2012 COLORADO RULE 608 COMPLIANCE REPORT

RATON BASIN, COLORADO

received 11/16/2012
Project 2042
XTO Energy 2012 report

NOVEMBER 2012

Prepared for:

XTO ENERGY, INC.
TRINIDAD, COLORADO

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EXECUTIVE SUMMARY

LT Environmental, Inc. (LTE) completed the tasks for the 2012 Colorado Rule 608 Compliance Program on behalf of XTO Energy, Inc. (XTO) with respect to XTO operations in Las Animas County, Colorado (Project Area). LTE followed the Colorado Oil and Gas Conservation Commission (COGCC)-approved Work Plan, dated May 5, 2010, in accordance with the following subsections of the COGCC Rule 608:

- 608(a) – Assessment and monitoring of plugged and abandoned (P&A) production wells within one-quarter (¼) mile of proposed coalbed methane (CBM) wells;
- 608(b) – Water well sampling; and
- 608(c) – Coal outcrop and coal mine monitoring.

The 2012 Rule 608 Compliance Program meets the requirements of subsections a, b, and c of the COGCC Rule 608.

XTO proposes to drill CBM production wells in the Project Area of the Raton Basin. The 2012 Project Area was determined by a 2-mile buffer around the 2010 and 2011 proposed XTO CBM production wells as well as CBM production wells XTO installed in 2010 and 2011. XTO did not plan to install any new CBM production wells in the Raton Basin in 2012 and as a result, the 2012 Project Area is identical to the 2011 Project Area.

No new P&A production wells were identified within the 2012 Project Area. No further action was granted on the four P&A production wells by the COGCC on April 28, 2011 for four previously identified P&A production wells.

Two water wells were identified within the 2012 Project Area; however, no proposed CBM production wells have been installed near the two water wells to date. Water well sampling will occur prior to the installation of XTO CBM production wells meeting Rule 608 (b) criteria.

LTE did not identify any new methane seeps within the Vermejo Formation or the Quinto, Vega, and Tercio mines through color infrared (CIR) images or field verification.

LTE identified, through previous investigations, eight known methane seep areas within the 2012 Project Area. Of the eight known methane seep areas, six areas continued to have methane seepage during the investigation and LTE recommends they continue to be monitored in 2013. Two known methane seeps (13 & L-1026 and 14) had limited reportable methane flux and appear to be diminishing in magnitude and extent. LTE recommends monitoring these two known methane seep areas in 2013 to verify they are continuing to diminish in magnitude and extent.

LTE also identified eight continued suspect seep areas within the 2012 Project Area. Limited reportable methane flux was detected at area 19. Area 19 appears to be limited in magnitude and extent with similar results as observed in 2011. LTE recommends monitoring area 19 in 2013 to determine if the magnitude and extent of methane continues to indicate limited/diminished methane flux. The other seven areas did not have any reportable methane flux. The lack of

reportable methane flux in these seven areas over the last two monitoring events suggests that they do not need to be monitored in the future. As a result, LTE recommends these seven areas be discontinued from the monitoring program.

Below is a summary of the historically identified suspect seeps, the category each historical suspect seep has been assigned, and proposed monitoring of each historical seep area.

[1]Methane Seep	[2]Diminishing Methane Seep Areas	[3]Other Source of Methane	[3]No Methane Seep Activity Observed
L-1021	13 & L-1026	L-1023	623/L-99
L-1030	14	L-1025	11
L-1033	19	L-1027	15
L-1050		L-1031	17
5		L-1036	18
32 & L-1049		L-1039	21, 33, 617, & L-100
		L-1040	L-109
		L-1041	
		L-1042	
		L-1043	
		L-1044	
		L-1045	
		L-1047	
		L-1048	
		7, 8, 9, & L-1046	

[1] Recommended for continuation of detailed flux mapping in 2013
[2] Recommended for detailed flux mapping in 2013 to verify the absence of methane
[3] Recommended for discontinuation of detailed flux mapping in 2013

Gas samples were collected from areas 5, 32/L-1049, L-1021, L-1030, L-1033, and L-1050. Analytical isotopic results indicated the methane from the soil gas samples were thermogenic in origin with varying maturation and oxidation characteristics.

Three natural springs were sampled for water quality analysis (Chavez01, Chavez02, and Chavez03). The water types appear to be predominately calcium bicarbonate. Dissolved methane for all three water samples were below the 2 milligrams per kilogram (mg/L) threshold used by the COGCC to analyze for gas composition and for carbon and hydrogen isotopes of methane. In addition to collecting a water sample, flux measurements were collected in the vicinity of the natural springs. Reportable methane flux was not detected at any of the measurement locations.

LTE, at the direction of XTO, proposes to continue conducting Rule 608 compliance activities in Las Animas County in accordance with the COGCC-approved Work Plan as XTO development activities expand.

1.0 INTRODUCTION

LT Environmental, Inc. (LTE) has prepared this 2012 Colorado Rule 608 Compliance Report on behalf of XTO Energy, Inc. (XTO) to summarize the tasks completed with respect to XTO operations in Las Animas County, Colorado (Project Area) (Figure 1). Compliance activities were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC)-approved Work Plan (LTE, May 2010) previously submitted on May 5, 2010. This is the third monitoring event conducted in accordance with this compliance program.

1.1 OBJECTIVE

The objective of the Rule 608 Compliance Program is to meet compliance requirements, as discussed in the May 2010 Work Plan, associated with the drilling and installation of coalbed methane (CBM) wells in Colorado. The Rule 608 Compliance Program as applied to XTO CBM development in Las Animas County, Colorado, applies the following subsections of Rule 608 from the COGCC 600 Series Safety Regulations, as amended on March 30, 2009:

- 608(a) – Assessment and monitoring of plugged and abandoned (P&A) production wells within one-quarter (¼) mile of proposed CBM wells;
- 608(b) – Water well sampling; and
- 608(c) – Coal outcrop and coal mine monitoring.

As part of the Rule 608 Compliance Program, gas composition and isotopic analysis data is collected and evaluated to determine the significant aspects of the gas composition for each methane seep area in the overall Project Area. The objective is to have a data set that assists in the identification of potential sources of gas seepage and observe and evaluate seep characteristics across the entire Project Area.

1.2 PROJECT AREA

The Project Area is located in the Raton Basin in southern Colorado. The Raton Basin is a geologic structural basin in southern Colorado and northern New Mexico. The basin is situated in Huerfano and Las Animas counties, Colorado, and Colfax County, New Mexico. The basin has long been a source of coal production and more recently a source of CBM. Much of the regional geology presented herein was derived from the report, *A Geologic Assessment of Natural Gas from Coal Seams in the Raton and Vermejo Formations, Raton Basin* (Stevens, et.al. 1992).

The Raton Basin is an asymmetric synclinal basin with the axis of the La Veta syncline oriented roughly north-south and passing through Weston, Colorado, which is immediately east of the area defined by XTO for development of CBM. The Raton Formation outcrops over approximately 50 percent (%) of the Project Area. The discontinuous nature of the coal beds both in the subsurface and on the surface makes it difficult to identify and/or correlate individual continuous coal beds from the subsurface producing zone to the surface coal outcrop. The XTO

proposed drilling area is located on the western side of the La Veta syncline suggesting that the formations encountered within the Project Area are dipping to the east.

The Vermejo Formation consists of sandstone, interbedded siltstone, shale, carbonaceous shale, and coal accumulated above the fluvial-deltaic sequences of the Trinidad Sandstone (Stevens, et al. 1992). The Vermejo Formation outcrops along the western edge of the Raton Basin syncline basin, which is on the west side of the Project Area. Of the more than 90,000-acre Project Area, the Vermejo formation outcrop covers approximately 2% of the overall Project Area. The Raton and Vermejo formation outcrops are depicted on Figure 1.

1.3 SCOPE OF WORK

XTO proposes to drill CBM production wells in the Project Area of the Raton Basin (red outline on Figure 1). The 2012 Project Area was determined by a 2-mile buffer around the 2010 and 2011 proposed XTO CBM production wells as well as CBM production wells XTO installed in 2010 and 2011. The 2012 Project Area (green outline on Figure 2), proposed 2010 and 2011 CBM production well locations, recorded P&A production well locations, water well locations, topography, and mine features are illustrated on Figure 2.

The scope of work for the 2012 Rule 608 Compliance Program included the following tasks:

- Task 1: Assessment of applicable P&A production wells;
- Task 2: Assessment of applicable water wells;
- Task 3: Detailed mapping of known and suspect seep areas;
- Task 4: Assessment of applicable natural springs; and
- Task 5: Preparation of this report.

XTO did not propose or install any new CBM production wells in 2012. As a result, the following tasks were not completed for the 2012 Rule 608 Compliance Program:

- Ground survey to locate suspect methane seeps on the Raton Formation outcrop; and
- Color infrared (CIR) aerial imagery and field verification of suspect areas along the Vermejo Formation and at the Quinto, Tercio, and Vega mines.

1.4 REPORT ORGANIZATION

This report is organized into five sections including this introduction (Section 1.0), which presents the objectives and scope of work related to the project. The field methods are described in Section 2.0. The 2012 results are summarized in Section 3.0. The conclusions of the 2012 work are in Section 4.0. The report references are included in Section 5.0. Figures, tables, and appendices follow the text.

2.0 FIELD METHODS

2.1 2012 PROJECT AREA

The 2011 Project Area was utilized for the 2012 Project Area since XTO did not plan to install any new CBM production wells in 2012. The 2011 and 2012 Project Areas were determined by a 2-mile buffer around the 2010 and 2011 proposed XTO CBM production wells as well as CBM production wells XTO installed in 2010 and 2011. The 2012 Project Area is outlined in green on Figure 2. The overall Project Area is outlined in red on Figure 2.

2.2 PROPERTY ACCESS

Prior to conducting 2012 field activities, LTE, with the cooperation of the XTO land department, acquired landowner information from the Las Animas County Assessor's office. LTE and XTO cross-referenced parcel data to identify owners of parcels located in the 2012 Project Area. LTE and XTO requested to gain access to all properties where fieldwork was proposed, but was denied access to several properties; as a result, no investigation activities were conducted on those properties. The 2012 property owner and access information is presented in Table 1.

2.3 ASSESSMENT OF PLUGGED AND ABANDONED PRODUCTION WELLS

Determining surveys of P&A production wells per Rule 608(a) was accomplished on a well-by-well basis. P&A production wells were identified through the Colorado Oil and Gas Information System (COGIS). Plugging procedures from all P&A production wells within the regulatory radius (2 miles) were assessed from existing COGCC well file notes, bond logs, and permit information.

There were no P&A production wells identified in the 2012 Project Area. In 2011, there were four P&A production wells, all without discrepancies or issues of concern identified in plugging data, and as a result, COGCC approval was requested for no further action (COGCC, April 2011). The request was granted by the COGCC on April 28, 2011. The information related to the no further action was discussed in the 2011 Colorado Rule 608 Compliance Report.

In the event there were discrepancies or issues of concern, a field survey for methane seepage would have been completed at the P&A production well. The P&A production wells would then be resurveyed one year and three years after commencement of production of the newly installed CBM production wells.

2.4 WATER WELL SAMPLING

Determining water well sampling per Rule 608(b) is accomplished on a well-by-well basis. Water well sampling is based on the following criteria set forth in Rule 608(b):

1. If a conventional gas well or P&A production well is located within a ¼-mile of a planned XTO CBM well, then the closest two water wells within a one-half (½) mile radius of the conventional gas well or P&A well will be sampled;

2. If there are no conventional gas wells or P&A production wells located within a ¼-mile radius of a proposed XTO CBM well, then water wells located within ¼-mile radius of the proposed XTO CBM well will be sampled. If there are more than two water wells located within the ¼-mile radius of the proposed XTO CBM well, the closest two water wells will be selected and sampled;

3. If there are no water wells located within a ¼-mile radius of the proposed XTO CBM well, then the closest water well within a ½-mile radius of the proposed XTO CBM well will be selected and sampled; or

4. If there is no water well located within a ½-mile radius of the planned XTO CBM well, then no sampling is required.

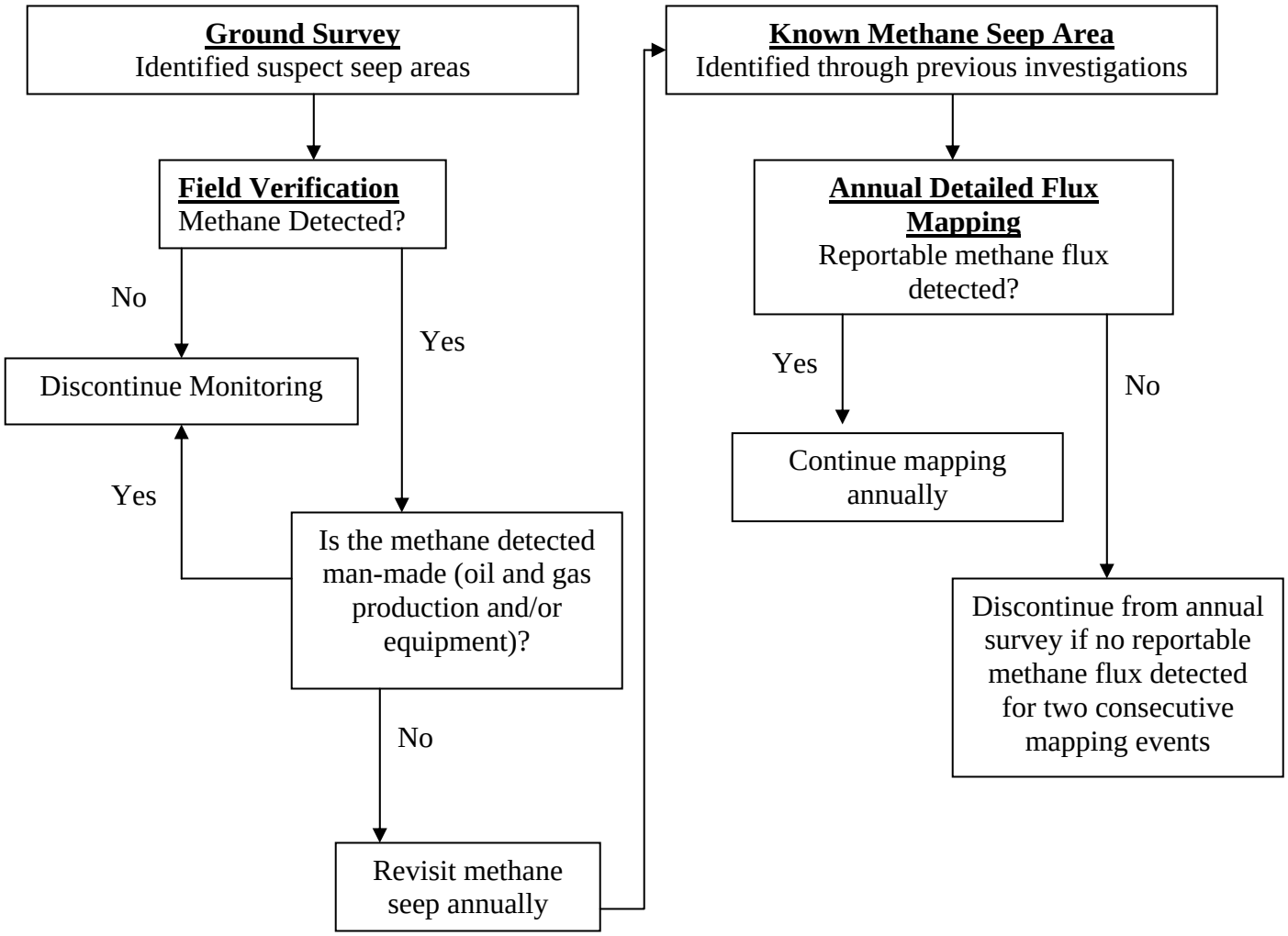
A review of water wells within the 2012 Project Area meeting the requirements set forth in Rule 608(b) identified one water well (Permit Number 39685) that met the second criteria above for sampling. However, the two proposed XTO CBM production wells (New Elk 22-13 and New Elk 22-14) nearest to the water well were not installed during 2012. As a result, no water wells were sampled during the 2012 Colorado Rule 608 Compliance Program. Water well #39685 will be sampled prior to the drilling of New Elk 22-13 and New Elk 22-14.

2.5 GROUND SURVEY WITHIN RATON FORMATION

Ground surveys along the Raton Formation are conducted by Apogee Scientific, Inc. (Apogee) to meet the requirements of Rule 608(c). This is the method of survey utilized by the COGCC during previous monitoring events and appears to be the most effective method for monitoring large areas.

The ground survey is conducted to identify areas where methane is detected in the atmosphere along accessible roadways Apogee drives for the survey. Any area where methane is detected in the atmosphere by Apogee is considered a “suspect seep area”. Those suspect seep areas are then verified by using a flux meter as described in Section 2.7. Suspect seep areas become a methane seep when methane flux is identified within the suspect seep area and other potential methane sources are ruled out. Other potential methane sources include equipment for oil and gas production and/or production itself. Only those suspect seep areas determined to be methane seeps will be monitored annually. The suspect seep areas that are not considered methane seeps will not be monitored and will be discontinued from future detailed mapping events. The flow chart below illustrates how a methane seep is determined within the Raton Formation.

Methane Seepage Within Raton Formation



The technique involves using a vehicle-mounted leak detection system (LDS) to survey the Project Area using the existing roadway network as a reasonable means to cover the formations and identify seep areas. The LDS is an infrared spectrometer (IRS)-based gas analyzer designed to locate methane emission sources from mobile platforms (cars, trucks, helicopters, ATVs, etc.) in real time. The LDS system measures methane, total hydrocarbons, and carbon dioxide with sub-parts per million (ppm) detection limits and displays the data in real time on the control computer. The LDS incorporates a global positioning system (GPS) that records the route taken by the survey vehicle. Wind direction and ambient temperature sensors are mounted on the survey vehicle. Appendix A contains the specifications of the LDS system and GPS unit.

As the survey vehicle was driven, any increases in methane concentration exceeding the local background concentration was marked and investigated with the goal of identifying a potential

source of the methane plume. Marking a potential seep area involved recording the latitude, longitude, wind speed, wind direction, temperature, and other pertinent data about the location.

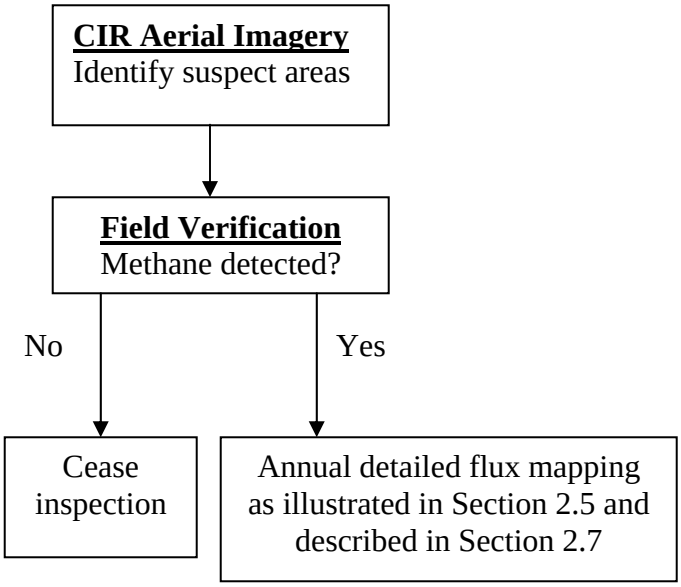
Apogee did not conduct a ground survey in 2012 since XTO did not plan to install any CBM production wells within the 2012 Project Area.

2.6 COLORED INFRARED AERIAL IMAGERY AND FIELD VERIFICATION

A regional reconnaissance for methane seepage along the Vermejo Formation outcrop and at the Quinto, Tercio, and Vega mines is conducted using CIR aerial imagery (CIR aerial imagery last collected in 2010) and field verification of suspect areas. This survey method was selected due to the high topographic relief and limited accessible roads in this portion of the Project Area as compared to the Raton Formation outcrop areas in the basin.

This method only identifies areas within the CIR imagery that are anomalous to the surrounding areas and as such are deemed "suspect areas". Suspect areas are verified by conducting subsurface soil gas surveys to identify the presence or absence of methane within the suspect areas. A suspect area becomes a methane seep area when methane is identified through subsurface soil gas investigations, as described in Section 2.6.2. Those areas that do not record methane in the soil gas probes are not considered methane seep areas and are discontinued from further investigations. Review the flow chart in Section 2.5 for a visual illustration of the methodology. Below illustrates how a methane seep is determined within the Vermejo Formation and within the Quinto, Tercio, and Vega mines.

Methane Seepage Within the Vermejo Formation and the Quinto, Tercio, and Vega Mines



Field verification was not conducted in 2012 since XTO did not plan to install any CBM production wells within the 2012 Project Area. As a result, new areas of the Vermejo formation or mines was not identified for field verification. The next CIR reconnaissance flight is

tentatively scheduled for 2013; however, if XTO does not plan to install any CBM production wells within the Project Area in 2013, the CIR reconnaissance flight will be postponed until the summer XTO is prepared to install CBM production wells in the Project Area.

2.6.1 Infrared Aerial Imagery Acquisition

A CIR camera mounted on an aircraft was used to collect high-resolution, low-altitude imagery. The imagery was georeferenced and rectified using digital elevation model (DEM) ortho-correction. Since methane seepage frequently affects vegetative conditions, the CIR imagery was used as the key indicator of potential seepage. The images were reviewed for suspect seep areas, which were defined as areas with CIR reflectance anomalies generally caused by dead or stressed vegetation. The CIR imagery cannot detect the presence or absence of methane; therefore, each suspect area identified in the imagery was field verified to determine if methane seepage was present.

The CIR imagery acquisition was conducted by Agro Engineering, Inc. (Agro) of Alamosa, Colorado. Agro flew over the Vermejo Formation outcrop using an CIR camera mounted on an aircraft at 1-meter and 1.5-meter resolution. This reconnaissance flight was conducted during peak vegetation conditions in order to be effective. Once the imagery was acquired, Agro georeferenced the imagery and provided it to LTE for interpretation.

Identified suspect areas along the Vermejo Formation and mines that appeared to contain dead or stressed vegetation or an anomalous CIR reflectance signature were delineated as polygons on the imagery and uploaded to a GPS unit for field verification.

