geological Technics Inc.

Rev. 7/2007

Argon Laboratories Sample Receipt Checklist

Client Name: Geological Technics — Date & Time Received: 11/20/08 15:42

Project Name: Springton Gas — Client Project Number: 1409.2

Received By: S.F. — Matrix: Water ☑ Soil ☐ Sludge ☐

Sample Carrier: Client ☑ Laboratory ☐ Fed Ex ☐ UPS ☐ Other ☐

Argon Labs Project Number: I811061

Shipper Container in good condition? N/A____	Yes ☑	No ☐	Samples received in proper containers?	Yes ☑	No ☐
Samples received under refrigeration?	Yes ☑	No ☐	Samples received intact?	Yes ☑	No ☐
Chain of custody present?	Yes ☑	No ☐	Sufficient sample volume for requested tests?	Yes ☑	No ☐
Chain of Custody signed by all parties?	Yes ☑	No ☐	Samples received within holding time?	Yes ☑	No ☐
Chain of Custody matches all sample labels?	Yes ☑	No ☐	Do samples contain proper preservative? N/A ☐	Yes ☑	No ☐
			Do VOA vials contain zero headspace? (None submitted ☐)	Yes ☑	No ☐

ANY "No" RESPONSE MUST BE DETAILED IN THE COMMENTS SECTION BELOW

Date Client Contacted: _____ Person Contacted: _____

Contacted By: _____ Subject: _____

Comments:

Action Taken:

ADDITIONAL TEST(S) REQUEST / OTHER

Contacted By: _____ Date: _____ Time: _____

Call Received By: _____

Comments:

♥ ♣ ♦ ♠

argon laboratories 2905 Railroad Ave. Ceres, CA 95307 (209)581-9280 Fax (209)581-9282

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.:
I811061

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
STMW-2	I811061-01	Water	11/20/08 10:55	11/20/08 15:42
VE-2	I811061-02	Water	11/20/08 11:25	11/20/08 15:42
STMW-1	I811061-03	Water	11/20/08 12:00	11/20/08 15:42
VE-1	I811061-04	Water	11/20/08 13:35	11/20/08 15:42
STMW-3	I811061-05	Water	11/20/08 14:00	11/20/08 15:42
P-1	I811061-06	Water	11/20/08 14:20	11/20/08 15:42

Approved By

Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

argon laboratories 2905 Railroad Ave. Ceres, CA 95307 (209)581-9280 Fax (209)581-9282

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

Dissolved Metals

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-2 (I811061-01) Water Sampled: 20-Nov-08 10:55 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**4.7**	1.0	"	"	"	"	
Barium	**41**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**8.8**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	ND	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**61**	5.0	"	"	"	"	
Nickel	ND	5.0	"	"	"	"	
Selenium	**2.4**	1.0	"	"	"	"	
Silver	ND	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**13**	2.0	"	"	"	"	
Zinc	**6.5**	5.0	"	"	"	"	
VE-2 (I811061-02) Water Sampled: 20-Nov-08 11:25 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**5.6**	1.0	"	"	"	"	
Barium	**62**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**7.2**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	**6.1**	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**10**	5.0	"	"	"	"	
Nickel	**10**	5.0	"	"	"	"	
Selenium	**3.1**	1.0	"	"	"	"	
Silver	ND	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**6.1**	2.0	"	"	"	"	
Zinc	**34**	5.0	"	"	"	"	

Approved By

Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

argon laboratories 2905 Railroad Ave. Ceres, CA 95307 (209)581-9280 Fax (209)581-9282

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

Dissolved Metals

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-1 (I811061-03) Water Sampled: 20-Nov-08 12:00 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**3.7**	1.0	"	"	"	"	
Barium	**150**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**2.7**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	ND	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**23**	5.0	"	"	"	"	
Nickel	**7.4**	5.0	"	"	"	"	
Selenium	**2.7**	1.0	"	"	"	"	
Silver	ND	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**5.3**	2.0	"	"	"	"	
Zinc	**19**	5.0	"	"	"	"	
VE-1 (I811061-04) Water Sampled: 20-Nov-08 13:35 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**3.2**	1.0	"	"	"	"	
Barium	**210**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**8.0**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	ND	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**20**	5.0	"	"	"	"	
Nickel	**7.8**	5.0	"	"	"	"	
Selenium	**1.8**	1.0	"	"	"	"	
Silver	ND	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**5.8**	2.0	"	"	"	"	
Zinc	**43**	5.0	"	"	"	"	

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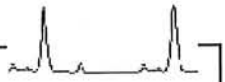

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.:
I811061

Dissolved Metals

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-3 (I811061-05) Water Sampled: 20-Nov-08 14:00 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**2.6**	1.0	"	"	"	"	
Barium	**67**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**2.6**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	ND	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**23**	5.0	"	"	"	"	
Nickel	ND	5.0	"	"	"	"	
Selenium	**1.1**	1.0	"	"	"	"	
Silver	**2.0**	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**3.1**	2.0	"	"	"	"	
Zinc	**12**	5.0	"	"	"	"	
P-1 (I811061-06) Water Sampled: 20-Nov-08 14:20 Received: 20-Nov-08 15:42							
Antimony	ND	2.0	ug/L	1	25-Nov-08	EPA 200.8	
Arsenic	**5.3**	1.0	"	"	"	"	
Barium	**82**	5.0	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	
Chromium +3	**3.0**	2.0	"	"	"	Calculation	
Cobalt	ND	5.0	"	"	"	EPA 200.8	
Copper	ND	5.0	"	"	"	"	
Lead	ND	1.0	"	"	"	"	
Mercury	ND	0.25	"	"	"	"	
Molybdenum	**13**	5.0	"	"	"	"	
Nickel	ND	5.0	"	"	"	"	
Selenium	**1.4**	1.0	"	"	"	"	
Silver	ND	1.0	"	"	"	"	
Thallium	ND	1.0	"	"	"	"	
Vanadium	**7.3**	2.0	"	"	"	"	
Zinc	**8.1**	5.0	"	"	"	"	

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Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