Upon completion of the imagery review activities, field verification of the suspect areas was conducted with the goal of identifying the presence or absence of methane seepage. The field personnel were equipped with the aerial imagery, topographic maps, a digital camera, and a GPS.

The initial CIR reconnaissance flight was conducted on June 15, 2010, for the 2010 Colorado Rule 608 Compliance Program. CIR reconnaissance flights are scheduled on a 3-year cycle with the next fly over event scheduled for 2013, as approved by the COGCC, or the summer of the next planned CBM production well installation event.

To determine methane seep areas, LTE reviews the suspect seep areas from the ground surveys and the suspect areas from the CIR aerial imagery to identify the presence or absence of methane and then classifies those suspect seep areas and suspect areas based on the results. Section 2.6 includes a flow chart of methane seep determination methodology.

2.6.2 Subsurface Soil Gas Measurements

For each accessible CIR suspect area, a traditional subsurface soil gas survey was conducted within the polygons.

A Mine Safety Appliances (MSA) GasPort® multi-gas meter is used to measure the concentrations of methane, carbon monoxide, hydrogen sulfide, and oxygen in the subsurface soil. Subsurface soil gas measurements are collected by using a hand-driven slide hammer to drive a ½-inch diameter steel rod into the ground to depths ranging from approximately 1 foot

below ground surface (bgs) to 3 feet bgs. Occasionally, advancement of boreholes in consolidated soil or outcrop materials is limited. Where probe refusal occurs, measurements are taken at the depth bored.

Once the rod is removed from the ground, a ¼-inch diameter polyethylene tubing is inserted into the borehole. The tubing is perforated at the bottom 6 inches to allow soil gas to enter the tubing. Once the temporary tubing is in place and the borehole is sealed with native soil, the multi-gas meter is attached to the tubing. The multi-gas meter's internal pump draws gas from the soil, through the tubing and into the meter's gas sensors.

The multi-gas meter is capable of detecting methane in concentrations from 0.0 to 100%, oxygen concentrations from 0.0 to 25%, carbon monoxide concentrations from 0.0 to 1,000 parts per million (ppm), and hydrogen sulfide concentrations from 0.0 to 100 ppm. Specifications for the multi-gas meter are included in Appendix A.

The maximum concentrations of methane, carbon monoxide, and hydrogen sulfide, and the minimum concentration of oxygen at each sampling location are recorded. Data are recorded in a field notebook and a hand-held Trimble GeoXT® GPS unit, which is discussed further in the following subsection.

2.6.3 Global Positioning System Data Management

Each sample location is recorded using a GPS unit. Soil gas sampling grids are created in ArcView® and pre-loaded into the GPS unit so field personnel can quickly and accurately position detection equipment along the Project Area. Soil gas measurements and other relevant field data are then stored as attributes in the GPS unit along with the associated location data. The data stored in the GPS unit is downloaded later for processing and reporting.

The GPS unit location data are collected in the World Geodetic System 1984 (WGS 84) and projected in Universal Transverse Mercator (UTM) Zone 13 South, North American Datum 1983 (NAD 83) for use in an ArcView® project file. On average, 25 GPS log points are collected for each point feature in order to obtain more accurate positioning.

Readings collected with the GPS unit can be located with 1-meter accuracy. However, the terrain and forest canopy can adversely affect GPS unit accuracy. North-facing slopes and heavily wooded areas can distort or block satellite signals. When satellite signals are limited, positioning accuracy decreases. In locations where the GPS unit cannot obtain a signal, field personnel will note measurement data on their field reference maps. Specifications of the GPS unit are included in Appendix A.

2.7 DETAILED MAPPING OF KNOWN AND SUSPECT SEEP AREAS

To be compliant with Rule 608(c), annual detailed mapping of known methane seeps and continued suspect seep areas are conducted within the Project Area for that year. The 2012 Project Area includes a 2-mile buffer around 2010 and 2011 proposed XTO CBM production wells as well as XTO CBM production wells installed in 2010 and 2011. Known methane seeps and continued suspect seep areas mapped in 2012 were identified during previous Rule 608 Compliance Program investigations as well as previous COGCC investigations.

Field mapping of known methane seeps and continued suspect seep areas consists of utilizing a portable flux meter to measure the magnitude and extent of methane seepage within the survey area. Measurements for previously identified suspect seep areas are typically collected using a sampling grid approach.

Grids for detailed mapping areas consisted of varying numbers of squares, with grid nodes spaced 50 feet to 400 feet apart, depending on historical data for previously identified known methane seeps and continued suspect seep areas. The smaller grid spacings are typically used to map known methane seep areas of relatively small extent. A flux measurement is collected at the corner of each grid square. When methane is detected along the outer edges of the mapping area, additional grid points are developed and measured to determine the extent of methane seepage. Where appropriate, photographs of vegetative conditions, visible seeps, and sensitive receptors are collected.

Full color spectrum aerial photographs were used as base maps for field use and figures for reporting. The geologic contacts depicted on the aerial photographic maps were derived from geologic maps prepared by the Colorado Geological Survey (CGS) and digitized. Accuracy of the formation contact is reduced when aerial photographs are viewed at a smaller scale.

Detailed mapping of the suspect seep areas was conducted from August 27, 2012, through September 6, 2012.

2.7.1 Flux Measurements

The flux of soil gases moving across the soil surface to the atmosphere is measured using the West Systems® portable gas flux meter (flux meter). The flux meter has been used to measure soil gas seepage on the Raton Formation in the Raton Basin in Colorado. The portable flux meter measures the flux of methane, hydrogen sulfide, and carbon dioxide by employing individual gas-specific sensors that records the increases, if any, of gas concentrations over time for a given surface area. These increases in concentration over time are proportional to the flux of each gas.

The flux meter components include an accumulation chamber connected by circulation tubes to the gas detector unit. At each sampling point, the accumulation chamber is placed on the ground surface to capture gas seeping from the ground. A fan in the chamber continuously mixes the gases in the chamber during the measurement process. A pump moves gases in the accumulation chamber to the detector unit. After passing through the detector unit, gases are returned to the chamber. This closed-loop process allows soil gases discharging to the chamber to increase over time. Increases in concentrations are measured and recorded automatically. No gas is allowed to escape the system. However, a vacuum is not created during the process. This enables measurement of natural seep conditions, if present. The result for each gas is reported as a mass flux in units of moles per square meter per day ($mol/m^2 \cdot day$).

Flux measurement accuracy can be limited by surface conditions. One of the most important factors is the quality of the seal between the accumulation chamber base and the ground surface. To ensure a proper seal between the ground surface and the chamber, field personnel choose relatively flat surfaces where possible and placed loose soil surrounding the base of the chamber to reduce the potential for gas loss at the base of the chamber. In addition, ground disturbance is

minimized during the measurement process in order to maintain the natural seep conditions. In areas with heterogeneous surfaces, the seal is sometimes difficult to achieve. This scenario is evident at locations with poorly developed soil or where the soil surface is obscured by decayed organic matter on the forest floor.

The accuracy of the total flux estimation within the Project Area is influenced by the ability of the grid spacing system to represent the actual flux on a detailed level relative to the subsurface fracture system, coal quality, and stratigraphy within the Raton Formation.

The methane sensor within the flux meter unit has a range of 60 parts per million (ppm) to 50,000 ppm. The flux meter methane measurement range is 0.0 mol/m^2·day to 300 mol/m^2·day. Methane fluxes below 0.2 mol/m2·day are detectable with decreased accuracy. As a result, reporting of methane fluxes will not include values less than 0.2 mol/m^2·day.

The carbon dioxide sensor has a full-scale range of 0.0 ppm to 20,000 ppm and flux measurement range of 0.0 mol/m^2·day to 600 mol/m^2·day at an accuracy of ±25%.

The hydrogen sulfide detector has a full-scale range of 0.0 ppm to 20 ppm and a flux measurement range of 0.0025 mol/m^2·day to 0.5 mol/m^2·day at an accuracy of ±25%. The sensor is an electrochemical cell that measures hydrogen sulfide through a chemical oxidation process. The sensing process consumes a small volume of the hydrogen sulfide, which is not returned to the flux meter's accumulation chamber. Therefore, the flux meter can underestimate hydrogen sulfide flux by as much as 10%. For this reason, hydrogen sulfide values less than 0.0025 mol/m^2·day will not be reported. Information on the West Systems portable gas flux meter is provided in Appendix A.

During the measurement process, gas concentrations are recorded at 1-second intervals and directly downloaded via Bluetooth® connection to a portable digital assistant (PDA) integrated with the GPS unit. Other measurements recorded include barometric pressure, temperature, date, and time.

Integrated West Systems Flux Manager® software on the GPS unit recorded the gas measurement data. The software plots the curve of gas concentration versus time for each measurement collected. The best-fit line for the curve generated is selected. The slope of the best-fit line is proportional to the flux at the measurement point.

2.7.2 Flux Volume Estimations

LTE estimated the volumetric flux of methane and carbon dioxide for each suspect seep area or a combination of several suspect seep area if they are close in lateral proximity. Flux data were interpolated and gridded, then contoured and processed to estimate total volumetric flux.

The results were converted to volumetric flux rates common to the natural gas production industry in units of thousand cubic feet per day (MCFD). For a better perspective of the methane flux and carbon dioxide flux rates, LTE converted the mass flux values into volumetric flux units of cubic feet per day (CFD), assuming equal areas. The unit conversion is based on the molecular weight of the gas and the density of the gas at approximately 7,400 feet above mean sea level.

For methane flux, the calculation is as follows:

$$\frac{\text{mol } CH_4}{\text{day}} \times \frac{16.04276 \text{ g } CH_4}{\text{mol } CH_4} \times \frac{0.0698 \text{ ft}^3 CH_4}{\text{g } CH_4} = \frac{\text{ft}^3 CH_4}{\text{day}}$$

For example,

1.0 mol/day CH_4 = 1.12 CFD CH_4

For carbon dioxide flux, the calculation is as follows:

$$\frac{\text{mol } CO_2}{\text{day}} \times \frac{44.01 \text{ g } CO_2}{\text{mol } CO_2} \times \frac{0.0253 \text{ ft}^3 CO_2}{\text{g } CO_2} = \frac{\text{ft}^3 CO_2}{\text{day}}$$

For example,

1.0 mol/day CO_2 = 1.11 CFD CO_2

Notes:

Ft^3 – cubic feet | CH_4 – methane | CO_2 – carbon dioxide | g – gram
CFD – cubic feet per day | mol - mole

The volumetric flux values calculated are estimates and may not represent actual values for the specific areas. Interpolation calculation techniques are highly sensitive to data skewness and can result in large changes in calculated flux values based on measurements made at only a few locations.

2.7.3 Soil Gas Analysis

While conducting detailed mapping of known methane seeps and continued suspect seep areas in 2012, gas samples were collected from those areas with reportable methane flux and where existing isotopic information from the 2007 COGCC Phase II Seep Investigation (LTE, 2007), the 2010 XTO Colorado Rule 608 Compliance Program (LTE, 2010), or the 2011 XTO Colorado Rule 608 Compliance Program (LTE, 2012) does not exist. During the 2007 Phase II Seep Investigation conducted for the COGCC, gas samples were collected from many of the known and suspect seep areas in the Raton Basin. As a result, re-sampling these seeps was not conducted.

Gas samples were collected from the area within each seep with the highest observed methane concentration. Field personnel used a hand pump attached to tubing inserted into a borehole driven by a slide hammer. The tubing was purged of the ambient air and a Cali-5-bond® Mylar bag was filled with a sample of the gas within the borehole for analysis of the following:

- Fixed Gas Chromatography: hydrogen (H_2), argon (Ar), nitrogen (N_2), oxygen (O_2), carbon dioxide (CO_2), and hydrogen sulfide (H_2S);
- Hydrocarbon Gas Chromatography: methane, ethane, propane, i-butane, n-butane, i-pentane, n-pentane, and hexane+; and

- Isotopic Analysis: carbon and hydrogen isotopes of methane, carbon isotopes of CO_2, and carbon isotopes of ethane and propane.

Isotopic analysis was dependent on the gas concentration detected in the sample. Gas seep concentrations of methane, carbon dioxide, and ethane vary greatly and at times are insufficient to conduct isotopic analysis.

The samples were packaged and shipped to Isotech Laboratories, Inc. of Champaign, Illinois. Results of the analytical laboratory data are discussed in Section 3.3.2.

2.8 NATURAL SPRING MONITORING

Surveys of natural springs are conducted on a well-by-well basis. Only natural springs identified on United States Geological Survey (USGS) topographic maps within the 2012 Project Area were surveyed.

Once a natural spring was identified, water samples were collected. At each natural spring, field personnel located the position and elevation using a GPS. A discharge rate was measured, when possible, using a graduated cylinder and stopwatch. Water quality measurements, including pH, total dissolved solids (TDS), specific conductance (SC), oxidation-reduction potential (ORP), and temperature were collected using a YSI® 556 meter. The equipment specifications for the water quality field meter are provided in Attachment A.

Water samples from the natural spring were collected and analyzed for the following:

- Major Cations [dissolved sodium (Na), calcium (Ca), magnesium (Mg), potassium (K), and iron (Fe)] by Environmental Protection Agency (EPA) Method 6010/6020;
- Dissolved Metals [selenium (Se), manganese (Mn)] by EPA Method 6010/6020;
- Alkalinity (carbonate/bicarbonate) by EPA Method 300;
- Major Anions [chloride (Cl), sulfate (SO4), bromide (Br), and fluoride (F)] by EPA Method 300;
- pH by EPA Method150.1;
- SC by MCA Method WW 120.1;
- Nitrate/Nitrite as Nitrogen (N) by EPA Method 353.3;
- TDS by EPA Method 160.1;
- Dissolved Methane by Method RSK 175;
- Sodium Adsorption Ratio (SAR) by Louisiana Department of Natural Resources (LaDNR) Statewide Order Number 29B; and
- Bacteria by IRB/SRB/SLYM/ Coliform.

Laboratory-provided sample bottles were filled with water for analysis of the parameters identified above. All water samples collected were submitted in a cooler under strict chain-of-custody documentation to Accutest Mountain States (Accutest) located in Wheat Ridge, Colorado.

The COGCC informed XTO and LTE that natural springs that overlap with other oil and gas industry companies conducting similar activities to comply with Rule 608 did not need to be sampled. As a result, LTE did not attempt to sample Spring 05 (Vega Canyon), Spring 07 (Spring Canyon), or Spring 08 (Middle Lorencito).

LTE received information from a landowner during the property access request process that there were additional natural springs on their property. XTO met with the landowner to review the natural springs and confirmed the presence of three natural springs in Section 19 of Township 33 South, Range 67 West. As a result, LTE included three additional natural springs (Chavez01, Chavez02, and Chavez03) to the sampling event in 2012.

Spring 01 (North Fork Apache Canyon) was observed to be dry during the 2012 sampling event. As a result, a natural spring water sample was not collected in 2012.

LTE did not gain property access for Spring 02, Spring 03, Spring 04, Spring 06, Spring 09, or Spring 10 prior to the 2012 field activities. As a result, natural spring water samples from these six springs were not collected in 2012.

3.0 RESULTS

3.1 PLUGGED AND ABANDONED PRODUCTION WELLS

LTE identified four P&A production wells within ¼ mile of 2011 proposed XTO CBM production wells as described in the Colorado Rule 608(a). XTO respectfully requested the COGCC to issue a no further action for the identified P&A production wells and eliminate the need to conduct a soil gas survey at these P&A production wells. LTE received a confirmation email from the COGCC on April 28, 2011, with approval for the no further action request. These four P&A production wells were the only P&A production wells within the 2012 Project Area and as such there were no P&A production wells to review.

3.2 WATER WELL SAMPLING

Two proposed XTO CBM production wells (New Elk 22-13 and New Elk 22-14) nearest to water well #39685 were not installed during 2012. As a result, the water well was not sampled during the 2012 Colorado Rule 608 Compliance Program. Water well #39685 will be sampled prior to the drilling of New Elk 22-13 and New Elk 22-14.

3.3 GROUND SURVEY AND DETAILED MAPPING OF SUSPECT SEEP AREAS

The ground survey by Apogee was not conducted in 2012 since XTO did not plan to install any CBM production wells in the Project Area during 2012. Table 2 summarizes previously identified suspect seep areas within the 2012 Project Area identified in 2007, 2010, and 2012.

3.3.1 Detailed Flux Mapping Summary

As a result of the 2011 Colorado Rule 608 Compliance Program, LTE identified eight known methane seep areas and eight continued suspect seep areas. LTE surveyed these 16 areas in 2012. Below are summary tables of findings from the 2012 detailed mapping event.

Known Methane Seep	Reportable Methane Identified in 2012	2013 Classification
L-1021	Yes	Methane Seep
L-1030	Yes	Methane Seep
L-1033	Yes	Methane Seep
L-1050	Yes	Methane Seep
5	Yes	Methane Seep
13 & L-1026	Limited	Diminishing Methane Seep
14	No	Diminishing Methane Seep
32 & L-1049	Yes	Methane Seep

Continued Suspect Seep Areas	Reportable Methane Identified in 2012	2013 Classification
623/L-99	No	No methane present, discontinue monitoring
11	No	No methane present, discontinue monitoring
15	No	No methane present, discontinue monitoring
17	No	No methane present, discontinue monitoring
18	No	No methane present, discontinue monitoring
19	Limited	Limited methane present, discontinue monitoring
21, 33, 617, & L-100	No	No methane present, discontinue monitoring
L-109	No	No methane present, discontinue monitoring

Methane measurements are presented on Figures 3 through 18. Summaries of each known methane seep area and continued suspect seep area, including the rationale for the potential source of methane, is included in Table 2.

3.3.2 Gas Composition and Isotopic Analytical Results

Soil gas samples were collected from the following known methane seep areas:

- 5;
- L-1021;
- L-1030;
- 32/L-1049;
- L-1033; and
- L-1050.

Gas samples were collected at locations with the highest flux measurements recorded for each seep area. There was not a sufficient concentration of methane in soil gas sample Seep L-1033 for isotopic analysis. As a result, isotopic analysis on methane from Seep L-1033 was not analyzed.

Results of the isotopic analysis of gas from the 2012 sampling event indicates the methane gas ranges from less mature and oxidized thermogenic gas in the case of L-1021 to slightly more mature and oxidized thermogenic gas in the case of 5 and L-1050. These results are similar to other soil gas samples collected for the Colorado Rule 608 Compliance Program and previous investigations (as depicted on Figure 19) within the 2012 Project Area, with the exception of 18

and 623. Area 18 gas sample indicated the methane was extremely oxidized and falls out of the maturation phase of thermogenic gas. Area 623 gas sample was presumed to be biogenic in origin during the 2007 COGCC Phase II Investigation. Apogee had detected methane near this area in 2010 and as a result, LTE had continued to conduct a flux survey in the vicinity of area 623 to determine if methane is still present.

Results of the gas composition and isotopic analysis are summarized on Table 3. Figure 19 illustrates the isotopic analysis of soil gas samples within the 2012 Project Area and plots them on a chart indicating the potential origin (thermogenic versus biogenic) of the methane gas detected. Appendix D includes the gas composition and isotopic analytical report.

3.4 COLORED INFRARED AERIAL IMAGERY AND FIELD VERIFICATION

The initial CIR aerial imagery flight was conducted on June 15, 2010. The fly over of the Vermejo Formation and the Tercio, Quinto, and Vega mines was conducted after 11 a.m. so shadows would not affect the overall quality of the CIR images and not produce additional suspect areas. In the event that future CBM production wells are planned near mines, CIR imagery will be reviewed for suspect areas and mapped for verification. As observed in other studies, the methane seeps do not dramatically change from year to year and as a result, the CIR imagery from 2010 will be utilized for three years, as approved by the COGCC. The next CIR fly over will be conducted in 2013.

XTO did not plan to install any CBM production wells within the Project Area in 2012 and as a result, CIR was not reviewed and no field verifications occurred in 2012.

3.5 NATURAL SPRING SURVEY

LTE identified 10 natural springs within the 2012 Project Area (Figure 2). Natural springs Spring 05 (Vega Canyon), Spring 07 (Spring Canyon), and Spring 08 (Middle Lorencito) were excluded from the sampling list as approved by the COGCC. Six natural springs were located on private property with no access granted at the time of the sampling event. Spring 01 (North Fork Apache Canyon) was dry at the time of sampling.

Three natural springs were identified in 2012 on private properties that were not documented on the USGS topographic maps. As a result, the Chavez01, Chavez02, and Chavez03 natural springs were sampled on September 4, 2012.

3.5.1 Field Observations

The North Fork Apache Canyon natural spring was identified as a pooled area of water and was not flowing at the time of the fieldwork. As a result, flow rate readings were not collected. LTE field personnel did observe what appeared to be a pipe connected to the natural spring and a windmill platform. The pipe appeared to be filled in with sand to approximately one foot below the top of the well casing. LTE could not collect field measurements from the pooled water as this data would not necessarily be reflective of the natural spring.

LTE collected field measurements from the Chavez01, Chavez02, and Chavez03 natural springs, which were documented in the field logbook. The 2012 field observations and measurements for the natural springs are summarized in Table 4.

3.5.2 Sampling and Analysis

Dissolved methane was detected in water from Chavez01, Chavez02, and Chavez03 at concentrations below the 2 milligrams per kilogram (mg/L) threshold used by the COGCC to identify water for further investigation of the origin of the methane in the water.

By plotting the major anions (Cl, SO_4, Br, and F) and major cations (Na, Ca, Mg, K, Fe) that are dissolved in the natural spring water samples on a Stiff diagram, the water type can be presented graphically. The water from Chavez01, Chavez02, and Chavez03 indicates a predominately calcium bicarbonate composition. The water from Spring01 historically has been predominately sodium and potassium bicarbonate.

Laboratory analytical results for the natural spring samples are summarized in Table 5. A Stiff diagram illustrating the water type is depicted on Figure 20. Natural spring analytical results are presented in Appendix E.

3.5.3 Flux Measurements

During the 2012 natural spring sampling event, flux measurements were collected near each natural spring location. Reportable methane flux was not detected in any of the flux measurement locations near the three natural springs.

4.0 CONCLUSIONS

The 2012 Rule 608 Compliance Program meets the requirements of subsections a, b, and c of the COGCC Rule 608.

No new P&A production wells were identified within the 2012 Project Area. No further action was granted on the four P&A production wells by the COGCC on April 28, 2011, for the four previously identified P&A production wells.

Two water wells were identified within the 2012 Project Area; however, no proposed CBM production wells were installed near the two water wells. Water well sampling will occur prior to the installation of XTO CBM productions wells meeting Rule 608 (b) criteria.

LTE did not identify new methane seeps within the Vermejo Formation outcrop and at the Quinto, Vega, and Tercio mines through the 2010 CIR images or field verification survey.

LTE identified, through previous investigations, 39 suspect seep areas within the Project Area. The following is a list of each area, the potential source, and recommendation for monitoring in 2013.

[1]Methane Seep	[2]Diminishing Methane Seep Areas	[3]Other Source of Methane	[3]No Methane Seep Activity Observed
L-1021	13 & L-1026	L-1023	623/L-99
L-1030	14	L-1025	11
L-1033	19	L-1027	15
L-1050		L-1031	17
5		L-1036	18
32 & L-1049		L-1039	21, 33, 617, & L-100
		L-1040	L-109
		L-1041	
		L-1042	
		L-1043	
		L-1044	
		L-1045	
		L-1047	
		L-1048	
		7, 8, 9, & L-1046	

[1] Recommended for continuation of detailed flux mapping in 2013
[2] Recommended for detailed flux mapping in 2013 to verify the absence of methane
[3] Recommended for discontinuation of detailed flux mapping in 2013

Gas samples were collected from areas 5, 32/L-1049, L-1021, L-1030, L-1033, and L-1050. Analytical isotopic results indicated the methane from the soil gas samples were thermogenic in origin with varying maturation and oxidation characteristics.

Three natural springs were sampled for water quality analysis (Chavez01, Chavez02, and Chavez03). The water types appear to be predominately calcium bicarbonate. Dissolved methane for all three water samples were below the 2 mg/L threshold used by the COGCC to analyze for gas composition and for carbon and hydrogen isotopes of methane. In addition to collecting a water sample, flux measurements were collected in the vicinity of the natural springs. Reportable methane flux was not detected at any of the measurement locations.

LTE, at the direction of XTO, proposes to continue conducting Rule 608 compliance activities in Las Animas County in accordance with the COGCC-approved Work Plan as XTO's development activities expand.

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FIGURES

FIGURES

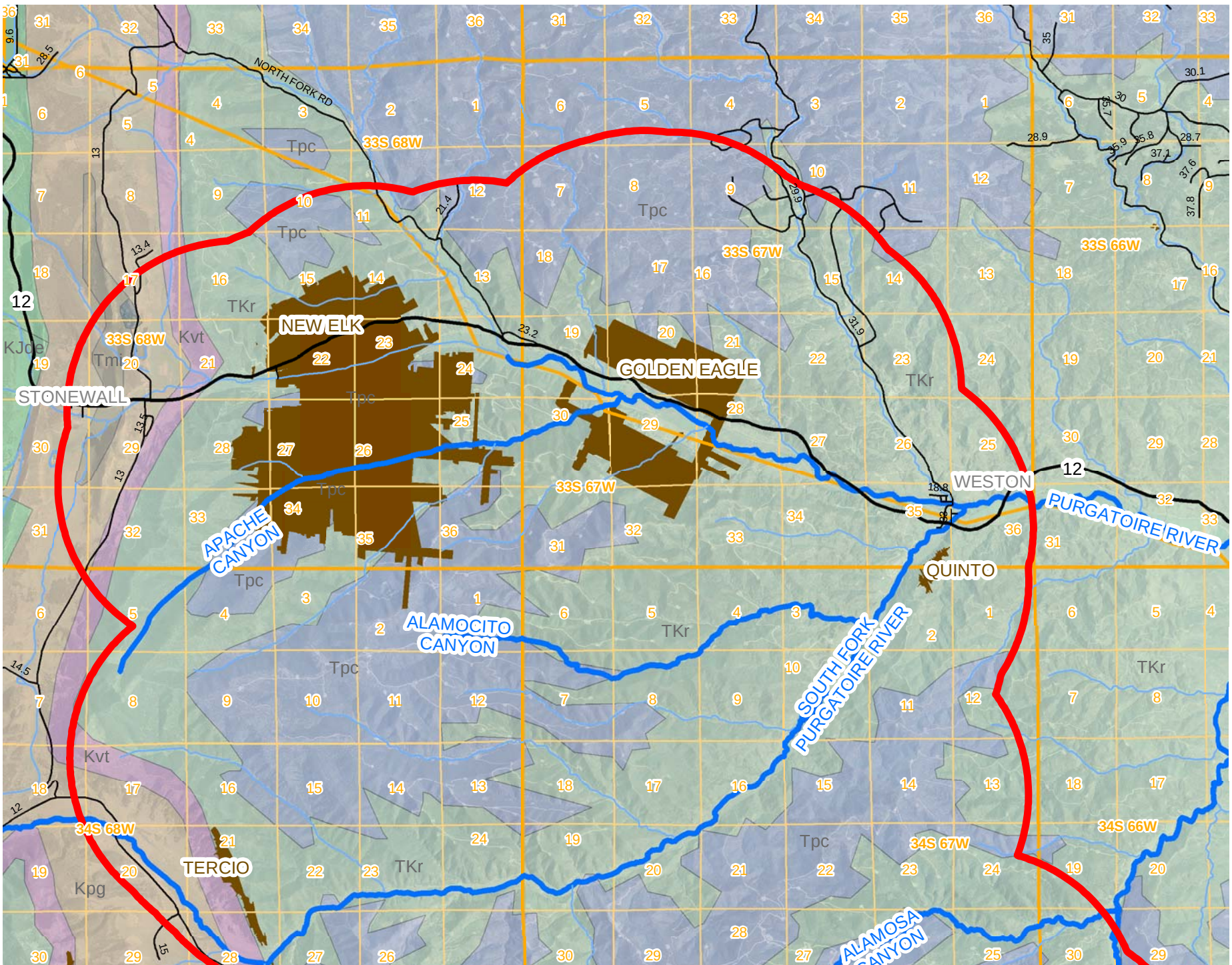

IMAGE COURTESY OF USDA/NRCS, 2009

LEGEND

- PROJECT AREA
- COLORADO STATE LINE
- TOWNSHIP AND RANGE LINES
- SECTION LINE
- MINE BOUNDARY

GEOLOGIC CONTACTS (TWETO, 1979)

- Tmi - MIDDLE TERTIARY INTRUSIVE ROCKS
- Tpc - POISON CANYON FORMATION
- TKr - RATON FORMATION
- Kvt - VERMEJO FORMATION
- Kpg - PIERRE SHALE FORMATION
- KJde - DAKOTA FORMATION

- ROAD
- OTHER WATER SOURCE
- MAJOR DRAINAGE

0 1.5 3
Miles

N

FIGURE 1
PROJECT AREA MAP
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC

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NEW ELK
STONEWALL
GOLDEN EAGLE
WESTON
QUINTO
TERCIO
CUATRO
VEGA
COLORADO
NEW MEXICO
39685
SPRING 01 (NORTH FORK APACHE CANYON)
SPRING 02
SPRING 03
SPRING 04
SPRING 05 (VEGA CANYON)
SPRING 06
SPRING 07 (SPRING CANYON)
SPRING 08 (MIDDLE LORENCITO)
SPRING 09
SPRING 10
CHAVEZ01
CHAVEZ02
CHAVEZ03
APACHE CANYON
ALAMOCITO CANYON
SOUTH FORK PURGATOIRE RIVER
PURGATOIRE RIVER
ALAMOSA CANYON
LORENCITO CANYON
33S 68W
33S 67W
33S 66W
34S 68W
34S 67W
34S 66W
35S 68W
35S 67W
35S 66W

IMAGE COURTESY OF USDA/NRCS, 2009

LEGEND

- 2010 PROPOSED COALBED METHANE PRODUCTION WELL
- 2010 INSTALLED COALBED METHANE PRODUCTION WELL
- 2011 PROPOSED COALBED METHANE PRODUCTION WELL
- 2011 INSTALLED COALBED METHANE PRODUCTION WELL
- WATER WELL LABELED WITH PERMIT NUMBER
- SPRING LABELED WITH SAMPLE ID (SPRING NAME, IF APPLICABLE)
- PROJECT AREA
- 2012 PROJECT AREA
- COLORADO STATE LINE
- TOWNSHIP AND RANGE LINES
- SECTION LINE
- MINE BOUNDARY
- ROAD
- OTHER WATER SOURCE
- MAJOR DRAINAGE

0 1.5 3
Miles

N

FIGURE 2
2012 PROJECT AREA MAP
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC

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IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE

- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 3
METHANE FLUX CONTOURS
METHANE SEEP AREA L-1021
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC

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IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 4
METHANE FLUX CONTOURS
METHANE SEEP AREA L-1030
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

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IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 5
METHANE FLUX CONTOURS
METHANE SEEP AREA L-1033
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 6
METHANE FLUX CONTOURS
METHANE SEEP AREA L-1050
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

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IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
($mol/m^2 \cdot day$)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- $mol/m^2 \cdot day$: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 $mol/m^2 \cdot day$ ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE

- SOIL GAS SAMPLE

0 125 250
Feet

N

FIGURE 7
METHANE FLUX CONTOURS
METHANE SEEP AREA 5
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 8
METHANE FLUX CONTOURS
METHANE SEEP AREAS 13 & L-1026
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 9
METHANE FLUX CONTOURS
METHANE SEEP AREA 14
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

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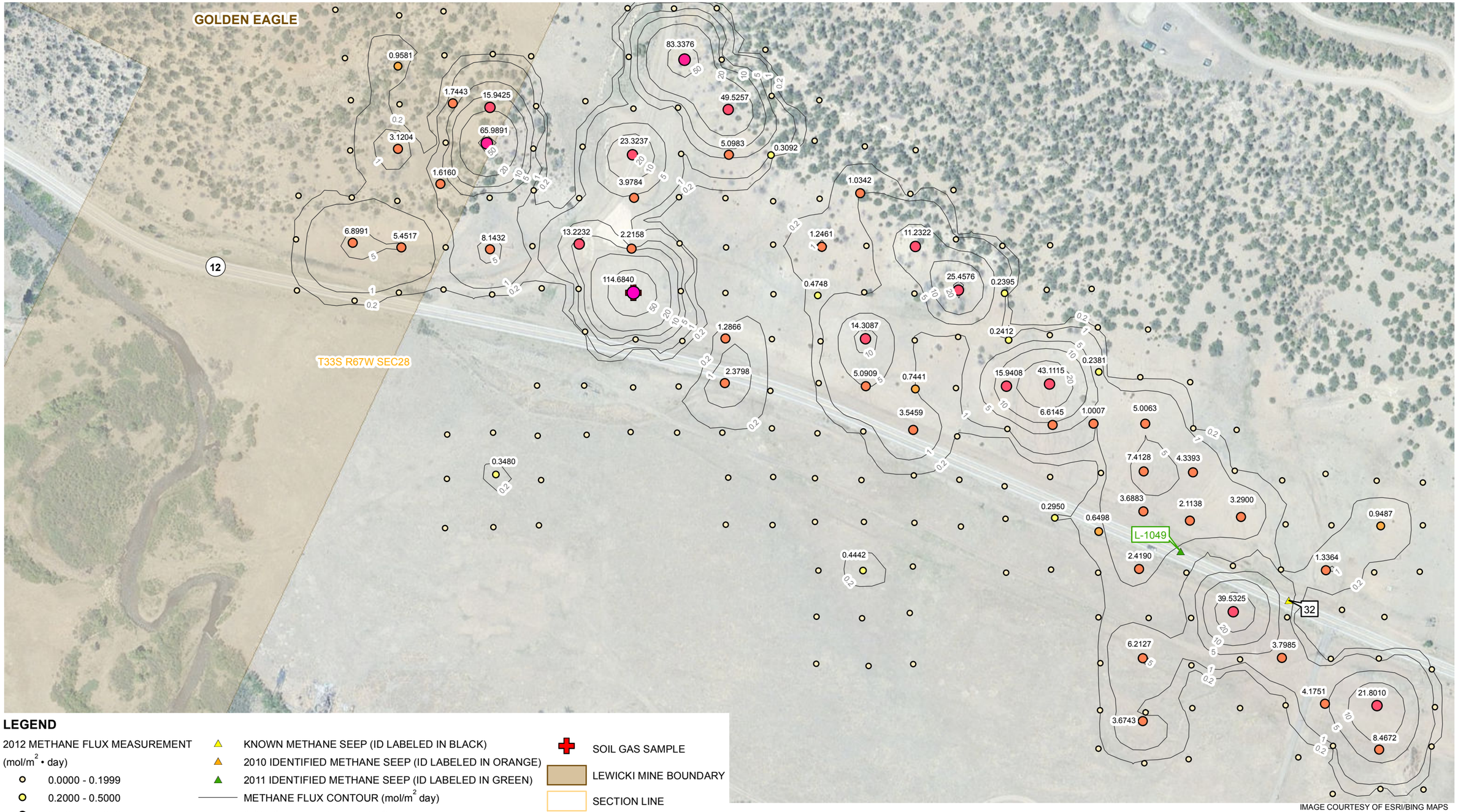

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- KNOWN METHANE SEEP (ID LABELED IN BLACK)
- 2010 IDENTIFIED METHANE SEEP (ID LABELED IN ORANGE)
- 2011 IDENTIFIED METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES

mol/m^2 • day: MOLES PER SQUARE METER PER DAY
ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED

- SOIL GAS SAMPLE
- LEWICKI MINE BOUNDARY
- SECTION LINE

0 200 400
Feet

N

FIGURE 10
METHANE FLUX CONTOURS
METHANE SEEP AREAS 32 & L-1049
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG10_CH4_LANDSCAPE.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 11
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 632/L-99
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

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IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
  CONTOUR INTERVAL VARIES

mol/m^2 • day: MOLES PER SQUARE METER PER DAY
ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED

- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 12
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 11
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

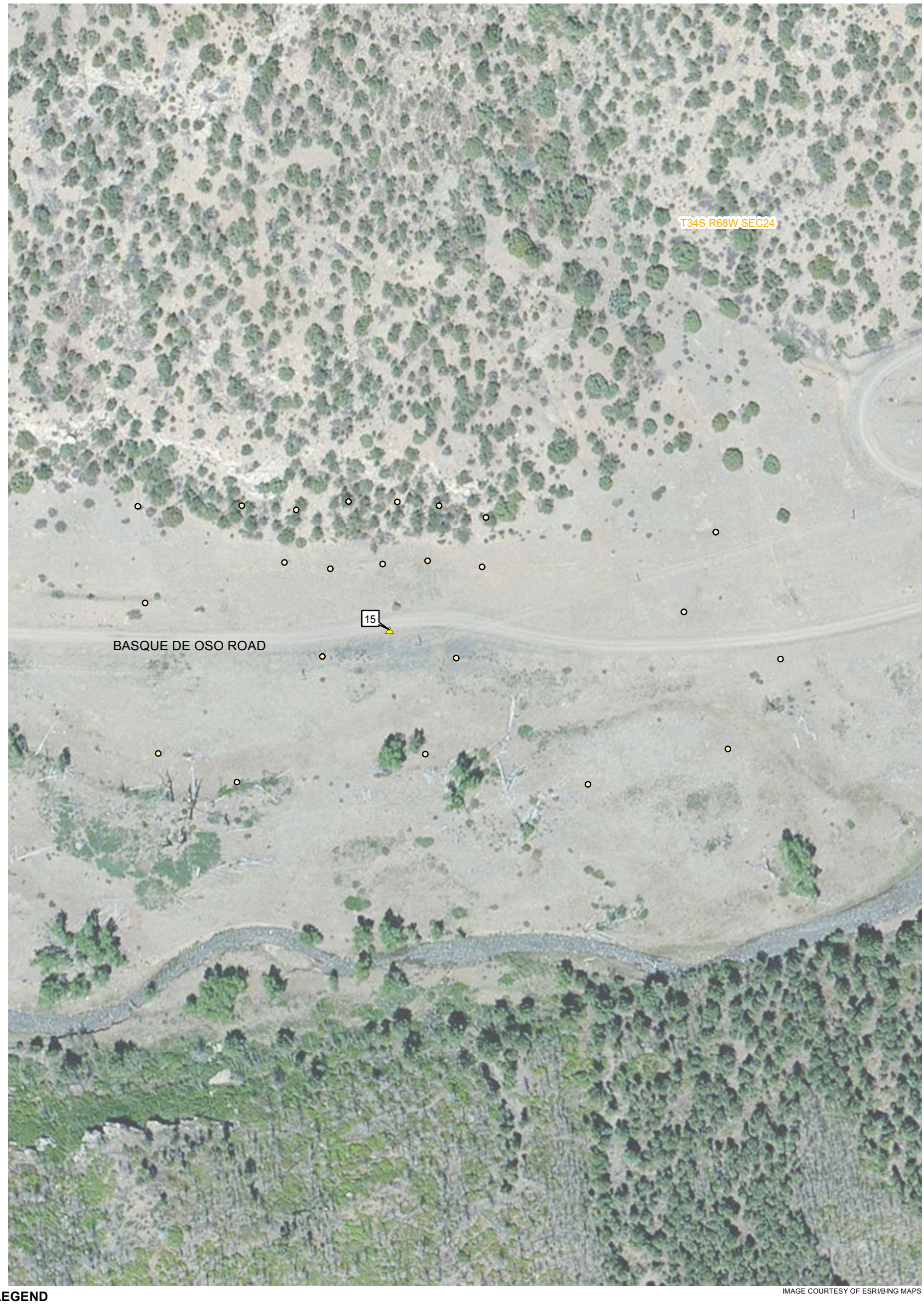


IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 13
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 15
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT ($mol/m^2 \cdot day$)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- $mol/m^2 \cdot day$: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 $mol/m^2 \cdot day$ ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 14
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 17
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 15
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 18
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 16
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA 19
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

0 100 200
Feet

N

FIGURE 17
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREAS 21, 33, 617, & L-100
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

2012 METHANE FLUX MEASUREMENT
(mol/m^2 • day)

- 0.0000 - 0.1999
- 0.2000 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 400.0000

- 2007 SUSPECT METHANE SEEP (ID LABELED IN BLACK)
- 2010 SUSPECT METHANE SEEP (ID LABELED IN ORANGE)
- 2011 SUSPECT METHANE SEEP (ID LABELED IN GREEN)
- METHANE FLUX CONTOUR (mol/m^2 day)
- CONTOUR INTERVAL VARIES
- mol/m^2 • day: MOLES PER SQUARE METER PER DAY
- ONLY METHANE FLUX MEASUREMENTS GREATER THAN OR EQUAL TO 0.2 mol/m^2 • day ARE LABELED
- LEWICKI MINE BOUNDARY
- SECTION LINE
- SOIL GAS SAMPLE

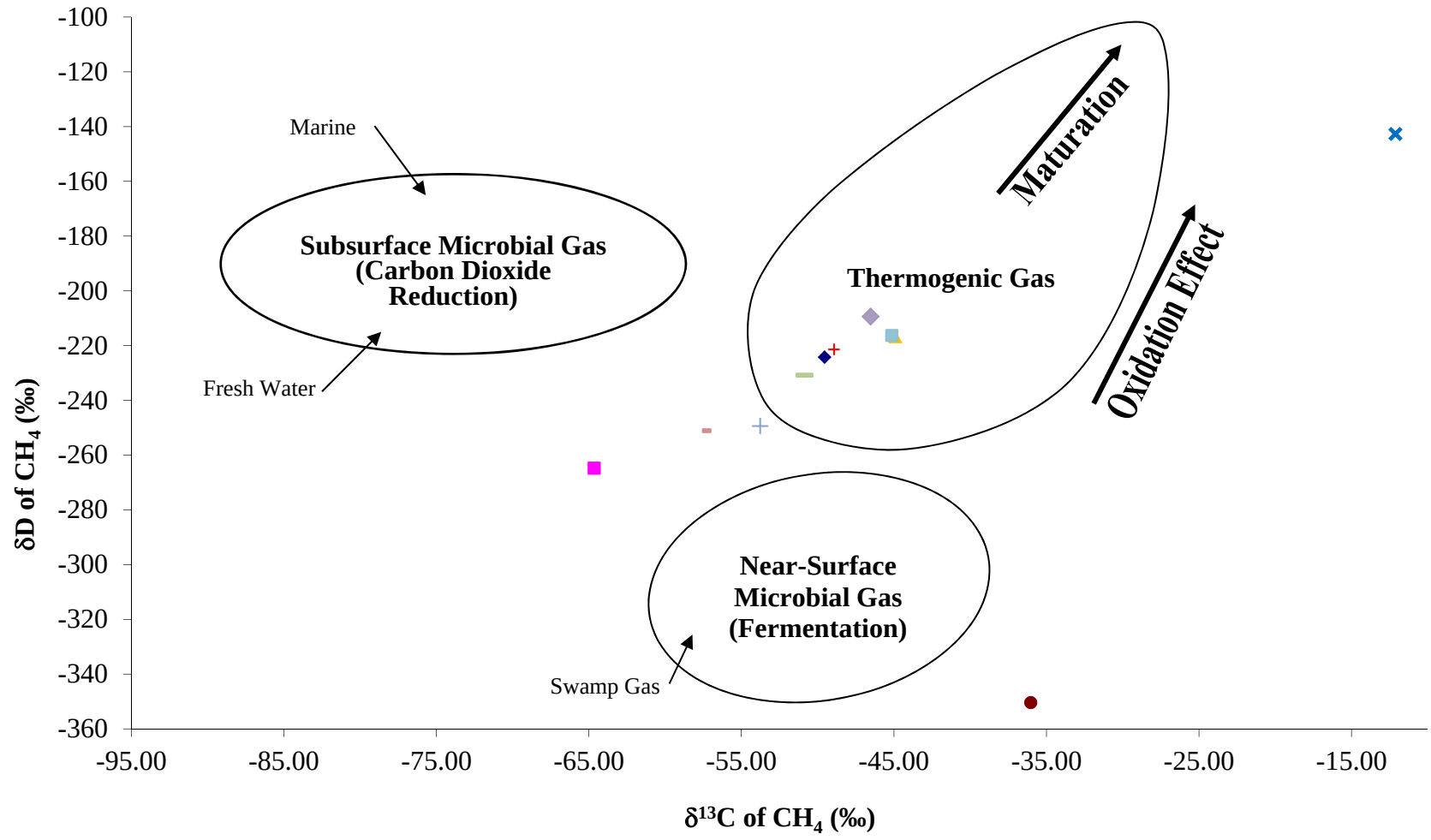
0 100 200
Feet

N

FIGURE 18
METHANE FLUX CONTOURS
CONTINUED SUSPECT SEEP AREA L-109
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG03_CH4.mxd