Hexachrome by IC

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-2 (I811061-01) Water Sampled: 20-Nov-08 10:55 Received: 20-Nov-08 15:42							
Chromium (VI)	**1.7**	0.20	ug/L	1	25-Nov-08	E218.6	
VE-2 (I811061-02) Water Sampled: 20-Nov-08 11:25 Received: 20-Nov-08 15:42							
Chromium (VI)	**12**	0.20	ug/L	1	25-Nov-08	E218.6	
STMW-1 (I811061-03) Water Sampled: 20-Nov-08 12:00 Received: 20-Nov-08 15:42							
Chromium (VI)	**14**	0.20	ug/L	1	25-Nov-08	E218.6	
VE-1 (I811061-04) Water Sampled: 20-Nov-08 13:35 Received: 20-Nov-08 15:42							
Chromium (VI)	ND	0.20	ug/L	1	25-Nov-08	E218.6	
STMW-3 (I811061-05) Water Sampled: 20-Nov-08 14:00 Received: 20-Nov-08 15:42							
Chromium (VI)	**22**	0.20	ug/L	1	25-Nov-08	E218.6	
P-1 (I811061-06) Water Sampled: 20-Nov-08 14:20 Received: 20-Nov-08 15:42							
Chromium (VI)	**12**	0.20	ug/L	1	25-Nov-08	E218.6	

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Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

TPH-gas & Volatile Organic Compounds by GC/MS

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-2 (I811061-01) Water Sampled: 20-Nov-08 10:55 Received: 20-Nov-08 15:42							
Total Petroleum Hydrocarbons @ Gasoline	**90**	50	ug/L	1	26-Nov-08	EPA 8260B	
Benzene	**1.7**	0.5	"	"	"	"	
Toluene	**6.9**	0.5	"	"	"	"	
Xylenes, total	**7.6**	1.0	"	"	"	"	
Ethyl Benzene	**1.7**	0.5	"	"	"	"	
t-Butanol	**190**	5.0	"	"	"	"	
Methyl tert-Butyl Ether	**2.2**	0.5	"	"	"	"	
Di-Isopropyl Ether	ND	0.5	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	
tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	
Surr. Rec.:		*80 %*			"	"	
STMW-1 (I811061-03) Water Sampled: 20-Nov-08 12:00 Received: 20-Nov-08 15:42							
Total Petroleum Hydrocarbons @ Gasoline	ND	50	ug/L	1	26-Nov-08	EPA 8260B	
Benzene	ND	0.5	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	
Ethyl Benzene	ND	0.5	"	"	"	"	
t-Butanol	**930**	5.0	"	"	"	"	
Methyl tert-Butyl Ether	**14**	0.5	"	"	"	"	
Di-Isopropyl Ether	ND	0.5	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	
tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	
Surr. Rec.:		*81 %*			"	"	

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Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

TPH-gas & Volatile Organic Compounds by GC/MS

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes
STMW-3 (I811061-05) Water Sampled: 20-Nov-08 14:00 Received: 20-Nov-08 15:42							
Total Petroleum Hydrocarbons @ Gasoline	ND	50	ug/L	1	26-Nov-08	EPA 8260B	
Benzene	ND	0.5	"	"	"	"	
Toluene	ND	0.5	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	
Ethyl Benzene	ND	0.5	"	"	"	"	
t-Butanol	ND	5.0	"	"	"	"	
Methyl tert-Butyl Ether	**12**	0.5	"	"	"	"	
Di-Isopropyl Ether	ND	0.5	"	"	"	"	
Ethyl tert-Butyl Ether	ND	0.5	"	"	"	"	
tert-Amyl Methyl Ether	ND	0.5	"	"	"	"	
Surr. Rec.:		*84 %*			"	"	
P-1 (I811061-06) Water Sampled: 20-Nov-08 14:20 Received: 20-Nov-08 15:42							
Total Petroleum Hydrocarbons @ Gasoline	ND	500	ug/L	10	26-Nov-08	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	
Xylenes, total	ND	10	"	"	"	"	
Ethyl Benzene	ND	5.0	"	"	"	"	
t-Butanol	**2300**	50	"	"	"	"	
Methyl tert-Butyl Ether	**180**	5.0	"	"	"	"	
Di-Isopropyl Ether	ND	5.0	"	"	"	"	
Ethyl tert-Butyl Ether	ND	5.0	"	"	"	"	
tert-Amyl Methyl Ether	ND	5.0	"	"	"	"	
Surr. Rec.:		*83 %*			"	"	

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Geological Technics, Inc.	Project Number: 1409.2	
1101 7th Street	Project Name: Springtown Gas	Work Order No.:
Modesto, CA 95354	Project Manager: Reza Namdar Ghanbari	I811061

Dissolved Metals - Quality Control

Argon Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch I802524 - EPA 200.8										
Blank (I802524-BLK1)				Prepared & Analyzed: 11/25/08						
Cobalt	ND	5.0	ug/L							
Antimony	ND	2.0	"							
Zinc	ND	5.0	"							
Thallium	ND	1.0	"							
Vanadium	ND	2.0	"							
Barium	ND	5.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	1.0	"							
Chromium +3	ND	2.0	"							
Arsenic	ND	1.0	"							
Copper	ND	5.0	"							
Lead	ND	1.0	"							
Mercury	ND	0.25	"							
Molybdenum	ND	5.0	"							
Nickel	ND	5.0	"							
Selenium	ND	1.0	"							
Silver	ND	1.0	"							
LCS (I802524-BS1)				Prepared & Analyzed: 11/25/08						
Beryllium	9.7		ug/L	10		97	80-120			
Antimony	10.7		"	10		107	80-120			
Vanadium	7.8		"	10		78	80-120			
Barium	9.70		"	10		97	80-120			
Cobalt	8.7		"	10		87	80-120			
Thallium	7.5		"	10		75	80-120			
Cadmium	9.40		"	10		94	80-120			
Zinc	90		"	100		90	80-120			
Arsenic	8.60		"	10		86	80-120			
Copper	94.0		"	100		94	80-120			
Lead	9.0		"	10		90	80-120			
Molybdenum	9.60		"	10		96	80-120			
Nickel	86.0		"	100		86	80-120			
Selenium	9.2		"	10		92	80-120			
Silver	9.00		"	10		90	80-120			
LCS Dup (I802524-BSD1)				Prepared & Analyzed: 11/25/08						
Cadmium	9.30		ug/L	10		93	80-120	1	20	

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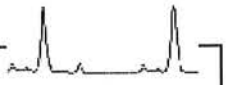