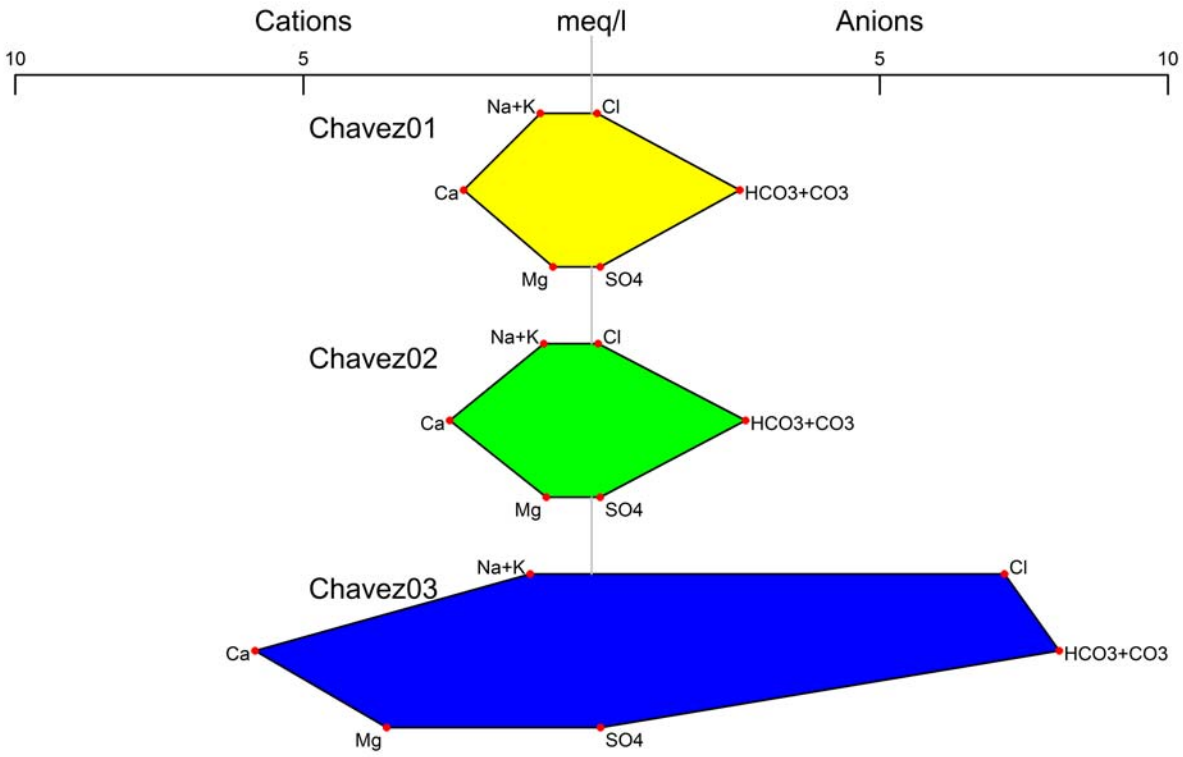
LEGEND

SAMPLE ID	
5	19
11	623
13	32/L-1049
15	L-1021
18	L-1030
	L-1050

FIGURE 19
ISOTOPIC ANALYSIS
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG19_ISOTOPIC.mxd



LEGEND

Ca: CALCIUM

Cl: CHLORIDE

CO3: CARBONATE

HCO3: BICARBONATE

K: POTASSIUM

Mg: MAGNESIUM

Na: SODIUM

SO4: SULFATE

meq/l: MILLIEQUIVALENTS PER LITER

FIGURE 20
STIFF DIAGRAMS
SEPTEMBER 4, 2012
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO
XTO ENERGY, INC

P:\XTO Energy\GIS\MXD\012912002 RULE 608\012912002_FIG20_STIFF.mxd

TABLES

TABLE 1
PROPERTY OWNER AND ACCESS INFORMATION
2012 COLORADO RULE 608 COMLPIANCE PROGRAM
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

PERMISSION GRANTED	LANDOWNER	PARCEL ID	SECTION	TOWNSHIP	RANGE
Yes - 6/25/2012	Mr. and Mrs. Arguello	10136500	13	33	68
Yes	XTO Energy, Inc.	14533300	28	33	67
		14533405	27, 28	33	67
		14533200	27	33	67
No Response	Red River Ranch Holdings, LLC	14182121	4, 5, 6, 7, 8	35	67
		1418210	1, 2, 3, 10, 11, 12, 13, 14, 15	35	68
Verbal yes with restrictions.	Hill Ranch LTD and Kozad Properties LTD	12220713	4, 5, 6, 7, 10	35	67
		12220714	1,2, 3, 10, 11, 12, 13, 14, 15	35	68
		11071110	21, 22, 28	34	67
		13432508	2, 31, 32, 33	34	67
		14533003	28	33	67
		13297000	27, 35	33	67
Yes - 7/11/2012	Department of Natural Resources (care of mibe.trujillo@state.co.us)	10877304	30	33	67
			2, 3, 13, 23, 24, 25, 26	34	68
		10877303	19	34	67
			25	33	68
			35	33	68
Yes - 6/13/2012	Bill R. and Rossana T. Chavez	13940200	19	33	67
Yes - 6/13/2012	Silver Bernadina Sandra Chacon	14021300	19	33	67
No Response	Donald Mounier		17	33	67
No Response	Al Van Staveren		17	33	67
Returned mail / No response	Sabrina Blakeney	14239500	17	33	67
No Response	Gery Navalesi		18	33	67
No Response	Richard W Stiles		18	33	67
Yes - 8/16/12	Vermejo Park, LLC				
Yes - 8/20/12	Bill Toupal		28	33	67
			27, 28	33	67
			27	33	67

TABLE 2
KNOWN AND SUSPECT SEEP AREA SUMMARIES
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

Area IDs	Figure Number	Ground Survey Conducted				2007	2010			2011			2012			Observations	Potential Methane Source	Conclusions	Recommendations
		2007	2010	2011	2012	Subsurface Methane Gas Detected	Total Number of Flux Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**				
L-1021	10			x	NA	--	--	--	--	44	10	129.71	47	6	6.7	Gas lines in the vicinity of the detected methane during the 2011 ground survey. Dead vegetation such as bushes and grass in vicinity of reportable methane flux. Reportable methane flux still present during 2012 flux survey.	Methane seep	Based on the correlation of methane flux within an area that contains stressed/dead vegetation and the lack of other potential sources, it appears that this area is still a methane seep.	Will monitor during 2013 event
L-1030	14			x	NA	--	--	--	--	17	3	2.19	17	3	2.2	Apogee identified a well pad southeast of the suspect area during the 2011 ground survey. Reportable methane flux still present during 2012 flux survey.	Methane seep	Based on reportable methane detected in 2011 and 2012 and the lack of other observable potential sources of methane, it appears that this area is still a methane seep.	Will monitor during 2013 event
L-1033	16			x	NA	--	--	--	--	26	1	0.02	40	4	0.1	Apogee identified small concentration of methane in the vicinity. LTE observed stressed and dead vegetation near vacant structures on the north side of Basque De Oso Road. Reportable methane flux still present during 2012 flux survey.	Methane seep	Based on the correlation of methane flux within an area that contains stressed/dead vegetation and the lack of other potential sources, it appears that this area is still a methane seep.	Will monitor during 2013 event
L-1050	27			x	NA	--	--	--	--	22	4	0.69	22	2	1.0	Apogee identified seep area during the 2011 ground survey. Apogee observed a well pad upwind of the seep area where methane was detected during the 2011 ground survey. Limited reportable methane flux still present during 2012 flux survey.	Methane seep	Based on reportable methane detected in 2011 and 2012 and the lack of other observable potential sources of methane, it appears that this area is still a methane seep.	Will monitor during 2013 event
5	28 & 29	x		x	NA	Yes	--	--	--	167	16	2.16	83	6	1.9	Seep area is located near or within Golden Eagle mine boundary. Reportable methane flux still present during 2012 flux survey.	Methane seep	Based on reportable methane detected in 2011 and 2012 and the lack of other observable potential sources of methane, it appears that this area is still a methane seep.	Will monitor during 2013 event
32 & L-1049	38	x			NA	--	--	--	--	372	146	304.12	217	55	720.4	Apogee identified gas lines and risers near suspect seep area L-1049 during the 2011 ground survey. Suspect seep areas are just east of the Golden Eagle mine. Reportable methane flux still present during 2012 flux survey.	Methane seep	Based on reportable methane detected in 2011 and 2012 and the lack of other observable potential sources of methane, it appears that this area is still a methane seep.	Will monitor during 2013 event
13 & L-1026	31	x		x	NA	--	29	8	10.74	56	2	0.03	61	1	NA	Reportable methane detected in 2010 and confirmed in 2011. Limited reportable methane flux detected in 2012.	Diminishing Methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the limited reportable methane flux during the 2011 & 2012 mapping event, this area appears to be a diminishing methane seep.	Will monitor during 2013 event to confirm results of 2012 event
14	32	x			NA	--	94	16	0.56	50	7	0.34	46	0	0.00	Reportable methane detected in 2010 and confirmed in 2011. No reportable methane flux detected in 2012.	Diminishing Methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the limited reportable methane flux during the 2011 & 2012 mapping event, this area appears to be a diminishing methane seep.	Will monitor during 2013 event to confirm results of 2012 event
19	36	x			NA	Yes	--	--	--	23	0	0.00	15	1	NA	Methane was detected in 2007. No reportable methane flux detected in 2011. Limited reportable flux detected in 2012.	Diminishing Methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the limited reportable methane flux during the 2011 & 2012 mapping event, this area appears to be a diminishing methane seep.	Will monitor during 2013 event to confirm results of 2012 event
623/L-99	9	x	x		NA	623: Yes L-99: --	78	4	0.07	27	0	0.00	27	0	0.00	Methane was detected in 2007 and 2010. Methane was not detected in 2011 or 2012.	Diminished methane seep	LTE did not detect reportable methane flux at this area in 2011 or 2012. At this time, the methane seep appears to have diminished and is no longer present.	Will discontinue monitoring of methane seep area
11	30	x			NA	Yes	--	--	--	47	0	0.00	47	0	0.00	Methane was detected in 2007. No reportable methane flux detected in 2011 or 2012.	Diminished methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area
15	33	x			NA	Yes	--	--	--	23	0	0.00	23	0	0.00	Methane was detected in 2007. No reportable methane flux detected in 2011 or 2012.	Diminished methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area

Will monitor during 2013 event
Will monitor during 2013 event to confirm 2012 results
Will discontinue monitoring of suspect seep area

TABLE 2
KNOWN AND SUSPECT SEEP AREA SUMMARIES
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

Area IDs	Figure Number	Ground Survey Conducted				2007	2010			2011			2012			Observations	Potential Methane Source	Conclusions	Recommendations
		2007	2010	2011	2012	Subsurface Methane Gas Detected	Total Number of Flux Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**				
17	34	x			NA	--	--	--	--	38	0	0.00	38	0	0.00	Methane was detected in 2007. No reportable methane flux detected in 2011 or 2012.	Diminished methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area
18	35	x			NA	--	--	--	--	40	1	0.00	27	0	0.00	Methane was detected in 2007. No reportable methane flux detected in 2011 or 2012.	Diminished methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area
21, 33, 617, & L-100	37	x	x		NA	--	74	1	0.03	35	0	0.00	32	0	0.00	Methane was detected in 2007 and 2010. No reportable methane flux detected in 2011 or 2012.	Diminished methane seeps	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area
L-109	39		x		NA	--	83	3	0.03248	24	0	0.00	22	0	0.00	Limited reportable methane flux detected in 2010. Suspect seep area located within Allen-East and West Portals mine. No reportable methane flux detected in 2011 or 2012.	Diminished methane seep	Due to the low methane subsurface concentrations recorded in 2007 and the lack of reportable methane flux during the 2011 & 2012 mapping event, this area does not appear to be a methane seep.	Will discontinue monitoring of suspect seep area
7, 8, 9, & L-1046	28 & 29	x		x	NA	7: -- 8: -- 9: --	-- -- --	-- -- --	-- -- --	167	16	2.16	--	--	--	Suspect seep areas located near or within Golden Eagle mine boundary. Apogee identified a well pad northeast of suspect area L-1046. Reportable methane flux detected in 2011 related to methane seep 5.	Diminished methane seeps	Suspect seep areas 7, 8, 9, and L-1046 do not appear to be methane seeps. Due to the low concentrations recorded four years ago and the lack of reportable methane flux during the 2011 mapping event appears to indicate the historical seeps has diminished.	Will discontinue monitoring of suspect seep areas
L-1023	11			x	NA	--	--	--	--	8	0	0.00	--	--	--	Apogee identified gas lines and risers in the vicinity of the detected methane during the 2011 ground survey. LTE also observed gas lines and risers during the 2011 mapping event.	Leaking gas lines and/or risers	With the absence of methane flux in the vicinity of suspect seep area, it appears this area is not a seep area.	Will discontinue monitoring of suspect seep area
L-1025	12	x			NA	--	--	--	--	9	0	0.00	--	--	--	Apogee identified the methane near a well pad and associated generator. LTE personnel also observed the well pad and generator during the detailed mapping event.	Off-gassing of wellhead and/or generator	The lack of methane flux in the vicinity of suspect seep area and the presence of a well head, well pad, and generator indicate the likely source is from the off-gassing of wellhead and/or generator.	Will discontinue monitoring of suspect seep area
L-1027	13	x			NA	--	--	--	--	8	0	0.00	--	--	--	Apogee identified a riser pipe in the vicinity of the detected methane during the 2011 ground survey.	Leaking gas lines and/or risers	The lack of methane flux in the vicinity of suspect seep area and the presence of a riser pipe indicates the likely source of the methane is from a leaking riser pipe.	Will discontinue monitoring of suspect seep area
L-1031	15	x			NA	--	--	--	--	8	0	0.00	--	--	--	Apogee identified a riser pipe in the vicinity of the suspect area during the 2011 ground survey	Leaking gas lines and/or risers	The lack of reportable methane flux in the vicinity of the suspect seep area and observations of riser pipes indicate the likely source of methane is from leaking riser pipes.	Will discontinue monitoring of suspect seep area
L-1036	17	x			NA	--	--	--	--	9	0	0.00	--	--	--	Apogee identified a gas compressor station near the suspected seep areas during the 2011 ground survey. LTE also observed the gas compressor station west of the suspect area.	Off-gassing of compressor station	Based on the lack of methane flux and the presence of a gas compressor station nearby, it appears the methane Apogee detected during the ground survey was from the gas compressor station and not methane seep.	Will discontinue monitoring of suspect seep area
L-1039	18	x			NA	--	--	--	--	8	0	0.00	--	--	--	Apogee observed the nearby gas compressor station off-gas while recording the methane measurements at L-1039.	Off-gassing of compressor station	Based on the lack of reportable methane flux and the off-gassing of the gas compressor station at the time of the 2011 ground survey, the likely source of methane is the gas compressor station.	Will discontinue monitoring of suspect seep area
L-1040	19	x			NA	--	--	--	--	14	1	0.02	--	--	--	Apogee identified a well pad near the detected methane during the 2011 ground survey. LTE also observed the well pad during the detailed mapping event.	Off-gassing wellhead and/or leaking gas lines	Based on the low methane flux and limited total reportable volumetric methane flux, the detected methane appears related to the well pad and is not considered a methane seep.	Will discontinue monitoring of suspect seep area
L-1041	20	x			NA	--	--	--	--	7	0	0.00	--	--	--	Apogee during the 2011 ground survey. Apogee identified a gas compressor station near the suspect area during the 2011 ground survey.	Off-gassing of compressor station	Based on the presence of a gas compressor station and no reportable methane flux, methane detected by Apogee in 2011 appears to be from off-gassing of the gas compressor station and not a methane seep.	Will discontinue monitoring of suspect seep area
L-1042	21	x			NA	--	--	--	--	8	0	0.00	--	--	--	Apogee identified a well pad and associated wellhead near the suspect area during the 2011 ground survey.	Off-gassing wellhead and/or leaking gas lines	Based on the presence of a wellhead and no reportable methane flux, methane detected by Apogee in 2011 appears to be from off-gassing of the wellhead and not a methane seep. Will monitor during 2012 event.	Will discontinue monitoring of suspect seep area

Will monitor during 2012 event
Will monitor during 2012 event to confirm 2011 results

TABLE 2
KNOWN AND SUSPECT SEEP AREA SUMMARIES
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

Area IDs	Figure Number	Ground Survey Conducted				2007	2010			2011			2012			Observations	Potential Methane Source	Conclusions	Recommendations
		2007	2010	2011	2012	Subsurface Methane Gas Detected	Total Number of Flux Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**	Total Number of Sample Points	Reportable CH_4 Flux Points*	Total CH^4 Flux (MCFD)**				
	Will discontinue monitoring of suspect seep area																		
L-1043	22			x	NA	--	--	--	--	11	0	0.00	--	--	--	Apogee did not identify any oil and gas structure that could be the potential source of the detected methane during the 2011 ground survey.	Fugitive atmospheric gas	Based on the lack of methane flux in the vicinity of the suspect seep area, methane detected by Apogee appears to be fugitive gas in the atmosphere and not a methane seep	Will discontinue monitoring of suspect seep area
L-1044	23			x	NA	--	--	--	--	9	0	0.00	--	--	--	Apogee identified a new production well being drilling during the 2011 ground survey.	Production well installation activities	Based on the lack of reportable methane flux in the vicinity of the suspect seep area and the installation of a new production well, it appears methane detected by Apogee during the 2011 ground survey was related to the installation of the production well and not a methane seep. Will monitor during 2012 event.	Will discontinue monitoring of suspect seep area
L-1045	24			x	NA	--	--	--	--	8	0	0.00	--	--	--	Apogee identified a well pad in the vicinity of where methane was detected during the 2011 ground survey.	Off-gassing wellhead and/or leaking gas lines	Based on the location of the suspect seep area to an active well pad and the lack of reportable methane flux, the methane Apogee detected during the 2011 ground survey appears to be from the tank battery associated with the well pad and not a methane seep.	Will discontinue monitoring of suspect seep area
L-1047	25			x	NA	--	--	--	--	17	0	0.00	--	--	--	Apogee observed a well pad in the vicinity of the suspect seep area where methane was detected during the 2011 ground survey.	Off-gassing wellhead and/or leaking gas lines or off-gassing of mine	Based on the lack of reportable methane flux and the presence of an active well pad, the methane detected by Apogee during the 2011 ground survey is related to the well pad and not a methane seep. Also within mine boundary to be another possible source.	Will discontinue monitoring of suspect seep area
L-1048	26			x	NA	--	--	--	--	15	1	0.27	--	--	--	Apogee observed a well pad upwind of the suspect seep area where methane was detected during the 2011 ground survey.	Off-gassing wellhead and/or leaking gas lines	Based on limited reportable methane flux and the presence of an active well pad, the methane detected by Apogee during the 2011 ground survey is related to the well pad and not a methane seep.	Will discontinue monitoring of suspect seep area

Will monitor during 2012 event
Will monitor during 2012 event to confirm 2011 results
Will discontinue monitoring of suspect seep area

Notes:

CH_4 - Methane
moles/m^2·day - moles per meter squared per day
MCFD - thousand cubic feet per day
-- - No data available
* - Points where flux values were above 0.000 moles/m^2·day
* - Only points where flux values were above the reporting limit of 0.2 moles/m^2·day
** - Volume includes only gridded values > 0.2 moles/m^2·day
PLSS - Public Land Survey System
NA - Not applicable

TABLE 3
GAS COMPOSISITON AND ISOTOPIC ANALYSIS
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

Sample ID	Latitude	Longitude	Sample Date	He (%)	H2 (%)	Ar (%)	O_2 (%)	CO_2 (%)	N_2 (%)	CO (%)	C_1 (%)	C_2 (%)	C_2H_4 (%)	C_3 (%)	iC_4 (%)	nC_4 (%)	iC_5 (%)	nC_5 (%)	C_6+ (%)	$\delta^{13}C_1$ (‰)	δDC_1 (‰)	Specific Gravity	BTU
11	37.139900	-104.895913	8/30/2007	0.0041	0	0.617	13.07	0.39	50.17	0	35.75	0.0039	0	0	0	0	0	0	0	-49.55	-224.2	0.842	362
9	37.066857	-104.927918	8/19/2011	Sampling container comprimised - No analysis																			
13	37.144873	-104.935814	8/10/2010	0	0	0.460	1.83	3.66	28.24	0	65.81	0.0038	0	0	0	0	0	0	0	-64.65	-264.8	0.72	667
15	37.129468	-104.963196	8/30/2007	0	0.002	0.707	14.55	0.86	57.48	0	26.4	0.003	0	0	0	0	0	0	0	-44.92	-216.7	0.886	267
18	37.067512	-104.947312	8/17/2011	0	0	0.953	20.30	0.89	77.24	0	0.617	0	0	0	0	0	0	0	0	-12.12	-142.7	1.001	6
19	37.062110	-104.95592	8/30/2007	0	0	0.927	19.9	0.39	70.02	0	8.76	0	0	0	0	0	0	0	0	-48.93	-221.4	0.964	89
32	37.067441	-104.955794	8/19/2011	NA	0	0.000	21.82	0.19	77.18	0	0.809	0	0	0	0	0	0	0	0	NA	NA	0.995	8
L-109	37.143447	-104.889475	8/11/2010	0	0	0.935	20.62	0.35	78.1	0	0	0	0	0	0	0	0	0	0	NA	NA	1.001	0
14	37.171476	-104.950621	8/12/2010	0	0	0.935	20.94	0.16	77.96	0	0.0036	0	0	0	0	0	0	0	0	NA	NA	1.001	0
L-99	37.171662	-104.950614	8/13/2010	0	0	0.933	20.07	1.05	77.95	0	0	0	0	0	0	0	0	0	0	NA	NA	1.005	0
623	37.158073	-104.930933	8/30/2007	0	0	0.91	19.06	4.37	67.05	0	8.61	0	0	0	0	0	0	0	0	-36.03	-350.4	0.986	87
L-100	37.140434	-104.946006	8/13/2010	0	0	0.931	20.95	0.072	78.05	0	0	0	0	0	0	0	0	0	0	NA	NA	1.000	0
32/L-1049	37.145289	-104.894296	9/1/2012	0.0011	ND	0.65	13.69	0.81	53.57	ND	31.28	0.0023	ND	ND	ND	ND	ND	ND	ND	-53.77	-249.400	0.864	317
L-1021	37.14272	-104.886497	9/2/2012	ND	0.0015	0.154	1.79	1.01	12.57	ND	84.47	0.0069	ND	ND	ND	ND	ND	ND	ND	-57.54	-251.100	0.627	856
L-1030	37.067117	-104.93533	8/29/2012	0.0013	ND	0.371	0.28	4	29.66	ND	65.68	0.0104	ND	0.0002	ND	ND	ND	ND	ND	-50.87	-230.800	0.72	666
L-1033	37.12562	-104.853858	9/3/2012	0.0011	ND	0.938	21.14	0.065	77.86	ND	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	1.001	0
L-1050	37.13921	-104.883739	9/3/2012	ND	ND	0.937	18.6	1.11	77.11	ND	2.24	0.0001	ND	ND	ND	ND	ND	ND	ND	-46.53	-209.400	0.994	23
5	37.139702	-104.894521	9/2/2012	ND	ND	0.927	19.05	1.22	76.22	ND	2.58	0.0002	ND	ND	ND	ND	ND	ND	ND	-45.14	-216.300	0.993	26

Notes:

He - Helium
H_2 - Hydrogen
Ar - Argon
O_2 - Oxygen
CO_2 - Carbon Dioxide
N_2 - Nitrogen
CO - Carbon Monoxide
C_1 - Methane
C_2 - Ethane
C_2H_4 - Ethylene
C_3 - Propane
iC_4 - Isobutane
nC_4 - Butane
iC_5 - Isopentane
nC_5 - Pentane
C_{6+} - Hexanes +
$\delta^{13}C_1$ - Carbon isotope of Methane
δDC_1 - Hydrogen isotope of Methane
% - percent
‰ - per milion
BTU - British Thermal Units (At 60 degrees Fahrenheit aND 14.7 psia)
NA - Not analyzed due to insufficient concentration for analysis or comprimised sampling container
ND - Not detected

TABLE 4
NATURAL SPRING FIELD OBSERVATIONS AND MEASUREMENTS
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENERGY, INC.