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.:
I811061

Dissolved Metals - Quality Control

Argon Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch I802524 - EPA 200.8										
LCS Dup (I802524-BSD1)				Prepared & Analyzed: 11/25/08						
Antimony	10.7		ug/L	10		107	80-120	0	20	
Thallium	8.1		"	10		81	80-120	8	20	
Barium	9.80		"	10		98	80-120	1	20	
Cobalt	7.7		"	10		77	80-120	12	20	
Beryllium	9.6		"	10		96	80-120	1	20	
Vanadium	7.8		"	10		78	80-120	0	20	
Zinc	93		"	100		93	80-120	3	20	
Arsenic	8.40		"	10		84	80-120	2	20	
Copper	87.0		"	100		87	80-120	8	20	
Lead	9.7		"	10		97	80-120	7	20	
Molybdenum	9.40		"	10		94	80-120	2	20	
Nickel	81.0		"	100		81	80-120	6	20	
Selenium	9.4		"	10		94	80-120	2	20	
Silver	9.20		"	10		92	80-120	2	20	
Matrix Spike (I802524-MS1)	**Source: I811061-01**			Prepared & Analyzed: 11/25/08						
Barium	51.3		ug/L	10	41.0	103	70-130			
Cobalt	11		"	10	ND	113	70-130			
Vanadium	23.9		"	10	13.0	109	70-130			
Cadmium	8.00		"	10	ND	80	70-130			
Zinc	94		"	100	6.5	87	70-130			
Thallium	8.9		"	10	ND	89	70-130			
Beryllium	8.0		"	10	ND	80	70-130			
Antimony	10.1		"	10	ND	101	70-130			
Arsenic	17.4		"	10	4.70	127	70-130			
Copper	110		"	100	2.50	107	70-130			
Lead	10.4		"	10	ND	104	70-130			
Molybdenum	69.8		"	10	61.0	88	70-130			
Nickel	105		"	100	3.2	102	70-130			
Selenium	14		"	10	2.4	120	70-130			
Silver	9.10		"	10	ND	91	70-130			
Matrix Spike Dup (I802524-MSD1)	**Source: I811061-01**			Prepared & Analyzed: 11/25/08						
Zinc	92		ug/L	100	6.5	85	70-130	2	20	
Thallium	8.9		"	10	ND	89	70-130	0	20	
Vanadium	23.7		"	10	13.0	107	70-130	0.8	20	
Cadmium	8.20		"	10	ND	82	70-130	2	20	

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Geological Technics, Inc. 1101 7th Street Modesto, CA 95354	Project Number: 1409.2 Project Name: Springtown Gas Project Manager: Reza Namdar Ghanbari	Work Order No.: I811061

Dissolved Metals - Quality Control

Argon Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch I802524 - EPA 200.8										
Matrix Spike Dup (I802524-MSD1)	**Source: I811061-01**			Prepared & Analyzed: 11/25/08						
Cobalt	11		ug/L	10	ND	110	70-130	3	20	
Antimony	10.5		"	10	ND	105	70-130	4	20	
Barium	51.4		"	10	41.0	104	70-130	0.2	20	
Beryllium	8.0		"	10	ND	80	70-130	0	20	
Arsenic	17.5		"	10	4.70	128	70-130	0.6	20	
Copper	110		"	100	2.50	107	70-130	0	20	
Lead	8.8		"	10	ND	88	70-130	17	20	
Molybdenum	68.6		"	10	61.0	76	70-130	2	20	
Nickel	106		"	100	3.2	103	70-130	0.9	20	
Selenium	14		"	10	2.4	121	70-130	0.7	20	
Silver	9.40		"	10	ND	94	70-130	3	20	

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Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

Hexachrome by IC - Quality Control

Argon Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch I802525 - General Prep										
Blank (I802525-BLK1)				Prepared & Analyzed: 11/25/08						
Chromium (VI)	ND	0.20	ug/L							
LCS (I802525-BS1)				Prepared & Analyzed: 11/25/08						
Chromium (VI)	9.60		ug/L	10		96	80-120			
LCS Dup (I802525-BSD1)				Prepared & Analyzed: 11/25/08						
Chromium (VI)	8.80		ug/L	10		88	80-120	9	20	
Matrix Spike (I802525-MS1)		**Source: I811061-01**		Prepared & Analyzed: 11/25/08						
Chromium (VI)	10.9		ug/L	10	1.70	92	70-130			
Matrix Spike Dup (I802525-MSD1)		**Source: I811061-01**		Prepared & Analyzed: 11/25/08						
Chromium (VI)	11.8		ug/L	10	1.70	101	70-130	8	20	

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Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.: I811061

TPH-gas & Volatile Organic Compounds by GC/MS - Quality Control

Argon Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch I802523 - EPA 5030B										
Blank (I802523-BLK1)				Prepared & Analyzed: 11/26/08						
Surrogate: Fluorobenzene	*45.5*		*ug/L*	*50*		*91*	*70-130*			
Total Petroleum Hydrocarbons @ Gasoline	ND	50	"							
Benzene	ND	0.5	"							
Toluene	ND	0.5	"							
Xylenes, total	ND	1.0	"							
Ethyl Benzene	ND	0.5	"							
t-Butanol	ND	5.0	"							
Methyl tert-Butyl Ether	ND	0.5	"							
Di-Isopropyl Ether	ND	0.5	"							
Ethyl tert-Butyl Ether	ND	0.5	"							
tert-Amyl Methyl Ether	ND	0.5	"							
LCS (I802523-BS1)				Prepared & Analyzed: 11/26/08						
Methyl tert-Butyl Ether	26.5		ug/L	25		106	80-120			
LCS Dup (I802523-BSD1)				Prepared & Analyzed: 11/26/08						
Methyl tert-Butyl Ether	24.2		ug/L	25		97	80-120	9	20	
Matrix Spike (I802523-MS1)		**Source: I811061-01**		Prepared & Analyzed: 11/26/08						
Total Petroleum Hydrocarbons @ Gasoline	1010		ug/L	1000	90.0	92	70-130			
Matrix Spike Dup (I802523-MSD1)		**Source: I811061-01**		Prepared & Analyzed: 11/26/08						
Total Petroleum Hydrocarbons @ Gasoline	850		ug/L	1000	90.0	76	70-130	17	20	

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argon laboratories 2905 Railroad Ave. Ceres, CA 95307 (209)581-9280 Fax (209)581-9282