Natural Spring	Location	Latitude	Longitude	Inspection Date	Specific Electrical Conductance (µS/cm)	pH (Units)	ORP (mV)	Temperature (^{0}C)	DO (mg/L)	TDS (mg/L)
Spring01	North Fork Apache Canyon	-104.991708	37.108089	8/13/2010	381	9.2	140.5	22.4	10.25	247
				8/19/2011	408	7.1	-99.5	13.29	13.4	432
				9/4/2012	DRY - NOT MEASURED					
Chave01	Rancho Escondido	-104.9265768	37.15615866	9/4/2012	391	6.8	106.5	15.7	NM	200.7
Chave02	Rancho Escondido	-104.922814480	37.152863914	9/4/2012	414	6.51	105.5	16.0	NM	207.7
Chave03	Rancho Escondido	-104.916708750	37.156096546	9/4/2012	1,864	6.95	104.7	14.1	NM	921.9

Notes:

Blank cells indicate no measurement.
µS/cm - microSiemens per centimeter
ORP - oxidation reduction potential
mV - millivolts
mg/L - milligrams per liter
^{0}C - degrees celsius
TDS - total dissolved solids
ppm - parts per million
NM - Not Measured
DO - dissolved oxygen

TABLE 5
NATURAL SPRING ANALYTICAL RESULTS
2012 COLORADO RULE 608 COMPLIANCE REPORT
RATON BASIN, LAS ANIMAS COUNTY, COLORADO

XTO ENGERGY, INC.

Natural Spring	Location	Sample Date	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Manganese (mg/L)	Selenium (mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	TDS (mg/L)	Specific Conductivity (umhos/cm)	pH
Spring01	North Fork Apache Canyon	8/13/2010	3.4	0.652	97.7	1.41	0.021	<0.00080	<5.0	205	280	364	10.13
		8/19/2011	2.21	0.52	136	1.640	0.126	<0.00080	<5.0	332	420	428	8.16
		9/4/2012	DRY - NOT SAMPLED										
Chavez01	Rancho Escondido	9/4/2012	44.5	8.12	20.4	<1.0	<0.0050	<0.0020	<5.0	157	194	323	7.28
Chavez02	Rancho Escondido	9/4/2012	49.3	9.56	18.2	1.430	<0.0050	<0.0020	<5.0	163	206	330	7.17
Chavez03	Rancho Escondido	9/4/2012	117	43.2	20.8	6.250	<0.0050	<0.0020	<5.0	495	990	160	7.44

Natural Spring	Location	Sample Date	Sulfate (mg/L)	Chloride (mg/L)	Bromide (mg/L)	Fluoride (mg/L)	Hydrogen Sulfide (mg/L)	Nitrogen as Nitrate (mg/L)	Nitrogen as Nitrite (mg/L)	Iron Reducing Bacteria (cfu/ml)	Slime Forming Bacteria (cfu/ml)	Sulfate Reducing Bacteria (cfu/ml)	Dissolved Methane (mg/L)
Spring01	North Fork Apache Canyon	8/13/2010	2.9	3.3	<0.20	0.74	<0.50	<0.23	<0.061	500	>350,000	700,000	0.109
		8/19/2011	2.7	3.7	<0.20	1.4	NA	<0.045	<0.011	9,000	350,000	700,000	0.277
		9/4/2012	DRY - NOT SAMPLED										
Chavez01	Rancho Escondido	9/4/2012	19.3	3.4	<0.050	0.27	0.0	0.011	<0.0040	74,500	350,000	359,000	0.0012
Chavez02	Rancho Escondido	9/4/2012	20.3	4	<0.050	0.3	0.0	0.088	<0.0040	74,500	350,000	359,000	0.00030
Chavez03	Rancho Escondido	9/4/2012	63.7	254	2	0.35	0.0	0.083	0.024	74,500	66,500	359,000	0.0119

Notes:

mg/L - milligrams per liter
TDS - Total dissolved solids
SAR - Sodium adsorption ratio
umhos/cm - Microohms per centimeter
cfu/ml - Coliform units per milliliter
< - Less than the laboratory reporting limit
NA - Not analyzed
> - greater than

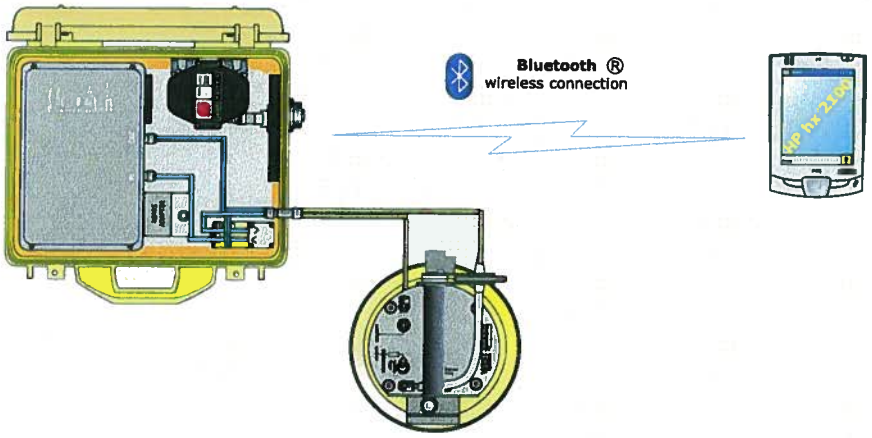
APPENDIX A

EQUIPMENT SPECIFICATIONS

WEST Systems portable soil flux meter

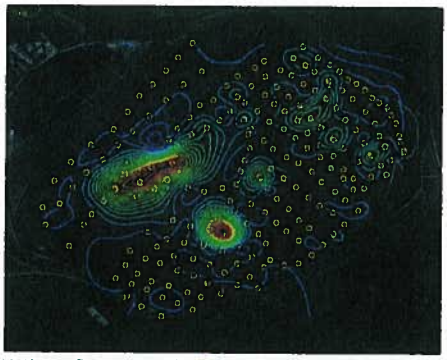
for Carbon dioxide, Methane and Hydrogen sulfide fluxes

The WEST Systems Fluxmeter is a portable instrument for the measurement of soil gas diffuse degassing phenomena that uses the accumulation chamber method.



This method studied for soil respiration in agronomy (Parkinson) and for soil degassing in volcanic areas (R. Cioni et al.), has been designed by WEST Systems to obtain a portable instrument that allows the performance of measurements with very good accuracy in a short time. The instrument allows a wide range evaluation of the amount of soil gas flux and can be utilized for the evaluation of biogas degassing (landfills), for the survey of non visible degassing phenomena in volcanic and geothermal areas as well as soil respiration rate in agronomy. In the picture below, the results of the degassing survey of a landfill.

Portable fluxmeter



Methane flux contour linees

a group of researchers during a flux mapping fieldwork, using the WS-LI820 flux meter

Courtesy of United States Geological Survey

WEST Systems

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Portable soil flux meter

Common physical characteristics:
Total Weight = 8.3 Kg/16 lbs. to be carried on the back using the backpack-like support vest. The field operator will also have to carry one of the accumulation chambers and the palmtop:

Warm Up
Only at instrument cold start-up a warm-up time of 20 minutes is required. The typical measurement time ranges from 2 to 4 minutes and the autonomy of the instrument is about 4 hours with a single NiMH 14.4 Volts, 2.6 A/h battery. The instrument comes with two interchangeable batteries.

Accumulation Chamber specifications:
- Accumulation chamber A diameter : 200 mm / Height: 100 mm / weight: 1.5 Kg/3.3 lbs
- Accumulation chamber B diameter : 200 mm / Height: 200mm / weight : 2.2 Kg /4.84 lbs

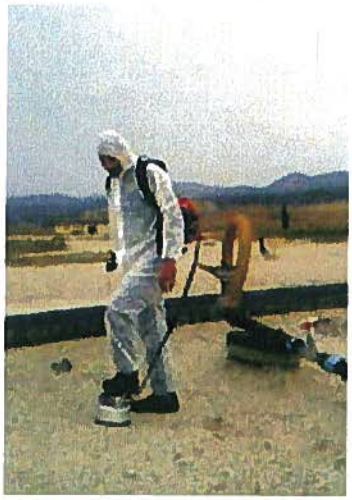
Palm top computer: PocketPC Color Display based on Windows Mobile operating system.
- PalmTop with cables, 0.3 Kg/0.7 lbs.
- Size 125mm (4.8") x 82mm (3.2") * 25 mm (1").

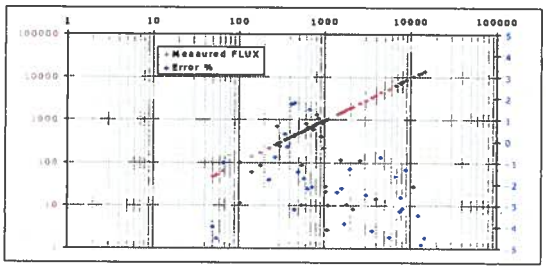
Software The instrument is supplied with a custom software, FluxManager, which allows recording and visualization of the increase in concentration of the target gas in the accumulation chamber, and then the flux calculations. The obtained measurements can be saved on the palmtop computer and then transferred to a desktop PC with a USB connection or using a SD card.

The instrument is supplied complete with:
- backpack-like support vest
- Carrying case for transport and storage
- 2 batteries NiMH 14.4 Volts 2.6 A/h and 1 NiMH battery charger Accumulation chamber A and B
- Palmtop Pocket PC
- User Manual, in English
- FLUX Manager Software for Windows Mobile, in English

The standard flux meter configuration is supplied with a single gas detector, normally the carbon dioxide detector. The fluxmeter can host two sensors by the way special releases, based on specific customer request, it can be supplied with a maximum of 3 sensors.

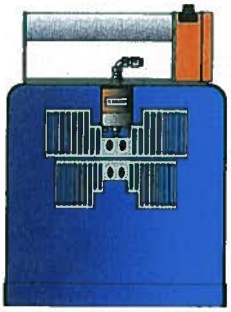
Finally we improved the connection between the instrument and the palmtop that now is based on BlueTooth wireless embedded device.





The measured carbon dioxide flux vs imposed flux (grams m^{-2} day^{-1});
The error % vs imposed flux (in blue).

The instrument is extremely versatile and allows measurement of flux in 2/4 minutes. In the picture: Soil bio-gas flux monitoring in a landifll.



Accumulation Chamber Type B

The accumulation chambers

In the normal use of instrument only the chamber B is used. To extend the instrument sensitivity to very low fluxes the accumulation chamber A is supplied.

	Type A	Type B
net area m^2	0.0314	
net volume m^3	0.003	0.006

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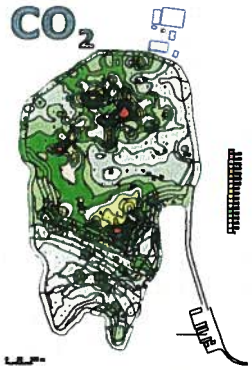


CO_2 - LI820

LI820 based Carbon dioxide fluxmeter

The CO_2 Fluxmeter is equipped with the LICOR LI-820 the most accurate and reliable portable carbon dioxide detector. The LI-820 is a double beam infrared sensor compensated for temperature variation in the range from -10 to 45°C and for atmospheric pressure variation in the range 660-1060 HPa. Accuracy 2% repeatability ±5ppm. The full scale range can be set to 1000 , 2000, 5000 or 20000 ppmV of carbon dioxide. The characteristics of precision refer to the sensor set to a full scale range of 20000 ppmV. If a very high sensitivity is required, the detector can be set to 1000 or 2000 ppm full scale value to measure with very high precision fluxes in the range from 0 to 10 moles m^{-2} day^{-1}

CO_2 FLUX Measurement range:
from 0 up 600 moles m^{-2} day^{-1}

The accuracy depends on the measured flux:

0 to 0.5 moles m^{-2} day^{-1}	25% (Acc.ch.A)
0.5 to 1 moles m^{-2} day^{-1}	15% (Acc.ch.A or B)
1 to 150 moles m^{-2} day^{-1}	10% (Acc.ch.B)
150 to 300 moles m^{-2} day^{-1}	10% (Acc.ch.B)
300 to 600 moles m^{-2} day^{-1}	20% (Acc.ch.B)

WS-DRAGER CO_2

WS-DRAGER: CO_2 Flux measurement:

A double beam infrared sensor compensated for temperature variation in the range from -20 to 65°C. Accuracy 3%. The full scale value can be set from 2,000 to 300,000 ppm of carbon dioxide. Carbon Dioxide flux measurement range from 0.5 to 1500 moles/m^2 per day.

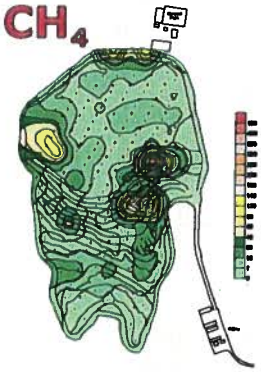
The precision depends on the measured flux:

range:0.5 – 5 moles/m^2 per day 25% (Acc. chamber A)

5-350 moles/m^2/day 10% (Acc. chamber B)

350-600 moles/ m^2/day 25% (Acc. chamber B)

600-1500 moles/ m^2/day 25% (Acc.Ch.B / F.S.=10%)



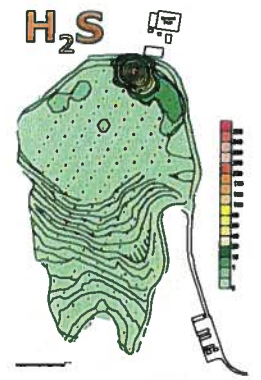
WS-HC CH^4

Methane fluxmeter

The methane sensor is an IR spectrometer. The full-scale range is 50000ppm, accuracy of 5% of reading, and repeatability is 2% of span. Detection limit 60 ppm, resolution 22 ppm. The detector was designed to measure the not controlled emissions of landfill, but it can be used to detect methane emission from coal or wherever the 0.2 moles/m^2/day detection limit is acceptable.

Methane Flux measurement range
from 0.2 up 300 moles m^{-2} day^{-1}
The fluxmeter is provided with 2 accumulation chambers and the accuracy depends on the measured flux:

0.2 to 10 moles m^{-2} day^{-1}	25% (Acc.Ch.A)
10 to 150 moles m^{-2} day^{-1}	15% (Acc.Ch.A)
150 to 300 moles m^{-2} day^{-1}	20% (Acc.Ch.B)



H_2S - WEST

Hydrogen sulfide

The hydrogen sulphide detector is a electrochemical cell with the following specifications:
The full-scale range is 20ppm, with a precision of 3% of reading, and the repeatability is 1.5% of span with a zero offset of 0.3%.

H_2S Flux measurement range: from 0.0025 to 0.5 moles/m^2 per day.
The precision depends on the measured flux:
0.0025 – 0.05 moles/m^2 per day ±25% (Acc. Chamber A)
0.05 – 0.5 moles/m^2 per day ±10% (Acc. Chamber B)

NOTE: The hydrogen sulphide flux evaluation can be affected by the presence of large quantities of water in both liquid and vapour phases.

We thanks to N.Lima et al. for the maps.

WEST Systems

West Systems Srl
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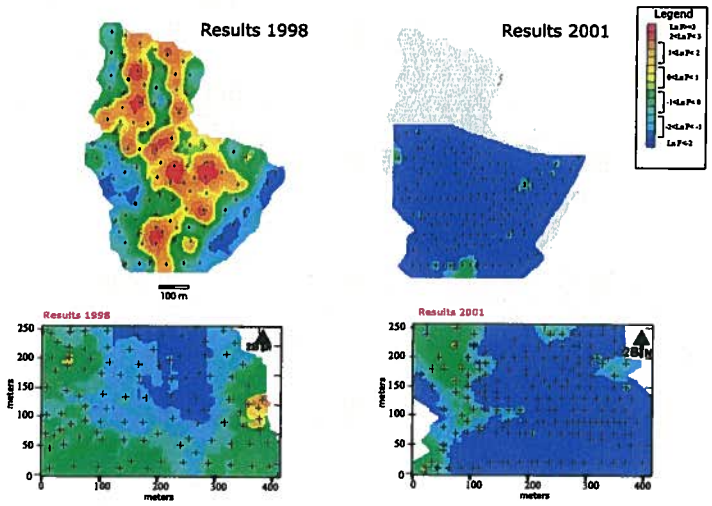
Application on a landfill: mapping the biogas non controlled emissions.

The figure shows the compare between the results of the measurement regime of a land/fill undertaken in 1998 and 2001: the mapping performed in 1998 gave clear indications of the areas which required intervention to improve the cover and the capture system.
The interventions were performed only where necessary with a significant economic savings.
The measurement regime of 2001 indicates without any doubt that the intervensions were efficient and state-of-the-art.



The obtained results:

- Minor atmospheric emissions;
- Higher quantity and better quality of biogas for cogeneration;
- Optimisation of management costs.

Continuous soil flux monitoring

WEST Systems produces a soil gas station for the continuous monitoring of carbon dioxide and hydrogen sulfide flux, soil temperature , soil water content, soil pressure gradient, soil heat flux and meteorological parameters.
For more information contact your local representative, visit our web site or e-mail to: g.virgili@westsystems.com

Local sales representative

H.Q.

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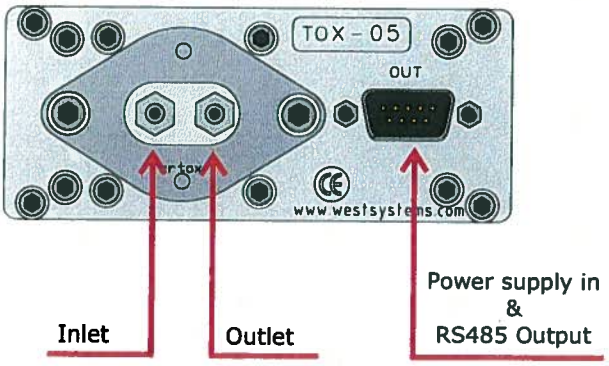
Hydrogen Sulfide Detector



Pin	Signal
1	Gnd
2	+VDC
3	Gnd
4	RS485-B
5	RS485-A
6	Gnd
7	+12V
8	Gnd
9	RS485-B

Legenda
Gnd: Ground reference for power supply and RS485
+VDC: 10-28 Volts Power supply input
RS485-A: Digital signal output A
RS485-B: Digital signal output B

Sensor specifications
Ambient conditions:
Air temperature -40°C to 65 °C
Air pressure 700 hPa to 1300 hPa
Air RH 5% - 95% non condensating.
Expected sensor life > 24 months.
Chemical cell order code: WEST H2S-BH
Detector order code: WEST TOX-05-H2S-BH
Factory calibration : 20 ppm
RMS Noise <= 0.02 ppm
Zero Offset <= 0.2 ppm
Max Overrange >= 200 ppm

The chemical cell reaction is:

$$H_2S + 2O_2 = H_2SO_4$$

the gas sample specific consuption is very low:

2.5×10^{-10} moles/Sec per ppm

Due to this consuption the H2S flux is methodically understimated by a -10% with the AccumulationChamber A and by a -5% when using the accumulation chamber B. Then we advise to use the accumulation chamber B except when the flux is very very low.

Appendix M

WS-HC detector

WS-HC Hydrocarbon Flux measurement:
The HydroCarbon detector is based on a double beam infrared spectrometer able to detect methane, hexane , propane and other molecules with HC linkages. The instrument comes calibrated for the methane. *The instrument requires a frequent **zero base-line** calibration that will be done using atmospheric air. The calibration requires 20 second.*

Detector specifications:

Accuracy 5%

Repeatibility 2%

Resolution 22 ppm (Methane equivalent)

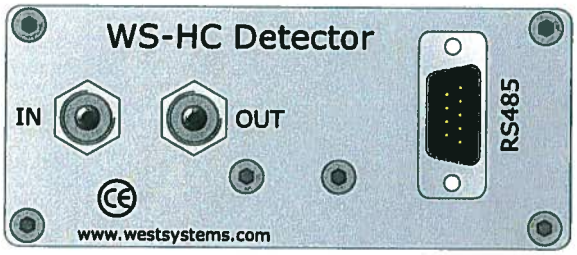
Full scale range is 50000 ppm of methane.

Detection limit 60 ppm.

Methane flux measurement range from 0.1 to 150 moles/m^2 per day.
The precision depends on the measured flux:

```
range 0.1  5      moles/ m^2 per day ±25%
      5 - 150     moles/ m^2 per day ±10%
```

The measurement of very low fluxes (< 0.1 moles/m^2/day) is possible but the error will increase due to the low detector sensitivity.



RS485 Connector DB9 Male panel

Pin 1	**Gnd**
Pin 2	**+Power supply**
Pin 3	**Gnd**
Pin 4	**RS485 B**
Pin 5	**RS485 A**
Pin 6	**Gnd**
Pin 7	**+Power supply**
Pin 8	**Gnd**
Pin 9	**RS485 B**

The gas fittings can be used with rilsan 6x4 mm tubes or silicon 5x3.2 tubes. Please respect inlet and outlet ports.

LI-820 Specifications

CO_2 Specifications

Measurement Range: 0-1000 ppm, 0-2000 ppm with 14 cm bench; 0-5000 ppm, 0-20000 ppm with 5 cm bench

Accuracy: < 2.5% of reading with 14 cm bench; 4% of reading with 5 cm bench

Calibration Drift

[1]Zero Drift: < 0.15 ppm / °C

[2]Span Drift at 370 ppm: < 0.03% / °C

[3]Total Drift at 370 ppm: <0.4 ppm / °C

RMS Noise at 370 ppm with 1 sec Signal Filtering: < 1 ppm

[1] Zero drift is the change with temperature at 0 concentration
[2] Span drift is the change after re-zeroing following a temperature change
[3] Total drift is the change with temperature without re-zeroing or re-spanning

Measurement Principle: Non-Dispersive Infrared

Traceability: Traceable gases to WMO standards from 0-3000 ppm. Traceable gases to EPA protocol gases from 3000 to 20000 ppm

Pressure Compensation Range: 15 kPa-115 kPa

Maximum Gas Flow Rate: 1 liter/minute

Output Signals: Two Analog Voltage (0-2.5 V or 0-5 V) and Two Current (4-20 mA)
Digital: TTL (0-5 V) or Open Collector

DAC Resolution: 14-bits across user-specified range

Source Life: 18000 hours

Power Requirements: Input Voltage 12-30 VDC
1.2A @ 12V (14 W) maximum during warm-up with heaters on
0.3 A @ 12 V (3.6 W) average after warm-up with heaters on

Supply Operating Range: 12-30 VDC

Operating Temperature Range: -20 to 45 °C

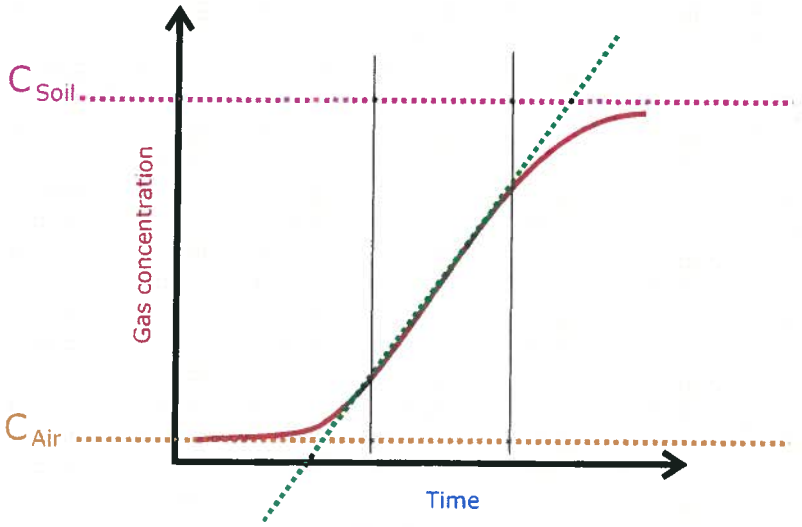
Relative Humidity Range: 0 to 95% RH, Non-Condensing

Dimensions: 8.75" x 6" x 3" (22.23 x 15.25 x 7.62 cm)

Weight: 2.2 lbs (1 kg)

Quantifying the flux

How explained in the chapter 3 the flux is proportional to the concentration increase ratio ppm/sec. The proportionality factor depends on the chamber volume/surface ratio as well as the barometric pressure and the air temperature inside the accumulation chamber.



There are two methods to carry out the field work, in both cases for each measurement you have to record the type of accumulation chamber used, the barometric pressure, and the air temperature.
The variation of few mBar of the pressure and or few degrees of temperature do not affect the evaluation of flux very much, then you can use a mean value for both parameters. Of course that depends on the accuracy you want to reach for the evaluation of flux.
The instrument measures the barometric pressure, using the embedded pressure sensor of the LICOR, with a good accuracy. A platinum Pt100 or a thermo-couple thermometer can be used to measure the air temperature as well as the soil temperature.

Choosing the flux measurement unit

The first measurements made, 10 years ago, with the accumulation chamber was expressed in cm/sec which is a speed, the speed of carbon dioxide flowing out from the soil. During the last ten years several units have been used by volcanologist and by geochemistry researchers. The most common unit is grams/squaremeter per day, but using the same instrument for two gas species to express the flux using this unit means to have two different conversion factors. Actually we use the unit **moles/squaremeter per day** that has two advantages: A single conversion factor for every gas specie and an easy conversion of the flux in grams/sm per day simply multiplying the result expressed in moles/sm per day for the molecular weight of the target gas.

From the [tools][settings] menu you can set the accumulation chamber factor in the "A.c.K." field.

If this factor is set to 1 the instrument will give you results expressed in ppm/sec, that's simply the slope of the curve in the selected interval.

If you set the A.c.K to a value different from 1 the instrument will give you the results expressed in moles per square meter per day.

Please see next page.

Quantifying the flux

Method 1: Measuring the slope

Set the Accumulation Chamber factor to 1 in order to have the flux measurement expressed in the slope unit "ppm/sec" and translate it in the desired unit with a post processing.
Using this method you can focus only on the accumulation chamber interfacing with the soil, the flux curve shape and the other aspects of the measurement, putting off choosing the correct accumulation chamber factor.

Method 2: Measuring the flux directly in moles/sm/day.

To get the results directly in moles/sm/day you have to set the Accumulation Chamber factor to the correct value, taking it from the tables.
For each measurement, if there are variations in the air temperature, or of the barometric pressure, or if you changed the accumulation chamber you have to select the [tools][settings] menu and put the correct accumulation chamber factor in the "A.c.K." field. This operation can be "critical". In any case on the saved files you'll find the results of flux evaluation expressed in both units , the raw ppm/sec and the moles/sm/day computed with the A.c.K. you set.

The accumulation chamber factors

Here following the formula used to compute the A.c.K.:

$$K = \frac{86400 \cdot P}{10^6 \cdot R \cdot T_k} \cdot \frac{V}{A}$$

Where

- **P** is the barometric pressure expressed in mBar (HPa)
- **R** is the gas constant 0.08314510 bar L K^{-1} mol^{-1}
- **T_k** is the air temperature expressed in Kelvin degree
- **V** is the chamber net volume in cubic meters
- **A** is the chamber inlet net area in square meters.

The dimensions of the A.c.K. are

$$K = \frac{moles \cdot meter^{-2} \cdot day^{-1}}{ppm \cdot sec^{-1}}$$

In the table the conversion factors vs temperaure and barometric pressure for the Accumulation Chamber Type A and B are reported.

An example:

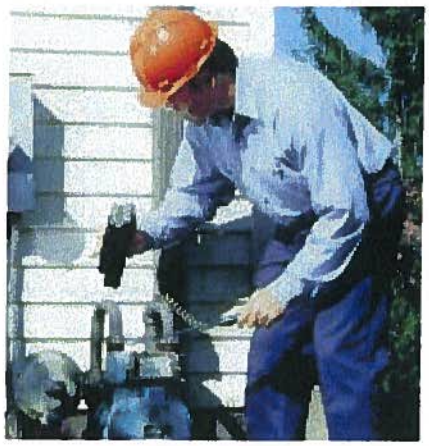
You're using the accumulation chamber B, the slope of the flux curve is 2.5 ppm/sec, the barometric pressure is 1008 mBar (HPa) and the air temperature is 22 °C.
From the table B get the value that correspond to the barometric pressure and temperature. In this case I get the value computed for 25°C and 1013 mBar : 0.696.

Then the flux is: 2.5 x 0.696= 1.74 moles per square meter per day.

Gasport® Gas Tester

MSA

The Gasport Gas Tester is designed for gas utility workers to detect methane and certain toxic gases. It is a reliable, simple, versatile tool to help your service technicians get the job done quickly! With multiple ranges and sensing capabilities built into one rugged housing, the Gasport Tester simplifies your work by reducing the number of meters you have to carry on the job.



Applications

The Gasport Tester's poison-tolerant methane sensor provides three measurement ranges for your daily service needs:

- Open air, safety sampling
- Small, in-home leak detection
- Street/outdoor service line leak detection

Features and Benefits

- **Proven in field use–rugged and reliable**
  Less costly to maintain, less time in repair
- **Multiple functions in one instrument**
  No need to buy, carry & maintain multiple instruments
- **New, poison-tolerant combustible gas sensor**
  Reduces meter ownership costs
- **User-selectable, "silent" operation mode**
  Reduces customer disturbances and worries
- **Fast warm up time**
  Fastest warm up time in industry saves time
- **Can monitor up to four gases at a time**
  Fewer instruments to carry
- **Show all gas concentrations simultaneously**
  Eliminates guesswork on what reading is displayed
- **Autoranging methane sensor**
  Automatically switches between 0-5% and 5-100% methane ranges
- **Gas readings recorded for later retrieval**
  Can double check readings after job is done
- **Simple manual or automated calibration options**
  Reduces training time and helps ensure accuracy
- **Intrinsically safe**
  Meets safety standards for work in hazardous areas
- **Lifetime warranty on case and electronics**
  Reduced maintenance and lifetime costs

Specifications

Gas	Range	Resolution
Methane	0–5000 ppm	50 ppm
Methane	0–100% LEL or 0–5% CH_4	1 % LEL or 0.1% CH_4
Methane	5–100% CH_4	1% CH_4
Oxygen	0–25%	0.1%
Carbon Monoxide	0–1000 ppm	1 ppm
Hydrogen Sulfide	0–100 ppm	1 ppm

Battery types: NiCd and Alkaline
Case material: Impact resistant, stainless-steel-fiber-filled polycarbonate
Operating temperature: normal -10 to 40°C; extended -20 to 50°C
Operating humidity: Continuous: 15-95% RH, non-condensing
Intermittent duty: 5-95% RH, non condensing
Warm up time: Less than 20 seconds to initial readings
Datalog capacity: 12 hours
Input: 3 clearly marked, metal domed keys
Warranty: Case and Electronics: Lifetime
Sensors and consumable parts: 1 year

The answer for gas utilities' gas detection needs

Gasport® Gas Tester

Ordering Information

Battery Chargers

Part No.	Description
494716	Omega 120 VAC 50/60Hz
495965	Omega 220 VAC 50/60Hz
801759	Omega 110/220 VAC, Five Unit, 50/60Hz
800525	Omega 8 - 24VDC for vehicle use

Battery Packs

Part No.	Description
496990	Standard NiCd Rechargeable
800526	Alkaline, Type C
711041	Alkaline, with Thumbscrews
800527	Heavy Duty NiCd Rechargeable

Sensors

Part No.	Description
813693	Combustible Gas
480566	O_2
812389	CO
812390	H_2S

Protective Boots

Part No.	Description
804955	Black, for NiCd Battery Packs
802806	Orange, for NiCd Battery Packs
806751	Black, for Alkaline Battery Packs
806750	Orange, for Alkaline Battery Packs
806749	Black, for HD NiCd Battery Packs
806748	Orange, for HD NiCd Battery Packs
812833	Yellow Soft Carrying Case with Harness
711022	Black padded Vinyl Carrying Case with Harness

Sampling Equipment

Part No.	Description
800332	Probe - 1 ft., plastic
800333	Probe - 3 ft., plastic
803561	Probe - 3 ft., plastic (holes 2" from end) (bar hole probe)
803962	Probe - 3 ft., plastic (holes 2" from handle) (solid probe)
803848	Probe - Hot Gas Sampler
710465	Sampling Line - 5 ft., coiled
497333	Sampling Line - 10 ft.
497334	Sampling Line - 15 ft.
497335	Sampling Line - 25 ft.

Sampling Accessories

Part No.	Description
801582	Replacement Filter, Probe, pkg. of 10
801291	External Filter Holder
014318	Charcoal Filter
711039	Line Scrubber Filter Holder
711059	Line Scrubber Replacement Cartridges, Box of 12
808935	Dust Filter, Pump Module
802897	Water Trap (Teflon) Filter, Pump Module

Calibration Check Equipment

Part No.	Description
477149	Calibration Kit Model RP with 0.25 lpm Regulator
491041	Calibration Gas - methane, 2.5%
473180	Calibration Gas - 300 ppm CO
813718	Calibration Gas - methane, 2.5% oxygen, 15%60 ppm CO
813720	Calibration Gas - methane, 2.5% oxygen, 15%300 ppm CO 10 ppm H_2S
710288	Gasmiser™ Demand Regulator 0 - 3.0 lpm

Accessories

Part No.	Description
804679	Data Docking Module Kit. Includes the Data Docking Module, MSA Link Software and Instruction Manual

Approvals

The Gasport Gas Tester has been designed to meet intrinsic safety testing requirements in certain hazardous atmospheres.

The Gasport Gas Tester is approved by MET (an OSHA Nationally Recognized Testing Laboratory [NRTL]) for use in Class I, Division I, Groups A, B, C, D; Class II, Division I, Groups E, F, G; and Class III Hazardous locations. Gaspor tGas Testers sold in Canada are approved by CSA for use in Class I, Division I, Groups A, B, C, and D locations.

Contact MSA at 1-800-MSA-2222 for more information or with questions regarding the status of approvals.

Gasport Gas Tester Kits

	LEL Display	O_2	CO	H_2S	Alarms Always	Alarms Optional	Leak Detect Page	Peak	Alkaline Battery	NiCd Battery	5ft Coiled Line	1ft Probe	Part No.
4-Gas, Selectable, NiCd	•	•	•	•		•	•	•		•	•	•	711489
4-Gas, Selectable, Alkaline	•	•	•	•		•	•	•	•		•	•	711490
3-Gas, Selectable, NiCd	•	•	•			•	•	•		•	•	•	711493
3-Gas, Selectable, Alkaline	•	•	•			•	•	•	•		•	•	711494
2-Gas, Selectable, NiCd	•		•			•	•	•		•	•	•	711495
2-Gas, Selectable, Alkaline	•		•			•	•	•	•		•	•	711496
4-Gas, Alarms On, NiCd	•	•	•	•	•		•	•		•	•	•	711491
4-Gas, Alarms On, Alkaline	•	•	•	•	•		•	•	•		•	•	711492

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Gasport Gas Tester, configured exactly the way you want it. You can choose from an extensive line of base instrument components and accessories. To obtain a copy of the "ATO System and Price Information for the Gasport Gas Tester," call toll-free 1-800-MSA-2222, and request Bulletin 0804-28. **To obtain a copy of the ATO via FAX, call MSA QuickLit Information Service at 1-800-672-9010. At the prompt, request QuickLit Document #2345 (ATO for Gasport Gas Tester).**

ID 08-04-27-MC / May 2000

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MSA

GeoXT

The total GPS platform for all your GIS field requirements

The GeoXT™ handheld, from the GeoExplorer® series, is an essential tool for maintaining your GIS. It's all you need to collect location data, keep existing GIS information up to date, and even mobilize your GIS.

The unique GeoExplorer series combines a Trimble® GPS receiver with a rugged field-ready handheld computer running the Microsoft® Windows Mobile™ 2003 software for Pocket PCs. Plus there's an internal battery that easily lasts for a whole day of GPS operation. The result is tightly integrated, tough, and incredibly powerful.

High-accuracy integrated GPS

The GeoXT is optimized to provide the reliable, high-accuracy location data you need. Advanced features like EVEREST™ multipath rejection technology let you work under canopy, in urban canyons, or anywhere where accuracy is crucial.

Need submeter accuracy in real-time? Use corrections from a satellite-based augmentation system (SBAS) like WAAS[1] or EGNOS[2]. Want to get that extra edge in precision? Collect data with Trimble's TerraSync™ or GPScorrect™ software, and then postprocess back in the office.

Because the GPS receiver and antenna are built into the handheld computer, it's never been easier to use GPS in your application. The system is more than just cable-free: it's a totally integrated solution.

Optimized productivity

Take advantage of the power and flexibility of Windows Mobile software for Pocket PCs by choosing from the most comprehensive range of field software available—whether off-the-shelf or purpose-built. Whatever your needs, Windows Mobile lets you choose a software solution to match your workflow.

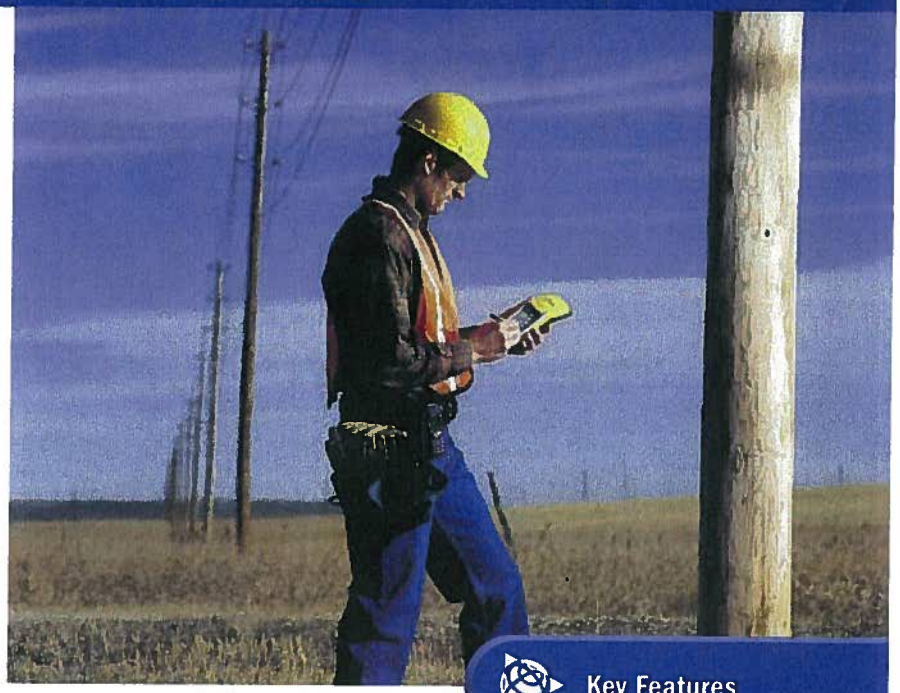
Windows Mobile includes familiar Microsoft productivity tools, including Pocket Word, Pocket Excel, and Pocket Outlook®. Pocket Outlook lets you synchronize e-mails, contacts, appointments, and data with your office computer, so whether you're in the office or in the field, you're always up to date.

Go wireless with integrated Bluetooth®* for connection to other Bluetooth-enabled devices, including cell phones and PCs. You also have the option to use the USB support module to connect to a desktop computer, or use the optional serial clip for cabled connections in the field.

Receive a free copy of Microsoft Streets & Trips** 2004 software with your GeoXT handheld, and take advantage of comprehensive map and travel information for easy navigation and route planning.

All the memory you need

There's plenty of storage space in the GeoXT for all your GIS data. The fast processor and large memory mean even big graphics files load quickly—and they're crisp and crystal-clear on the advanced TFT outdoor color screen.



Key Features

- High-performance submeter GPS with integrated WAAS/EGNOS
- Windows Mobile 2003 software for Pocket PCs, allowing maximum flexibility in software choice
- Rugged handheld with all-day battery
- Advanced color TFT display with backlight
- Integrated Bluetooth for wireless connectivity

From data collection to data maintenance, to mobile GIS and beyond ... the GeoXT is the handheld of choice.

* *Bluetooth type approvals are country specific. GeoExplorer series handhelds are approved for use with Bluetooth in the USA. For a complete list of other countries with Bluetooth approval please refer to: www.trimble.com/geo_bluetooth.html.*

** *Microsoft Streets & Trips 2004 software available in US/Canada; Microsoft AutoRoute® 2004 in Europe.*

Trimble.

GeoXT

The total GPS platform for all your GIS field requirements

Standard features

System
- Microsoft Windows Mobile 2003 software for Pocket PCs
- 206 MHz Intel StrongARM processor
- 512 MB non-volatile Flash data storage
- Outdoor color display
- Ergonomic cable-free handheld
- Rugged and water-resistant design
- All-day internally rechargeable battery
- Bluetooth wireless

GPS
- Submeter accuracy
- Integrated WAAS[1]/EGNOS[2]
- RTCM real-time correction support
- NMEA and TSIP protocol support
- EVEREST multipath rejection technology

Software
- GPS Controller for control of integrated GPS and in-field mission planning
- GPS Connector for connecting integrated GPS to external ports
- File Explorer, Internet Explorer, Pocket Outlook (Inbox, Calendar, Contacts, Tasks, Notes), Sprite Pocket Backup, Transcriber, Pocket Word, Pocket Excel, Pictures, Windows® Media Player, Bluetooth File Transfer, Calculator, ActiveSync®
- Microsoft Streets & Trips/AutoRoute 2004 software

Accessories
- Support module with power supply and USB data cable
- Getting Started Guide
- Companion CD includes Outlook 2002 and ActiveSync 3.7.1
- Hand strap
- Pouch
- Stylus

Optional Features

Software
- TerraSync
- GPScorrect for ESRI® ArcPad®
- GPS Pathfinder® Tools Software Development Kit (SDK)
- GPS Pathfinder Office
- Trimble GPS Analyst extension for ArcGIS®

Accessories
- Serial clip for field data and power input
- Vehicle power adaptor[3]
- Portable power kit[3]
- Hurricane antenna
- External patch antenna
- Pole-mountable ground plane
- Baseball cap with antenna sleeve
- Beacon-on-a-Belt (BoB™) differential correction receiver[3]
- Hard carry case
- Null modem cable[3]
- Backpack kit

Specifications subject to change without notice.