Geological Technics, Inc.
1101 7th Street
Modesto, CA 95354

Project Number: 1409.2
Project Name: Springtown Gas
Project Manager: Reza Namdar Ghanbari

Work Order No.:
I811061

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Argon Laboratories, Inc. California D.O.H.S. Cert. #2359

Appendix C

Groundwater Monitoring Field Reports

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: P-1

Project No.: 1409.2

Date: 10/2/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:40	0.0	20.68	1942	7.36	59.5	12.03	Murky, slight odor, few sediments
10:49	7.5	20.19	1912	7.09	59.4	0.53	Murky, slight odor, few sediments
11:00	15.0	20.43	1908	7.13	60.8	9.17	Murky, slight odor, few sediments
11:10	22.5	20.44	1893	7.10	59.6	1.18	Murky, slight odor, few sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.75 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.06
Silt Thickness (ft):	0.94
Initial DTW (ft):	7.65
Water column height (ft):	11.41
One casing volume (gal):	7.42
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera Richard Estioko

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☒ Yes ☐ No

No. of Drums: 1

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-1

Project No.: 1409.2

Date: 10/2/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:24	0.0	21.72	1629	7.06	35.4	10.57	Brown, slight odor, many sediments
10:28	2.5	21.36	1689	7.13	31.0	0.80	Brown, slight odor, many sediments
10:30	5.0	21.50	1695	7.15	33.0	0.72	Brown, slight odor, many sediments
10:34	7.5	21.57	1701	7.16	45.6	0.68	Brown, slight odor, many sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.75 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.41
Silt Thickness (ft):	0.59
Initial DTW (ft):	6.82
Water column height (ft):	12.59
One casing volume (gal):	2.14
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera Richard Estioko Mayra Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-2

Project No.: 1409.2

Date: 10/2/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
12:00	0.0	20.66	1641	7.46	57.7	6.69	Murky, mild odor, many sediments
12:02	2.0	21.08	1641	7.27	53.4	1.22	Murky, mild odor, many sediments
12:05	4.0	21.24	1651	7.11	52.3	0.63	Murky, mild odor, many sediments
12:09	6.0	21.14	1650	7.07	51.8	0.58	Murky, mild odor, many sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.67 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	18.92
Silt Thickness (ft):	1.08
Initial DTW (ft):	8.69
Water column height (ft):	10.23
One casing volume (gal):	1.74
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera Richard Estioko Mary Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Project No.: 1409.2

Project Location: 909 Bluebell Drive

Livermore, CA

Well I.D.: STMW-3

Date: 10/2/2008

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:00	0.0	21.03	2096	7.12	51.5	8.68	Brown, no odor, many sediments
10:04	2.0	20.60	1786	6.85	428.0	4.13	Brown, no odor, many sediments
10:08	4.0	20.56	1617	6.81	341.6	2.11	Brown, no odor, many sediments
10:11	6.0	20.47	1892	6.82	156.3	1.81	Brown, no odor, many sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.55 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.05
Silt Thickness (ft):	0.95
Initial DTW (ft):	9.74
Water column height (ft):	9.31
One casing volume (gal):	1.58
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera Richard Estioko Mary Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-1

Project No.: 1409.2

Date: 10/2/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:10	0.0	22.02	1780	7.18	2.1	8.29	Muddy, slight odor, few sediments

Purge Method: ☒ Dedicated Waterra ❑ Centrifugal pump with dedicated tubing ❑ Other _____

Pumping Rate: - gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.50
Silt Thickness (ft):	1.50
Initial DTW (ft):	7.69
Water column height (ft):	0.81
One casing volume (gal):	0.53
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: Well went dry at 11:17 A.M.

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ❑ Bailer ❑ Other ❑

* = measured ** = @ sampling

Purged Water Drummed: ❑ Yes ❑ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-2

Project No.: 1409.2

Date: 10/2/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks

Purge Method: ❑ Dedicated Waterra ❑ Centrifugal pump with dedicated tubing ❑ Other _____

Pumping Rate: _____ gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.25
Silt Thickness (ft):	1.75
Initial DTW (ft):	7.55
Water column height (ft):	0.70
One casing volume (gal):	0.46
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used:

_____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: Well was dry, there was not enough water to reach YSI chamber.

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ❑ Bailer ❑ Other ❑

* = measured ** = @ sampling

Purged Water Drummed: ❑ Yes ❑ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-1

Project No.: 1409.2

Date: 10/16/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:20	0.0	22.16	1051	7.62	132.7	39.13	Dark, no odor, a lot of sediments
11:24	2.0	21.74	801	7.49	169.2	37.89	Dark, no odor, a lot of sediments
11:29	4.0	21.91	910	7.51	91.4	35.94	Dark, no odor, a lot of sediments
11:35	6.0	21.48	970	7.53	71.6	36.39	Dark, no odor, a lot of sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.40 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	17.75
Silt Thickness (ft):	2.25
Initial DTW (ft):	6.65
Water column height (ft):	11.10
One casing volume (gal):	1.89
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Project No.: 1409.2

Project Location: 909 Bluebell Drive

Livermore, CA

Well I.D.: STMW-2

Date: 10/16/2008

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:45	0.0	23.28	1540	7.45	55.0	5.44	Muddy, no odor, a lot of sediments
10:49	2.0	21.28	1601	7.09	61.1	1.63	Muddy, no odor, a lot of sediments
10:53	4.0	21.33	1609	7.06	57.1	0.16	Muddy, no odor, a lot of sediments
10:56	6.0	21.35	1611	7.07	56.7	0.21	Muddy, no odor, a lot of sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.55 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.63
Silt Thickness (ft):	0.37
Initial DTW (ft):	8.44
Water column height (ft):	11.19
One casing volume (gal):	1.90
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-3

Project No.: 1409.2

Date: 10/16/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:19	0.0	22.01	470	7.29	127.4	38.96	Muddy, mild odor, a lot of sediments
10:25	2.0	21.25	488	7.35	129.3	37.88	Muddy, mild odor, a lot of sediments
10:31	4.0	20.88	626	7.30	76.0	37.64	Muddy, mild odor, a lot of sediments
10:39	6.0	20.64	656	7.38	66.6	37.40	Muddy, mild odor, a lot of sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.30 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.68
Silt Thickness (ft):	0.32
Initial DTW (ft):	9.55
Water column height (ft):	10.13
One casing volume (gal):	1.72
** Final DTW (ft):	-
Casing diameter (in):	2"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: P-1

Project No.: 1409.2

Date: 10/16/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:40	0.0	21.02	1592	7.61	145.3	36.39	Light brown, no odor, a lot of sediments
11:57	8.0	20.79	952	8.09	142.9	45.22	Light brown, no odor, a lot of sediments
	16.0	20.61	1285	7.75	85.9	18.23	Light brown, no odor, a lot of sediments

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: _____ - gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.30
Silt Thickness (ft):	0.70
Initial DTW (ft):	7.41
Water column height (ft):	11.89
One casing volume (gal):	7.73
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-1

Project No.: 1409.2

Date: 10/16/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
13:12	0.00	22.56	1563	7.56	148.7	4.71	Dark, no odor, a lot of sediments
13:15	0.25	22.28	1699	7.18	98.3	1.23	Dark, no odor, a lot of sediments
13:17	0.50	22.24	1702	7.01	12.1	0.94	Dark, no odor, a lot of sediments
13:19	0.75	22.29	1668	6.84	3.3	1.53	Dark, no odor, a lot of sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ❑ Centrifugal pump with dedicated tubing ❑ Other _____

Pumping Rate: 0.11 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.71
Silt Thickness (ft):	1.29
Initial DTW (ft):	7.66
Water column height (ft):	1.05
One casing volume (gal):	0.68
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera

Sample Method: Waterra ❑ Bailer ❑ Other ❑

* = measured ** = @ sampling

Purged Water Drummed: ❑ Yes ❑ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Project No.: 1409.2

Project Location: 909 Bluebell Drive

Livermore, CA

Well I.D.: VE-2

Date: 10/16/2008

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:06	0.0	21.43	1917	7.25	-92.8	3.35	Light brown, mild odor, few sediments
11:09	0.5	21.31	1907	7.03	-83.5	6.85	Light brown, mild odor, few sediments
11:11	1.0	21.39	1906	7.06	-58.9	7.12	Light brown, mild odor, few sediments
11:16	1.5	21.38	1912	7.16	-1.1	7.25	Light brown, mild odor, few sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.15 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.28
Silt Thickness (ft):	1.72
Initial DTW (ft):	7.35
Water column height (ft):	0.93
One casing volume (gal):	0.60
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estoiko / M. Barrera Richard Estoiko

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-2

Project No.: 1409.2

Date: 10/23/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:33	0.0	19.92	1875	7.78	57.2	9.17	Murky, no odor, few sediments
10:37	0.5	20.19	1913	7.40	49.3	8.19	Murky, no odor, few sediments
10:40	1.0	19.97	1912	7.41	49.7	8.40	Murky, no odor, few sediments
10:46	1.5	19.91	1924	7.42	49.6	8.48	Murky, no odor, few sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.12 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.49
Silt Thickness (ft):	1.51
Initial DTW (ft):	7.63
Water column height (ft):	0.86
One casing volume (gal):	0.56
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: Very slow recharge.

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☒ Yes ☐ No

No. of Drums: 1

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-2

Project No.: 1409.2

Date: 10/30/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:40	0.0	18.35	1137	7.92	196.9	186.3	Clear, no odor, very few sediments
10:41	0.1	19.15	1083	7.82	186.7	239.3	Clear, no odor, very few sediments
10:44	0.2	20.14	1053	7.83	166.1	192.1	Clear, no odor, very few sediments
10:45	0.3	20.05	1052	7.81	164.0	172.1	Clear, no odor, very few sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.06 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.08
Silt Thickness (ft):	1.92
Initial DTW (ft):	7.64
Water column height (ft):	0.44
One casing volume (gal):	0.29
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☒ No

No. of Drums: 1

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-2

Project No.: 1409.2

Date: 11/6/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:09	0.0	16.17	1326	7.15	214.6	10.91	Clear, no odor, very few sediments
10:12	1.0	19.95	1327	7.09	186.0	11.95	Clear, no odor, very few sediments
10:15	2.0	19.94	1329	7.13	183.5	9.77	Clear, no odor, very few sediments (Final Reading)

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.34 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.56
Silt Thickness (ft):	1.44
Initial DTW (ft):	7.16
Water column height (ft):	1.40
One casing volume (gal):	0.91
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used: _____ # VOAs _____ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

_____ # polys _____ _____ preserved ____ non-preserved

Notes: Weekly parameters. Well went dry after 2 gallons.

Sampled By: R. Estioko / M. Barrera Richard Estioko

Sample Method: Waterra ☐ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☒ No

No. of Drums: 0

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-1

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:30	0.0	19.91	1131	7.52	217.3	11.29	Muddy, no odor, few sediments
11:34	2.0	20.69	1134	7.55	217.9	11.40	Muddy, no odor, few sediments
11:39	4.0	20.72	1433	7.37	217.0	11.42	Muddy, no odor, few sediments
11:41	6.0	20.74	1554	7.36	208.3	11.17	Muddy, no odor, few sediments
12:00							Collected samples

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.55 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.10
Silt Thickness (ft):	0.90
Initial DTW (ft):	6.74
Water column height (ft):	12.36
One casing volume (gal):	8.03
** Final DTW (ft):	6.98
Casing diameter (in):	4"

Sample Containers used:

4	# VOAs	X	preserved ____ non-preserved
____	# amber liters	____	preserved ____ non-preserved
1	# polys 250 ml	____	preserved X non-preserved
1	# polys 250 ml	X	preserved ____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☒ Yes ☐ No

No. of Drums: 1

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-2

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
10:26	0.0	19.77	1783	7.37	250.2	5.50	Brown, no odor, few sediments
10:30	2.0	21.08	1777	7.36	226.2	1.63	Brown, no odor, few sediments
10:35	4.0	21.20	1780	7.26	216.2	1.37	Brown, no odor, few sediments
10:39	6.0	21.21	1782	7.20	211.4	1.13	Brown, no odor, few sediments
10:55							Collected samples

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.47 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.52
Silt Thickness (ft):	0.48
Initial DTW (ft):	8.42
Water column height (ft):	11.10
One casing volume (gal):	1.89
** Final DTW (ft):	8.54
Casing diameter (in):	2"