Technical specifications

Physical

Size	21.5 cm × 9.9 cm × 7.7 cm (8.5 in × 3.9 in × 3.0 in)
Weight	0.72 kg (1.59 lb) with battery
Processor	206 MHz Intel StrongARM SA-1110
Memory	64 MB RAM and 512 MB internal Flash disk
Power	
Low (no GPS)	0.6 Watts
Normal (with GPS)	1.4 Watts
High (with GPS, backlight, and Bluetooth)	2.5 Watts
Battery	Internal lithium-ion, rapidly rechargeable in unit, 21 Watt-hours

Environmental

Temperature	
Operating	-10 °C to +50 °C (14 °F to 122 °F)
Storage	-20 °C to +70 °C (-4 °F to 158 °F)
Humidity	99% non-condensing
Casing	Wind-driven rain and dust-resistant per IP 54 standard Slip-resistant grip, shock- and vibration-resistant

Input/output

Communications	Bluetooth for wireless connectivity USB vie support module, serial via optional DE9 serial clip adaptor
Bluetooth	
Certification	Bluetooth type approvals are country specific. GeoExplorer series handhelds are approved for use with Bluetooth in the USA. For a complete list of other countries with Bluetooth approval please refer to www.trimble.com/geoxt_ts.asp.
Profiles	
Both client and host support	Serial Port, File Transfer (using OBEX)
Client support only	Dial-Up Networking, Lan Access
Host support only	Basic Imaging, Object Push
Display	Advanced outdoor TFT, 240 × 320 pixel, 65,536 colors, with backlight
Audio	Microphone and half duplex speaker, record and playback utilities
Interface	Anti-glare coated touch screen, Soft Input Panel (SIP) virtual keyboard 2 hardware control keys plus 4 programmable permanent touch buttons Handwriting recognition software, Audio system events, warnings, and notifications

GPS

Channels	12
Integrated real-time	WAAS[1] or EGNOS[2]
Update rate	1 Hz
Time to first fix	30 sec (typical)
Protocols	NMEA (GGA, VTG, GLL, GSA, ZDA, GSV, RMC), TSIP (Trimble Standard Interface Protocol)

Accuracy (RMS)[4] after differential correction

Postprocessed[5]	Submeter
Carrier postprocessed[6]	
With 10 minutes tracking satellites	30 cm
Real-time	Submeter

1 *WAAS (Wide Area Augmentation System). Available in North America only. For more information, see http://gps.faa.gov/programs/index.htm.*
2 *EGNOS (European Geostationary Navigation Overlay System). Available in Europe only. For more information, see http://www.esa.int/export/esaSA/navigation.html.*
3 *Serial clip also required.*
4 *Horizontal accuracy. Requires data to be collected with minimum of 4 satellites, maximum PDOP of 6, minimum SNR of 4, minimum elevation of 15 degrees, and reasonable multipath conditions. Ionospheric conditions, multipath signals or obstruction of the sky by buildings or heavy tree canopy may degrade precision by interfering with signal reception. Accuracy varies with proximity to base station by +1 ppm for postprocessing and real-time, and by +5 ppm for carrier postprocessing.*
5 *Postprocessing with GPS Pathfinder Office software or GPS Analyst extension for ArcGIS.*
6 *Requires collection of carrier data. (Only available with the GPS Pathfinder Office software).*

YOUR LOCAL TRIMBLE OFFICE OR REPRESENTATIVE

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ULTRAMETER II™

OVER 50 YEARS

MYRON L COMPANY

Water Quality Instrumentation

Accuracy • Reliability • Simplicity

ULTRAMETER II™

Advanced Design • Superior Performance

MADE IN USA

OVER 50 YEARS

pH/ORP Sensor protective cap

Four-digit display for full 9999 readings, with autoranging capability up to 200 mS/200 ppt

Powerful microprocessor based surface-mount circuitry

Display prompts for simple pH calibration

Memory for 100 readings with Date & Time Stamp

Real Time Clock

Factory calibrations stored in microprocessor

Conductivity

Resistivity

TDS

Temperature

pH

ORP

CE

ULTRA-FAST
ULTRA-EASY
ULTRA-POWERFUL

Since 1957, the Myron L Company has designed and manufactured highly reliable analytical instruments for a wide variety of applications. Thousands of professionals around the world rely every day on the performance of our instruments. Demanding uses range from boiler water testing to ultrapure water control to medical instruments for artificial kidney machines.

We are proud of the trust our handheld instruments and monitor/controllers have earned in the past. Our product line has evolved to a new level of outstanding performance and value in analytical instruments: the Ultrameter II series. While priced like affordable single-parameter instruments, the Ultrameter II does the job of three, four or even six instruments.

Accuracy You Can Trust

Both Ultrameter II models deliver performance of ±1% of reading (not merely full scale). This high level of accuracy has been achieved through advanced four-electrode conductivity cell technology, a unique pH/ORP sensor and powerful microprocessor-based circuitry. With displayed values of up to 9999, the full four-digit LCD ensures resolution levels never before possible in such affordable instruments. Factory calibrated with NIST traceable solutions, each Ultrameter II may be supplied with both certification of traceability and NIST traceable solutions for definitive calibration.

Fast and accurate in the laboratory, both Ultrameter II models are rugged enough for daily in-line controller checks in hostile process applications.

Innovative Engineering

The Ultrameter II is a prime example of how high-tech engineering can greatly simplify and streamline a task. Whether in the lab, industrial plant, or in a remote field location, merely:

1. Fill the cell cup
2. Push a parameter key
3. Take the reading

Temperature compensation and range selection are both rapid and automatic. The Ultrameter II is a true one-hand operation instrument.

Easy to Calibrate

All calibrations are quickly accomplished by pressing the ☒ or ☒ keys to agree with our NIST traceable Standard Solution. When calibration is necessary, display prompts simplify pH calibration and make sure the correct buffer is being used. Plus, all parameters (excluding factory-set temperature) have an internal electronic setting that can be used for field calibration and as a check on pH/ORP sensor life.

Advanced Features

- Fully automatic temperature compensation
- User adjustable temperature compensation (up to 9.99%/°C) which also allows TC to be disabled for applications requiring non-compensated readings.
- User adjustable conductivity/TDS conversion ratio for greater accuracy when measuring solutions not contained in the microprocessor.
- Auto-shutoff maximizes the life of the single 9V battery to more than 100 hours/5000 tests.
- Non-volatile microprocessor provides data back-up, even when the battery is changed. This assures all calibrations and memory data will be retained.
- Extended life pH/ORP sensor is user replaceable in the field.

High Performance at a Low Cost

Beyond their affordable purchase price, Ultra-Fast, Ultra-Easy, Ultra-Powerful Ultrameter II's save both time and money. Measure for measure, Ultrameter II's give you a better return on your investment than any other handheld instrument. To see for yourself, contact your distributor or the Myron L Company today.

Multiple Applications

Irrigation Water

Hydroponics

Laboratories

Homeland Security

Reverse Osmosis

Deionization

Wastewater

Cooling Towers

Environmental

Desalination

Fountain Solutions

BENEFITS DESIGNED TO SAVE YOU TIME & MONEY

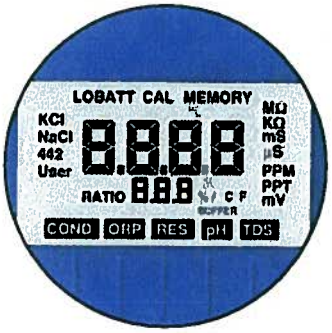
Built-in IR Port allows you to conveniently download your data to a computer. **(Requires Myron L uDock™ Accessory Package)**

Ample memory provides increased flexibility to record and store 100 separate readings.

Real Time Clock with Date & Time Stamp allows you to maintain the integrity of each individual reading.

The advanced four-electrode cell for conductivity/resistivity/TDS eliminates polarization, allowing greater accuracy and stability with minimal maintenance.

The pH/ORP sensor chamber provides protection to a unique porous liquid-junction.



The large capacity KCl reservoir guarantees extended life.

A custom LCD helps simplify calibration and operation by using annunciators and prompts to indicate various conditions.

IP67/NEMA 6 rated Ultrameter II's are waterproof and buoyant and can be fully immersed to 3 feet/1 meter.

Features

Ultrameter II™ Models	4PII Conductivity TDS, Resistivity Temperature	6PII Conductivity, TDS Resistivity, pH ORP, Temperature
Autoranging	•	•
Adjustable Temp. Compensation	•	•
Adjustable Cond/TDS ratio	•	•
Memory (100 readings)	•	•
Date & Time Stamp	•	•
pH Calibration Prompts		•
Low battery indicator	•	•
Auto-off	•	•

Specifications

Display	4 Digit Liquid Crystal Display
Dimensions LxWxH	196 x 68 x 64 mm/ 7.7 x 2.7 x 2.5 inches
Weight	352 g/12.4 oz.
Case/conductivity cell material	VALOX*
Cell capacities	pH/ORP: 1,2 ml/0.04 oz. Cond/TDS/Res: 5 ml/0.2 oz.
Power	9V alkaline battery
Battery life	>100 hours (5000 readings)
Operating/storage temperature	0 – 55°C/32 – 132°F
Protection ratings	IP67/NEMA 6 Waterproof to 1 meter/3 feet

*™GENERAL ELECTRIC

Parameters

	Conductivity	TDS	Resistivity	pH	ORP	Temperature
Ranges	0–9999 µS/cm 10–200 mS/cm in 5 autoranges	0–9999 ppm 10–200 ppt in 5 autoranges	10 KΩ–30 MΩ	0–14 pH	±999 mV	0–71°C 32–160°F
Resolution	0.01(<100 µS) 0.1(<1000 µS) 1.0(<10 mS) 0.01(<100 mS) 0.1(<200 mS)	0.01(<100 ppm) 0.1(<1000 ppm) 1.0(<10 ppt) 0.01(<100 ppt) 0.1(<200 ppt)	0.01(<100 KΩ) 0.1(<1000 KΩ) 0.1(>1 MΩ)	±0.01 pH	±1 mV	0.1°C/F
Accuracy	±1% of reading	±1% of reading	±1% of reading	±0.01 pH	±1 mV	±0.1°C
Auto Temperature Compensation	0–71°C 32–160°F	0–71°C 32–160°F	0–71°C 32–160°F	0–71°C 32–160°F	—	—
Adjustable Temperature Compensation to 25°C	0–9.99%/°C	0–9.99%/°C	0–9.99%/°C	—	—	—
Conductivity/TDS Ratios Preprogrammed	KCl, 442*, NaCl	KCl, 442*, NaCl	—	—	—	—
Adjustable Conductivity/TDS Ratio Factor	0.20–7.99	0.20–7.99	—	—	—	—

*442 Natural Water Standard ™ Myron L Company

Accessories

uDock™ Accessory Package includes uDock™, USB cable and Macintosh/PC application software for downloading data. MODEL: U2CIP

Certificates confirming the NIST traceability of an Ultrameter II are available (must be specified when placing instrument order). MODEL: MC

Conductivity Standard Solutions are necessary to maintain accuracy and for periodic calibration of conductivity/TDS parameters. All Standard Solutions are NIST traceable for your complete confidence. RECOMMENDED VALUES: KCl-7000 (7 mS), 442-3000 (TDS), or NaCl-14.0 (mS) available in 2 oz/59 ml, 1 qt/1 L, and 1 gal/3,8 L.

pH Buffers are necessary to maintain accuracy and for periodic calibration of pH and ORP parameters. Calibration with pH 7 Buffer is especially important. All pH 4, 7, and 10 Buffers are NIST traceable and are available in 2 oz/59 ml, 1 qt/1 L, and 1 gal/3,8 L.

pH Sensor Storage Solution
Available in 2 oz/59 ml, 1 qt/1 L, and 1 gal/3,8 L.
MODEL: SS20Z, SSQ and SSG

Certificate of NIST traceability for pH Buffer or Conductivity Standard Solutions are available (must be specified when placing solution order). MODEL: SC

Hard protective case (small)
MODEL: UPP

Hard protective case (kit) with three buffers (pH 4, 7, and 10), one pH/ORP storage solution, and two standard solutions, (KCl-7000 and 442-3000). All bottles are 2 oz/59 ml.
MODEL: PKU

Soft protective case is constructed of padded Nylon and features a belt clip for hands-free mobility.
MODEL: UCC (Blue)
UCCDT (Desert Tan)

Replacement pH/ORP sensor user-replaceable, features a unique/porous liquid-junction.
MODEL: RPR

Built on Trust

Founded in 1957, Myron L Company is one of the world's leading manufacturers of water quality instruments. Because of our policy of continuous product improvement, changes in design and the specifications in this brochure are possible. You have our assurance any changes will be guided by our product philosophy: Accuracy, Reliability, Simplicity.

Limited Warranty

All Myron L Ultrameter II's have a Two (2) Year Limited Warranty. The pH/ORP sensors have a Six (6) Month Limited Warranty. Warranty is limited to the repair or replacement of the Ultrameter II only, at our discretion. Myron L Company assumes no other responsibility or liability.

MYRON L COMPANY
Water Quality Instrumentation
Accuracy • Reliability • Simplicity

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PRINTED IN U. S. A.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UMIIB 03-08

APPENDIX B

FLUX METER DATA

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Chavez02_01	Chavez02_01_04092012_135756.txt	Chavez02	1177559.474	3168225.592	9/4/2012	0	0.003094	0.523544	A	787.1	36.2	04-09-2012 13:57:56	0	0.013	2.200000048	0.237974763
Chavezspring01_01	Chavezspring01_01_04092012_133344.txt	Chavezspring01	1178750.008	3167124.554	9/4/2012	0	0.001221	0.138171	A	786.8	28.3	04-09-2012 13:33:44	0	0.005	0.565999985	0.244118214
Chavezspring03_01	Chavezspring03_01_04092012_144836.txt	Chavezspring03	1178741.146	3170006.626	9/4/2012	0	0.003461	0.024454	A	785.0	45.1	04-09-2012 14:48:36	0	0.015	0.105999999	0.230702534
Seep11_01	Seep11_01_29082012_121648.txt	Seep11	1146305.826	3166900.826	8/29/2012	0	0.005107	0.306871	A	782.4	42.1	29-08-2012 12:16:48	0	0.022	1.322000027	0.232126579
Seep11_02	Seep11_02_29082012_121930.txt	Seep11	1146337.546	3166925.671	8/29/2012	0	0.006259	0.45161	A	782.4	42.5	29-08-2012 12:19:30	0	0.027000001	1.947999954	0.231832415
Seep11_03	Seep11_03_29082012_122233.txt	Seep11	1146314.501	3166962.156	8/29/2012	0	0.005558	0.72509	A	782.8	43.0	29-08-2012 12:22:33	0	0.024	3.131000042	0.231584102
Seep11_04	Seep11_04_29082012_122528.txt	Seep11	1146203.34	3166985.253	8/29/2012	0	0.00763	0.193054	A	782.5	43.4	29-08-2012 12:25:28	0	0.033	0.834999979	0.231202826
Seep11_05	Seep11_05_29082012_122834.txt	Seep11	1146114.227	3166950.112	8/29/2012	0	0.009001	0.301185	A	782.1	43.8	29-08-2012 12:28:34	0	0.039000001	1.304999948	0.230792999
Seep11_06	Seep11_06_29082012_123201.txt	Seep11	1146118.047	3166987.251	8/29/2012		0.005532	0.32084	A	782.3	44.3	29-08-2012 12:32:01		0.024	1.39199996	0.23048842
Seep11_07	Seep11_07_29082012_123515.txt	Seep11	1146110.948	3167042.521	8/29/2012	0	0.003915	0.410343	A	782.3	44.6	29-08-2012 12:35:15	0	0.017000001	1.781999946	0.230270803
Seep11_08	Seep11_08_29082012_123800.txt	Seep11	1146059.429	3167041.564	8/29/2012	0	0.00253	0.01702	A	782.1	44.9	29-08-2012 12:38:00	0	0.011	0.074000001	0.229994789
Seep11_09	Seep11_09_29082012_124057.txt	Seep11	1146065.595	3166991.967	8/29/2012	0	0.003906	0.115793	A	782.0	45.2	29-08-2012 12:40:57	0	0.017000001	0.504000008	0.229748666
Seep11_10	Seep11_10_29082012_124626.txt	Seep11	1146004.937	3166937.613	8/29/2012	0	0.004819	0.157639	A	782.0	45.6	29-08-2012 12:46:26	0	0.021	0.686999977	0.229460359
Seep11_11	Seep11_11_29082012_125007.txt	Seep11	1146008.822	3166985.275	8/29/2012	0	0.006184	0.037104	A	781.3	45.9	29-08-2012 12:50:07	0	0.027000001	0.162	0.229039401
Seep11_12	Seep11_12_29082012_125349.txt	Seep11	1146013.193	3167028.096	8/29/2012	0	0.00229	0.156376	A	781.5	46.1	29-08-2012 12:53:49	0	0.01	0.683000028	0.228954509
Seep11_13	Seep11_13_29082012_125742.txt	Seep11	1146037.03	3167172.104	8/29/2012	0	0.010527	0.094518	A	781.9	46.4	29-08-2012 12:57:42	0	0.046	0.412999988	0.228856638
Seep11_14	Seep11_14_29082012_130122.txt	Seep11	1146018.669	3167236.773	8/29/2012	0	0.003199	0.20613	A	781.5	46.7	29-08-2012 13:01:22	0	0.014	0.90200001	0.228525013
Seep11_15	Seep11_15_29082012_130434.txt	Seep11	1145913.888	3167208.75	8/29/2012	0	0.002967	0.23557	A	781.1	46.9	29-08-2012 13:04:34	0	0.013	1.031999946	0.228265315
Seep11_16	Seep11_16_29082012_130810.txt	Seep11	1145852.427	3167210.446	8/29/2012	0	0.005015	0.160952	A	780.6	47.1	29-08-2012 13:08:10	0	0.022	0.70599997	0.227976725
Seep11_17	Seep11_17_29082012_131036.txt	Seep11	1145810.249	3167208.404	8/29/2012	0	0.007061	0.107275	A	780.1	47.2	29-08-2012 13:10:36	0	0.030999999	0.470999986	0.227759585
Seep11_18	Seep11_18_29082012_131341.txt	Seep11	1145807.463	3167169.651	8/29/2012	0	0.006148	0.135247	A	780.1	47.3	29-08-2012 13:13:41	0	0.027000001	0.593999982	0.227688506
Seep11_19	Seep11_19_29082012_131657.txt	Seep11	1145859.96	3167158.5	8/29/2012	0	0.005469	0.079297	A	780.7	47.3	29-08-2012 13:16:57	0	0.024	0.34799999	0.227863625
Seep11_20	Seep11_20_29082012_131954.txt	Seep11	1145908.289	3167160.487	8/29/2012	0	0.005472	0.167347	A	780.9	47.2	29-08-2012 13:19:54	0	0.024	0.734000027	0.22799316
Seep11_21	Seep11_21_29082012_132226.txt	Seep11	1145902.759	3167115.321	8/29/2012	0	0.002053	0.088062	A	781.4	47.2	29-08-2012 13:22:26	0	0.009	0.386000007	0.228139132
Seep11_22	Seep11_22_29082012_132440.txt	Seep11	1145856.639	3167110.798	8/29/2012	0	0.004335	0.187759	A	781.4	47.2	29-08-2012 13:24:40	0	0.018999999	0.823000014	0.228139132
Seep11_23	Seep11_23_29082012_132711.txt	Seep11	1145809.915	3167108.88	8/29/2012	0	0.005016	0.286836	A	781.2	47.3	29-08-2012 13:27:11	0	0.022	1.258000016	0.228009567
Seep11_24	Seep11_24_29082012_133534.txt	Seep11	1145704.795	3166876.191	8/29/2012	0	0.009804	0.075239	A	781.4	47.4	29-08-2012 13:35:34	0	0.043000001	0.330000013	0.227996796
Seep11_25	Seep11_25_29082012_134033.txt	Seep11	1145743.317	3166863.201	8/29/2012	0	0.005918	0.230821	A	780.4	47.5	29-08-2012 13:40:33	0	0.026000001	1.014000058	0.227633998
Seep11_26	Seep11_26_29082012_141105.txt	Seep11	1145747.093	3166809.844	8/29/2012	0	0.001375	0.164531	A	778.5	44.6	29-08-2012 14:11:05	0	0.006	0.717999995	0.229152277
Seep11_27	Seep11_27_29082012_141417.txt	Seep11	1145708.36	3166806.142	8/29/2012	0	0.005494	0.205585	A	778.5	44.9	29-08-2012 14:14:17	0	0.024	0.898000002	0.228936121
Seep11_28	Seep11_28_30082012_082754.txt	Seep11	1146052.738	3166941.532	8/30/2012	0	0.0005	0.384433	A	782.1	19.5	30-08-2012 08:27:54	0	0.002	1.537999988	0.249956757
Seep11_29	Seep11_29_30082012_083324.txt	Seep11	1145956.88	3166958.193	8/30/2012	0	0.000248	0.044476	A	781.7	21.1	30-08-2012 08:33:24	0	0.001	0.179000005	0.248470455
Seep11_30	Seep11_30_30082012_083659.txt	Seep11	1145955.719	3168928.072	8/30/2012	0	0.000247	0.021036	A	780.7	21.9	30-08-2012 08:36:59	0	0.001	0.085000001	0.247479752
Seep11_31	Seep11_31_30082012_084112.txt	Seep11	1145907.235	3166959.251	8/30/2012	0	0.001233	0.023673	A	780.8	23.0	30-08-2012 08:41:12	0	0.005	0.096000001	0.246592104
Seep11_32	Seep11_32_30082012_084458.txt	Seep11	1145903.854	3166916.123	8/30/2012	0	0.000738	0.083156	A	781.1	23.8	30-08-2012 08:44:58	0	0.003	0.338	0.246022269
Seep11_33	Seep11_33_30082012_084827.txt	Seep11	1145924.354	3166877.516	8/30/2012	0	0.000735	0.077955	A	780.4	24.6	30-08-2012 08:48:27	0	0.003	0.317999989	0.245141372
Seep11_34	Seep11_34_30082012_085119.txt	Seep11	1145904.811	3166865.3	8/30/2012	0	0.000244	0.034441	A	779.7	25.4	30-08-2012 08:51:19	0	0.001	0.141000003	0.244265184
Seep11_35	Seep11_35_30082012_085450.txt	Seep11	1145925.153	3166850.172	8/30/2012	0	0.000731	0.127923	A	779.6	26.1	30-08-2012 08:54:50	0	0.003	0.524999976	0.243662551
Seep11_36	Seep11_36_30082012_085814.txt	Seep11	1145863.672	3166818.374	8/30/2012	0	0.000243	0.025511	A	779.7	27.0	30-08-2012 08:58:14	0	0.001	0.104999997	0.242963091
Seep11_37	Seep11_37_30082012_090119.txt	Seep11	1145893.004	3166799.831	8/30/2012	0	0.001938	0.055224	A	779.1	27.7	30-08-2012 09:01:19	0	0.008	0.228	0.242211238
Seep11_38	Seep11_38_30082012_090443.txt	Seep11	1145888.934	3166762.876	8/30/2012	0	0.000484	0.054395	A	779.7	28.5	30-08-2012 09:04:43	0	0.002	0.224999994	0.241754919
Seep11_39	Seep11_39_30082012_090727.txt	Seep11	1145852.043	3166761.711	8/30/2012	0	0.000483	0.020032	A	779.7	29.0	30-08-2012 09:07:27	0	0.002	0.082999997	0.241354853
Seep11_40	Seep11_40_30082012_091056.txt	Seep11	1145817.85	3166806.443	8/30/2012	0	0.000722	0.027205	A	779.3	29.6	30-08-2012 09:10:56	0	0.003	0.112999998	0.240752965
Seep11_41	Seep11_41_30082012_091424.txt	Seep11	1145801.823	3166764.292	8/30/2012	0	0.00048	0.115964	A	778.7	30.2	30-08-2012 09:14:24	0	0.002	0.48300001	0.240091771
Seep11_42	Seep11_42_30082012_091657.txt	Seep11	1145749.417	3166774.996	8/30/2012	0	0.001198	0.163671	A	778.5	30.7	30-08-2012 09:16:57	0	0.005	0.683000028	0.239635125
Seep11_43	Seep11_43_30082012_091946.txt	Seep11	1145705.416	3166765.064	8/30/2012	0	0.003111	0.12325	A	778.5	31.1	30-08-2012 09:19:46	-0.028999999	0.013	0.514999986	0.239320084
Seep11_44	Seep11_44_30082012_092410.txt	Seep11	1145812.625	3166856.888	8/30/2012	0	0.001671	0.002626	A	778.5	31.9	30-08-2012 09:24:10	0	0.007	0.011	0.238692462
Seep11_45	Seep11_45_30082012_092805.txt	Seep11	1145857.144	3166863.317	8/30/2012	0	0	0.021955	A	779.6	32.4	30-08-2012 09:28:05	0	0	0.092	0.23863858
Seep11_46	Seep11_46_30082012_093150.txt	Seep11	1145860.575	3166906.423	8/30/2012	0	0.002141	0.076849	A	779.3	33.2	30-08-2012 09:31:50	0	0.009	0.323000014	0.237923801
Seep11_47	Seep11_47_30082012_093506.txt	Seep11	1145855.621	3166943.143	8/30/2012	0	0.002616	0.072761	A	780.1	33.7	30-08-2012 09:35:06	0	0.011	0.305999994	0.23777996
Seep13L1026_01	Seep13L1026_01_30082012_142051.txt	Seep13L1026	1174645.136	3164525.056	8/30/2012	0	0.001389	0.563171	A	782.0	42.7	30-08-2012 14:20:51	0	0.006	2.431999922	0.231567174
Seep13L1026_02	Seep13L1026_02_30082012_142351.txt	Seep13L1026	1174642.596	3164478.915	8/30/2012	0	0.001851	0.07727	A	782.0	43.0	30-08-2012 14:23:51	0	0.008	0.333999991	0.231347427
Seep13L1026_03	Seep13L1026_03_30082012_142652.txt	Seep13L1026	1174609.042	3164406.747	8/30/2012	0	0.001617	0.14806	A	782.0	43.5	30-08-2012 14:26:52	0	0.007	0.640999973	0.230982125
Seep13L1026_04	Seep13L1026_04_30082012_142946.txt	Seep13L1026	1174654.3	3164364.144	8/30/2012	0	0.001845	0.126172	A	781.9	43.9	30-08-2012 14:29:46	0	0.008	0.546999991	0.230661213
Seep13L1026_05	Seep13L1026_05_30082012_143236.txt	Seep13L1026	1174650.514	3164309.819	8/30/2012	0	0.002304	0.352006	A	781.9	44.3	30-08-2012 14:32:36	0	0.01	1.527999997	0.230370566
Seep13L1026_06	Seep13L1026_06_30082012_143600.txt	Seep13L1026	1174653.013	3164263.526	8/30/2012	0	0.002071	0.022548	A	781.9	44.7	30-08-2012 14:36:00	0	0.009	0.097999997	0.230080649
Seep13L1026_07	Seep13L1026_07_30082012_143931.txt	Seep13L1026	1174612.537	3164207.551	8/30/2012	0	0.001608	0.094196	A	781.5	45.0	30-08-2012 14:39:31	0	0.007	0.409999996	0.229746103
Seep13L1026_08	Seep13L1026_08_30082012_144228.txt	Seep13L1026	1174613.446	3164258.185	8/30/2012	0	0.002983	0.088581	A	781.1	45.2	30-08-2012 14:42:28	0	0.013	0.386000007	0.22948426
Seep13L1026_09	Seep13L1026_09_30082012_144532.txt	Seep13L1026	1174612.792	3164319.596	8/30/2012	0	0.002755	1.497184	A	781.6	45.3	30-08-2012 14:45:32	0	0.012	6.521999836	0.229559049
Seep13L1026_10	Seep13L1026_10_30082012_144811.txt	Seep13L1026	1174614.754	3164361.727	8/30/2012	0	0.001607	0.079657	A	781.6	45.3	30-08-2012 14:48:11	0	0.007	0.347000003	0.229559049
Seep13L1026_11	Seep13L1026_11_30082012_145143.txt	Seep13L1026	1174559.436	3164415.267	8/30/2012	0	0.002066	1.26558	A	782.0	45.4	30-08-2012 14:51:43	0	0.009	5.512000084	0.229604423
Seep13L1026_12	Seep13L1026_12_30082012_145604.txt	Seep13L1026	1174557.367	3164367.848	8/30/2012	0	0.001836	0.620196	A	782.0	45.5	30-08-2012 14:56:04	0	0.008	2.701999903	0.229532376
Seep13L1026_13	Seep13L1026_13_30082012_145831.txt	Seep13L1026	1174554.38	3164309.412	8/30/2012	0	0.000229	0.028209	A	781.6	45.6	30-08-2012 14:58:31	0	0.001	0.123000003	0.229342982
Seep13L1026_14	Seep13L1026_14_30082012_150101.txt	Seep13L1026	1174558.705	3164260.105	8/30/2012	0	0.00321	0.398244	A	781.6	45.7	30-08-2012 15:01:01	0	0.014	1.736999989	0.229271054
Seep13L1026_15	Seep13L1026_15_30082012_150427.txt	Seep13L1026	1174542.006	3164212.427	8/30/2012	0	0.001604	0.152579	A	781.5	45.9	30-08-2012 15:04:27	0	0.007	0.666000009	0.229098022