Sample Containers used: 4 # VOAs __X__ preserved ____ non-preserved

_____ # amber liters _____ preserved ____ non-preserved

1 # polys 250 ml _____ preserved __X__ non-preserved

1 # polys 250 ml __X__ preserved _____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: STMW-3

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
9:56	0.0	19.36	886	7.87	241.0	20.66	Muddy, no odor, many sediments
10:00	2.0	20.86	828	7.82	234.1	18.71	Clear, no odor, few sediments
10:04	4.0	20.80	861	7.73	225.4	18.14	Clear, no odor, few sediments
10:11	6.0	20.63	771	7.88	194.6	15.53	Clear, no odor, few sediments
14:00							Collected samples

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.40 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.49
Silt Thickness (ft):	0.51
Initial DTW (ft):	9.55
Water column height (ft):	9.94
One casing volume (gal):	1.69
** Final DTW (ft):	17.37
Casing diameter (in):	2"

Sample Containers used:

4	# VOAs	X	preserved ____ non-preserved
____	# amber liters	____	preserved ____ non-preserved
1	# polys 250 ml	____	preserved X non-preserved
1	# polys 250 ml	X	preserved ____ non-preserved

Notes: Samples were collected before 80% recharge.

Sampled By: R. Estioko / M. Barrera Richard Estioko

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-1

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
13:08	0.0	18.91	1960	6.99	38.6	4.82	Brown, no odor, few sediments
13:35							Collected samples

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: - gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.48
Silt Thickness (ft):	1.52
Initial DTW (ft):	7.42
Water column height (ft):	1.06
One casing volume (gal):	0.69
** Final DTW (ft):	7.50
Casing diameter (in):	4"

Sample Containers used:

	# VOAs		preserved ____ non-preserved
	# amber liters		preserved ____ non-preserved
1	# polys 250 ml		preserved X non-preserved
1	# polys 250 ml	X	preserved ____ non-preserved

Notes: Well went dry after intial reading.

Sampled By: R. Estioko / M. Barrera Richard Estioko

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: VE-2

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
11:08	0.0	17.09	1625	7.39	233.5	7.95	Clear, no odor, few sediments
11:09	0.5	19.38	1616	6.91	225.6	10.45	Clear, no odor, few sediments
11:10	1.0	19.49	1618	6.89	225.1	10.22	Clear, no odor, few sediments
11:12	1.5	19.47	1593	6.89	224.5	9.09	Clear, no odor, few sediments
11:25							Collected samples

Purge Method: ☒ Dedicated Waterra ☐ Centrifugal pump with dedicated tubing ☐ Other _____

Pumping Rate: 0.38 gal/min

Well Constructed TD (ft):	10.00
* Well TD (ft):	8.25
Silt Thickness (ft):	1.75
Initial DTW (ft):	7.38
Water column height (ft):	0.87
One casing volume (gal):	0.57
** Final DTW (ft):	7.93
Casing diameter (in):	4"

Sample Containers used:

_____	# VOAs	_____ preserved	____ non-preserved
_____	# amber liters	_____ preserved	____ non-preserved
1	# polys 250 ml	_____ preserved	X non-preserved
1	# polys 250 ml	X preserved	_____ non-preserved

Notes: _____

Sampled By: R. Estioko / M. Barrera

Sample Method: Waterra ☒ Bailer ☐ Other ☐

* = measured ** = @ sampling

Purged Water Drummed: ☐ Yes ☐ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Geological Technics, Inc.

Groundwater Monitoring Field Log

Project Name: Springtown Gas (Blue Bell)

Well I.D.: P-1

Project No.: 1409.2

Date: 11/20/2008

Project Location: 909 Bluebell Drive

Livermore, CA

Samples sent to: Argon

Time	Cumulative Volume Purged (gal)	Temp C°	EC (µS/cm)	pH	ORP (millivolts)	DO (mg/L)	Remarks
12:10	0.0	17.86	1384	8.18	158.0	11.16	Muddy, no odor, many sediments
12:25	7.5	20.14	980	8.54	187.4	10.20	Clear, no odor, few sediments
12:41	15.0	20.11	1072	8.43	180.3	10.38	Clear, no odor, few sediments
12:57	20.0	19.96	1392	7.99	180.0	8.19	Clear, no odor, few sediments
14:20							Collected samples

Purge Method: ☒ Dedicated Waterra ❑ Centrifugal pump with dedicated tubing ❑ Other _____

Pumping Rate: 0.43 gal/min

Well Constructed TD (ft):	20.00
* Well TD (ft):	19.28
Silt Thickness (ft):	0.72
Initial DTW (ft):	7.53
Water column height (ft):	11.75
One casing volume (gal):	7.64
** Final DTW (ft):	-
Casing diameter (in):	4"

Sample Containers used:

4	# VOAs	X	preserved ____ non-preserved
____	# amber liters	____	preserved ____ non-preserved
1	# polys 250 ml	____	preserved X non-preserved
1	# polys 250 ml	X	preserved ____ non-preserved

Notes: Well went dry after 20 gallons purged. Samples were taken at 80% recharge.

Sampled By: R. Estioko / M. Barrera Richard Estioko

Sample Method: Waterra ☒ Bailer ❑ Other ❑

* = measured ** = @ sampling

Purged Water Drummed: ❑ Yes ❑ No

No. of Drums:

Gallons per foot of casing. 2" dia. = 0.17, 3" dia. = 0.38 4" dia. = 0.65, 5" dia. = 1.02, 6" dia. = 1.48

Appendix D

Site Health and Safety Plan

SITE HEALTH AND SAFETY PLAN
FOR
Springtown Gas
909 Bluebell Drive
Livermore, California

Project No. 1409.2
September 16, 2008

Prepared by
Geological Technics Inc.
1101 7th Street
Modesto, California 95354
209-522-4119
In accordance with
Federal OSHA Requirements
29-CFR 1910.120

Matthew H. Spielmann
Health & Safety Officer

TABLE OF CONTENTS

LIST OF ATTACHMENTS

1.0 INTRODUCTION

This Site Specific Safety Plan establishes the requirements to adequately protect workers during the installation of hydrogen peroxide injection wells, groundwater monitoring wells, quarterly groundwater monitoring, and hydrogen peroxide injection events at Springtown Gas (Site), 909 Bluebell Road, Livermore, Alameda County, California. Specific site safety procedures to be utilized for all personnel involved in the project are explained herein.

This plan presents a realistic approach to the anticipated hazards at the Site and shall be considered as an appropriate site specific worker protection plan. Site conditions may vary throughout the duration of the project. As the conditions change, parts of the plan may be updated as required. All changes in health and safety measures specified must be approved by the Site Safety Officer (SSO). A copy of this Site Safety Plan will be kept onsite at all times and made available to all personnel assigned to this project. In addition to this, all information presented in the Site Safety Plan will be reviewed with said employees by the SSO. Project personnel on the Site are expected to be familiar with, and comply with all portions of the Site Safety Plan. Regulatory personnel, visitors and contractors entering the work areas are expected to be familiar with and adhere to all provisions of the Site Safety Plan. Such personnel will be expected to utilize personal protective equipment which is equal to, or exceeds that designated by the SSO. Documentation of medical and training qualifications will be required. Any personnel failing to adhere to the requirements of the Site Safety Plan will be prohibited from entering the active work areas.

1.1 Site Description

Site location:	909 Bluebell Road
	Livermore, California
Client contact:	Masood Amini.
	Owner
	Phone: (925) 487-2598
Area Affected:	Retail gasoline service station
Properties abutting the Site:	North – retail/commercial
	South - commercial
	East - commercial
	West – retail/commercial

2.0 PROJECT ORGANIZATIONAL STRUCTURE

Project Manager:	Matthew H. Spielmann
Site Safety Officer:	Matthew H. Spielmann
Field Team Leader:	Matthew H. Spielmann

2.1 Project Manager Responsibilities

Overall management of the technical aspects of the project and the work plan.

2.2 Site Safety Officer Responsibilities

Onsite implementation of the Site Safety Plan. Halting or delaying any Site activities when necessary to protect worker or public health and safety, or the protection of the environment. Conducting inspections to determine the effectiveness of the Site Safety Plan. Any deficiencies in the Site Safety Plan identified by the SSO will be corrected as soon as possible. Providing a pre-entry briefing according to Section 4 of this plan. Inspecting the use of proper personal protective equipment by employees, contractors and subcontractors at all times. Monitoring workers for signs and symptoms of excessive heat stress. Workers experiencing excessive heat stress shall be moved outside the work area for liquid replenishment and cool down.

2.3 Sampling Team Personnel Responsibilities

Become familiar with and follow the requirements of this site safety plan and follow instructions given by the SSO. Notify the SSO of any injury, signs of symptoms of overexposure to hazardous substances, any unsafe acts or conditions occurring at the Site. Collect samples as instructed using proper equipment and safe procedures to minimize exposure to hazardous materials or conditions.

3.0 JOB HAZARD ANALYSIS

The tasks associated with the installation of the monitoring wells are summarized below: A complete description is given in the Monitoring Well Installation Work Plan for this project.

- Drill Well Borings: One or more soil borings will be drilled to 20 feet below grade. Groundwater beneath the Site occurs at depths ranging from approximately 6.26 to 9.25 feet below grade, or 513 to 510 feet above mean sea level, and flows generally north to northwest across the Site Soil samples for lithologic description purposes and possible laboratory analyses will be continuously collected to total depth. Soil samples for laboratory analyses will be collected for waste profiling purposes.

- Hydrogen Peroxide Injection Well Installation: One or more, as needed, hydrogen peroxide injection wells will be installed in the borings. The installed wells will be developed and survey controlled.

- Monitoring Well Installation: Additional, as needed, groundwater monitoring wells will be installed in the borings. The installed wells will be developed and survey controlled.

- Groundwater Sample Collection: Existing and additional groundwater monitoring wells will be sampled. Prior to sample collection, each well will be purged by pumping. Samples will be collected using a clean, unused, disposable polyethylene bailer. The collected sample will be transferred from the bailer to appropriate sample containers using a bottom emptying device.

- Hydrogen Peroxide Injection: Dilute hydrogen peroxide will be injected into the installed hydrogen peroxide injection points, and groundwater monitoring wells, as needed, to reduce dissolved-phase hydrocarbon concentrations in groundwater. Groundwater samples will be collected for metals analyses, and groundwater will be monitored for dissolved oxygen concentrations and oxygen reduction potential.

The work activities outlined above present potential physical and chemical hazards to the workers involved. In all instances, precautionary measures will be implemented to minimize these risks. It is not expected that any workers or nearby residents will be adversely affected by the work. Strict environmental monitoring will be conducted at and around each work station. Adherence of this SSP will minimize the risk to persons conducting the work, and also to those not associated with the field work. This assessment will be revised periodically during the assessment as more detailed information becomes available. In order to control exposures at the Site, work practices and the use of personal protective equipment/procedures will be required as outlined in Section 5 of this plan.

3.1 Chemical Hazard

The chemicals of concern are dissolved-phase hydrocarbons including total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene and total xylenes (BTEX), and oxygenates tert-butyl alcohol (TBA) and methyl-tertiary butyl ether (MtBE). Based on previous land use at and in the vicinity of the Site, the overall health risk due to exposure to the chemicals is believed to be low to moderate.

Soil cuttings produced during drilling operations, groundwater produced during well development and sampling activities, and rinsate generated by equipment decontamination activities, will be appropriately and securely stored on the Site in 55-gallon capacity steel DOT drums until laboratory results indicate if these materials should be treated as hazardous materials.

Hazardous waste sites contain a number of chemicals that may cause direct bodily injury if exposures are at levels in excess of recommended exposure limits. There are four

routes of exposure or pathways by which toxic chemicals can enter the body: skin punctures, ingestion, eye and skin absorption and inhalation.

A preliminary evaluation of the Site did not reveal obvious signs of IDLH conditions. The proper use of the personal protective equipment in conjunction with the monitoring equipment and the work procedures as described in this site safety plan should minimize the potential for over exposure of personnel.

3.1.1 Skin Puncture

Skin punctures by pointed objects, such as broken glass or work-related tools, can be avoided by wearing safety boots, long-pants, a long sleeve shirt, a hard hat, gloves, and shatter resistant eye protection.

3.1.2 Ingestion

Workers may ingest materials unintentionally when they handle food, drink, smoke, bite fingernails, etc., after contact with the material and before thoroughly washing their hands. This can be avoided if workers wash their hands prior to any of these activities. At no time will food or smoking be allowed in any work area.

3.1.3 Eye and Skin Absorption

The skin is a major protective barrier to all organs of the body. The exterior layer of the skin generally prevents foreign materials from entering the body. However, corrosive chemicals can damage the exterior layers of the skin and cause chemical burns. Some chemicals may dry the skin and cause dermatitis. Other chemicals are able to penetrate the intact skin and enter the bloodstream.

Contact of chemicals with skin or eyes can be avoided if workers wear personal protective equipment, such as Tyvek suits, safety glasses/chemical goggles, gloves, and boots.

3.1.4 Inhalation

Foreign material may be inhaled and come into direct contact with lung tissue. This may cause an adverse effect on the lung tissue which, if not irreversible, may persist for a long time before the damage can be repaired by the body. The foreign material may also enter the bloodstream, and circulate throughout the body. Once the material enters the bloodstream, all sensitive organ systems may be affected including the brain, heart, liver, kidneys, and reproductive organs. Entry of a chemical into the bloodstream may occur rapidly. Foreign materials that may be inhaled include volatile chemicals and particulates (dust) that may contain or consist of nonvolatile hazardous substances.

Inhalation of dust or chemicals can be successfully avoided by using respirators fitted with proper cartridges and by eliminating downwind work stations where possible.

3.2 Mechanical Hazards

Common mechanical hazards are present around heavy equipment, or in places where heavy objects may cause injury by falling on the worker. Any job that places a worker in a position where that worker may be injured by falling, such as working on a catwalk or ladder, also involves a mechanical hazard. The SSO will correct such hazards or institute precautionary measures once they are identified.

Heavy equipment used during field activities will include drilling rigs. Only trained or experienced personnel will operate machines, tools, and equipment employed in the investigation. All machines and tools will be cleaned regularly and maintained in good repair. All moving parts will be securely fastened or covered when not in use. Personal protective equipment required around any heavy equipment will include hard hats, steel-toe boots, high visibility vest, and eye protection. Hearing protection such as ear plugs will also be available. In areas where operating heavy equipment can create a chemical or health hazard, appropriate protective clothing and respiratory protection will also be used.

3.3 Electrical Hazards

All electrical equipment to be used during field activities will be properly grounded. Only qualified persons will work on electrical equipment and all equipment will be maintained in safe condition. The drilling rig derrick will be located a minimum of 10 feet from electrical power lines (50 KV or less) unless such lines have been de-energized. At no time will drilling rig derricks be raised or lowered without direct supervision by a Site Supervisor. Utility companies (such as PG&E) and/or private locator services will be contacted to identify underground utility lines leading into the Site. Underground electrical utilities will be located before drilling begins.

3.4 Heat Stress

Heat Stress may be caused by the combination of elevated ambient temperatures and the wearing of personal protective equipment. The effects of heat stress are heat rash, cramps, exhaustion, and heat stroke. To minimize the potential of heat stress, workers heart rates will be monitored in accordance with the guidelines published by NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985). Cool water or fluids will be readily available to the employees, who will be encouraged to drink frequently during each break.

3.5 Cold Exposure

It is not expected that cold exposure will be experienced at the Site. However, all persons working outdoors should be aware that they could be exposed to rapid body temperature cooling in the presence of winds. This is particularly a threat to the hazardous waste site worker if the body cools suddenly when chemical-protective equipment is removed and the clothing underneath is perspiration soaked. The presence of wind greatly increases the rate of cooling.

4.0 PERSONNEL TRAINING

All personnel shall be currently certified under GISO 5192 Hazardous Waste Operations and Emergency Response prior to the initiation of any work on the Site or other comparable training certification. All project personnel will be adequately trained to perform the work assigned. The suspected site specific hazards will be discussed with the assigned employees during the pre-entry briefing at the Site prior to initiating any Site activity, and as necessary to ensure that the employees are aware of the details of the Site Safety Plan. Personal Protective Equipment (PPE) will be available at the Site.

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE listed will be provided to Site personnel by their respective employer

PPE to be provided include:

- Chemical resistant steel toed safety shoes
- Nitrile gloves
- Safety glasses at a minimum and goggles if liquids are encountered.

6.0 SITE CONTROL PLAN

All access to the Site will be controlled by the SSO who will also act as the Public Information Officer if necessary. The SSO will be present onsite during the entire operation, and monitor activities and maintain safety of personnel.

7.0 DECONTAMINATION PLAN

The disposable PPE (gloves, etc.) and any waste generated will be properly bagged, containerized, labeled and disposed of according to local, state and federal regulations.

7.1 Emergency Decontamination

If immediate medical treatment is necessary to prevent loss of life, decontamination can be delayed until the victim is stabilized. Emergencies due to heat stress require that PPE be removed as soon as possible. All contaminated PPE is to be removed after the preliminary decontamination has been performed. After removal of PPE the victim may be further decontaminated. In the event of an emergency, decontamination priority is to be given to an injured or contaminated worker.

Upon completion of the project, or daily work schedule, all workers will wash their hands thoroughly. This also applies before each break and lunch hour.

8.0 EMERGENCY NOTIFICATIONS

Local Police:	911
State Police:	911
Fire:	911
Ambulance:	911
Nearest Hospital:	Emergi-Center At Valley Memorial Hospital
	1133 E. Stanley Blvd.
	Livermore, California
Telephone:	925-373-4018
Back-up Hospital:	Valley Care Medical Center
	5555 W. Los Positas Blvd.
	Livermore, California
Telephone:	925-416-3400
Poison Control:	800-342-9293
Regional EPA:	Region 9
National Response Ctr.:	800-424-8802

9.0 EMERGENCY RESPONSE PLAN

Employees are required to become familiar with the emergency evacuation plan for the Site and fire prevention plan. In the event of an emergency, employees will be directed to evacuate the area and dial 911 for emergency response assistance.

Emergencies can be categorized as:

- Hazardous substances spills
- Medical emergencies

10.0 EMERGENCY ACTION PLAN

- Place a fire extinguisher in the work area
- Place a first aid kit in the work area
- Designate a relocation zone upwind of the hot zone

DAILY SITE SAFETY PLAN BRIEFING ATTENDANCE SHEET

SPRINGTOWN GAS
909 BLUEBELL DRIVE
LIVERMORE, CALIFORNIA

Date and Time: _____

Given by: _____ Company: _____

Signature: _____

ATTENDEE	FUNCTION	COMPANY