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep13L1026_16	Seep13L1026_16_30082012_150723.txt	Seep13L1026	1174502.416	3164212.424	8/30/2012	0	0.001374	0	A	781.5	46.0	30-08-2012 15:07:23	0	0.006	-0.057	0.229026243
Seep13L1026_17	Seep13L1026_17_30082012_151026.txt	Seep13L1026	1174500.915	3164263.072	8/30/2012	0	0.000916	0.075541	A	781.6	46.2	30-08-2012 15:10:26	0	0.004	0.330000013	0.2289121
Seep13L1026_18	Seep13L1026_18_30082012_151242.txt	Seep13L1026	1174526.944	3164282.955	8/30/2012	0	0.000686	0.023554	A	781.3	46.4	30-08-2012 15:12:42	0	0.003	0.103	0.228681013
Seep13L1026_19	Seep13L1026_19_30082012_151516.txt	Seep13L1026	1174506.271	3164314.193	8/30/2012	0	0.000686	0.00983	A	781.5	46.6	30-08-2012 15:15:16	0	0.003	0.043000001	0.228596479
Seep13L1026_20	Seep13L1026_20_30082012_151800.txt	Seep13L1026	1174524.863	3164340.466	8/30/2012	0	0.000685	0.014393	A	781.5	46.8	30-08-2012 15:18:00	-0.185000002	0.003	0.063000001	0.228453591
Seep13L1026_21	Seep13L1026_21_30082012_152046.txt	Seep13L1026	1174502.165	3164363.498	8/30/2012	0	0.002738	0.1757	A	781.3	47.1	30-08-2012 15:20:46	-0.02	0.012	0.769999981	0.228181168
Seep13L1026_22	Seep13L1026_22_30082012_152313.txt	Seep13L1026	1174514.976	3164367.959	8/30/2012	0	0.002509	0.119295	A	781.5	47.3	30-08-2012 15:23:13	0	0.011	0.523000002	0.228097126
Seep13L1026_23	Seep13L1026_23_30082012_152553.txt	Seep13L1026	1174496.691	3164412.349	8/30/2012	0	0.000912	0.081127	A	781.5	47.6	30-08-2012 15:25:53	0	0.004	0.356000006	0.227883786
Seep13L1026_24	Seep13L1026_24_30082012_152919.txt	Seep13L1026	1174527.661	3164492.465	8/30/2012	0	0.001594	0.051681	A	781.5	47.9	30-08-2012 15:29:19	0	0.007	0.226999998	0.227670848
Seep13L1026_25	Seep13L1026_25_30082012_153421.txt	Seep13L1026	1174524.016	3164540.872	8/30/2012	0	0.002956	0.16283	A	781.6	48.3	30-08-2012 15:34:21	0	0.013	0.716000021	0.227416635
Seep13L1026_26	Seep13L1026_26_30082012_153651.txt	Seep13L1026	1174572.498	3164541.78	8/30/2012	0	0.001591	0.138411	A	781.6	48.5	30-08-2012 15:36:51	0	0.007	0.609000027	0.227275223
Seep13L1026_27	Seep13L1026_27_30082012_154015.txt	Seep13L1026	1174482.124	3164535.254	8/30/2012	0	0.001364	0.041362	A	781.8	48.6	30-08-2012 15:40:15	0	0.006	0.181999996	0.227262735
Seep13L1026_28	Seep13L1026_28_30082012_154321.txt	Seep13L1026	1174483.699	3164487.316	8/30/2012	0	0.004996	0.10332	A	781.4	48.7	30-08-2012 15:43:21	0	0.022	0.455000013	0.227075875
Seep13L1026_29	Seep13L1026_29_30082012_154642.txt	Seep13L1026	1174474.079	3164393.803	8/30/2012	0	0.003404	0.223543	A	781.2	48.8	30-08-2012 15:46:42	0	0.015	0.985000014	0.226947248
Seep13L1026_30	Seep13L1026_30_30082012_154955.txt	Seep13L1026	1174476.638	3164340.173	8/30/2012	0	0.002496	0.155686	A	781.2	48.8	30-08-2012 15:49:55	0	0.011	0.68599999	0.226947248
Seep13L1026_31	Seep13L1026_31_30082012_155417.txt	Seep13L1026	1174453.492	3164298.281	8/30/2012	0	0.003859	0.156849	A	781.1	48.7	30-08-2012 15:54:17	0	0.017000001	0.690999985	0.226988703
Seep13L1026_32	Seep13L1026_32_30082012_160047.txt	Seep13L1026	1174469.585	3164287.437	8/30/2012	0	0.001817	0.043604	A	781.5	48.7	30-08-2012 16:00:47	0	0.008	0.192000002	0.227104932
Seep13L1026_33	Seep13L1026_33_30082012_160313.txt	Seep13L1026	1174469.306	3164239.836	8/30/2012	0	0.001363	0.019531	A	781.5	48.7	30-08-2012 16:03:13	0	0.006	0.086000003	0.227104932
Seep13L1026_34	Seep13L1026_34_30082012_160829.txt	Seep13L1026	1174450.529	3164229.886	8/30/2012	0	0.003404	0.048794	A	781.2	48.8	30-08-2012 16:08:29	0	0.015	0.215000004	0.226947248
Seep13L1026_35	Seep13L1026_35_30082012_161204.txt	Seep13L1026	1174427.178	3164183.434	8/30/2012	0	0.002496	0.098256	A	781.1	48.8	30-08-2012 16:12:04	0	0.011	0.432999998	0.226918191
Seep13L1026_36	Seep13L1026_36_30082012_161519.txt	Seep13L1026	1174432.226	3164128.414	8/30/2012	0	0.003175	0.095478	A	780.9	48.9	30-08-2012 16:15:19	0	0.014	0.421000004	0.226789653
Seep13L1026_37	Seep13L1026_37_30082012_161742.txt	Seep13L1026	1174427.82	3164083.101	8/30/2012	0	0.000453	0.004307	A	780.8	49.0	30-08-2012 16:17:42	0	0.002	0.018999999	0.226690218
Seep13L1026_38	Seep13L1026_38_30082012_162010.txt	Seep13L1026	1174435.75	3164038.715	8/30/2012	0	0.002719	0.097648	A	780.6	49.1	30-08-2012 16:20:10	0	0.012	0.430999994	0.226561829
Seep13L1026_39	Seep13L1026_39_30082012_162301.txt	Seep13L1026	1174378.424	3164040.554	8/30/2012	0	0.002265	0.038051	A	780.6	49.2	30-08-2012 16:23:01	0	0.01	0.167999998	0.226491541
Seep13L1026_40	Seep13L1026_40_30082012_162556.txt	Seep13L1026	1174327.021	3164038.274	8/30/2012	0	0.001359	0.054341	A	780.6	49.3	30-08-2012 16:25:56	0	0.006	0.239999995	0.226421297
Seep13L1026_41	Seep13L1026_41_30082012_162831.txt	Seep13L1026	1174330.463	3164088.244	8/30/2012	0	0.002718	0.13203	A	781.0	49.4	30-08-2012 16:28:31	0	0.012	0.583000004	0.226467088
Seep13L1026_42	Seep13L1026_42_30082012_163051.txt	Seep13L1026	1174385.124	3164086.83	8/30/2012	0	0.001585	0.132686	A	781.1	49.5	30-08-2012 16:30:51	0	0.007	0.586000025	0.226425886
Seep13L1026_43	Seep13L1026_43_30082012_163413.txt	Seep13L1026	1174369.889	3164147.748	8/30/2012	0	0.002037	0.043913	A	781.1	49.6	30-08-2012 16:34:13	0	0.009	0.194000006	0.226355731
Seep13L1026_44	Seep13L1026_44_30082012_163719.txt	Seep13L1026	1174328	3164129.166	8/30/2012	0	0.003619	0.064919	A	780.8	49.7	30-08-2012 16:37:19	0	0.016000001	0.287	0.226198703
Seep13L1026_45	Seep13L1026_45_30082012_164014.txt	Seep13L1026	1174366.798	3164191.527	8/30/2012	0	0.004524	0.030761	A	781.0	49.8	30-08-2012 16:40:14	0	0.02	0.136000007	0.226186588
Seep13L1026_46	Seep13L1026_46_30082012_164349.txt	Seep13L1026	1174329.809	3164187.586	8/30/2012	0	0.00407	0.045	A	780.8	49.8	30-08-2012 16:43:49	0	0.017999999	0.199000001	0.226128668
Seep13L1026_47	Seep13L1026_47_30082012_164809.txt	Seep13L1026	1174268.64	3164180.336	8/30/2012	0	0.004972	0.084303	A	780.4	49.8	30-08-2012 16:48:09	0	0.022	0.372999996	0.226012826
Seep13L1026_48	Seep13L1026_48_30082012_165656.txt	Seep13L1026	1174278.143	3164231.965	8/30/2012	0.681888	0.001357	0.278995	A	779.7	49.4	30-08-2012 16:56:56	3.016000032	0.006	1.233999968	0.226090133
Seep13L1026_49	Seep13L1026_49_30082012_170242.txt	Seep13L1026	1174205.593	3164240.725	8/30/2012	0	0.005438	0.093578	A	779.7	48.7	30-08-2012 17:02:42	0	0.024	0.412999988	0.226581857
Seep13L1026_50	Seep13L1026_50_30082012_170545.txt	Seep13L1026	1174223.901	3164192.669	8/30/2012	0	0.005438	0.121905	A	779.0	48.4	30-08-2012 17:05:45	0	0.024	0.537999988	0.22658965
Seep13L1026_51	Seep13L1026_51_30082012_171000.txt	Seep13L1026	1174235.3	3164293.684	8/30/2012	0	0.006131	0.106718	A	779.4	47.9	30-08-2012 17:10:00	0	0.027000001	0.469999999	0.227059066
Seep13L1026_52	Seep13L1026_52_30082012_171429.txt	Seep13L1026	1174236.959	3164232.458	8/30/2012	0	0.000455	0.064549	A	779.2	47.5	30-08-2012 17:14:29	0	0.002	0.284000009	0.22728397
Seep13L1026_53	Seep13L1026_53_30082012_171706.txt	Seep13L1026	1174275.776	3164294.492	8/30/2012	0	0.00273	0.121726	A	779.3	47.2	30-08-2012 17:17:06	0	0.012	0.535000026	0.227526009
Seep13L1026_54	Seep13L1026_54_30082012_171924.txt	Seep13L1026	1174317.798	3164280.647	8/30/2012	0	0.002734	0.07337	A	779.7	46.9	30-08-2012 17:19:24	0	0.012	0.321999997	0.227856174
Seep13L1026_55	Seep13L1026_55_30082012_172209.txt	Seep13L1026	1174331.165	3164227.371	8/30/2012	0	0.001369	0.214213	A	779.9	46.6	30-08-2012 17:22:09	0	0.006	0.93900001	0.228128463
Seep13L1026_56	Seep13L1026_56_30082012_172648.txt	Seep13L1026	1174372.736	3164238.947	8/30/2012	0	0.002061	0.123403	A	780.5	45.7	30-08-2012 17:26:48	0	0.009	0.538999975	0.228948385
Seep13L1026_57	Seep13L1026_57_30082012_173049.txt	Seep13L1026	1174377.505	3164288.219	8/30/2012	0	0.003441	0.103909	A	780.5	45.1	30-08-2012 17:30:49	0	0.015	0.453000009	0.229380026
Seep13L1026_58	Seep13L1026_58_30082012_173408.txt	Seep13L1026	1174425.933	3164239.653	8/30/2012	0	0.005513	0.214783	A	780.9	44.8	30-08-2012 17:34:08	0	0.024	0.935000002	0.229714125
Seep13L1026_59	Seep13L1026_59_30082012_173645.txt	Seep13L1026	1174425.29	3164278.015	8/30/2012	0	0.002991	0.054061	A	781.3	44.5	30-08-2012 17:36:45	0	0.013	0.234999999	0.23004885
Seep13L1026_60	Seep13L1026_60_30082012_174019.txt	Seep13L1026	1174427.498	3164332.427	8/30/2012	0	0.002762	0.14272	A	781.3	44.3	30-08-2012 17:40:19	0	0.012	0.620000005	0.230193794
Seep13L1026_61	Seep13L1026_61_30082012_174356.txt	Seep13L1026	1174433.594	3164396.255	8/30/2012	0	0.001612	0.019802	A	781.5	44.3	30-08-2012 17:43:56	0	0.007	0.086000003	0.230252713
Seep14_01	Seep14_01_30082012_112643.txt	Seep14	1169475.679	3156554.94	8/30/2012	0	0.001665	0.057314	A	770.3	29.8	30-08-2012 11:26:43	0	0.007	0.240999997	0.23781544
Seep14_02	Seep14_02_30082012_113005.txt	Seep14	1169464.932	3156616.122	8/30/2012	0	0.007593	0.096568	A	770.3	30.5	30-08-2012 11:30:05	0	0.032000002	0.407000005	0.237267211
Seep14_03	Seep14_03_30082012_113232.txt	Seep14	1169462.705	3156670.48	8/30/2012	0	0.002613	0.024465	A	772.4	31.0	30-08-2012 11:32:32	0	0.011	0.103	0.23752293
Seep14_04	Seep14_04_30082012_113522.txt	Seep14	1169413.097	3156659.967	8/30/2012	0	0.00166	0.174755	A	772.6	31.6	30-08-2012 11:35:22	0	0.007	0.736999989	0.23711668
Seep14_05	Seep14_05_30082012_113813.txt	Seep14	1169391.72	3156721.092	8/30/2012	0	0.001183	0.05558	A	772.4	32.3	30-08-2012 11:38:13	0	0.005	0.234999999	0.236512035
Seep14_06	Seep14_06_30082012_114132.txt	Seep14	1169352.315	3156716.396	8/30/2012	0	0.001653	0.1426	A	772.8	33.0	30-08-2012 11:41:32	0	0.007	0.603999972	0.236093462
Seep14_07	Seep14_07_30082012_114430.txt	Seep14	1169357.402	3156662.572	8/30/2012	0	0.002119	0.07653	A	772.8	33.8	30-08-2012 11:44:30	0	0.009	0.324999988	0.235478133
Seep14_08	Seep14_08_30082012_114839.txt	Seep14	1169316.05	3156672.285	8/30/2012	0	0.003519	0.215355	A	772.4	34.8	30-08-2012 11:48:39	0	0.015	0.917999983	0.234591991
Seep14_09	Seep14_09_30082012_115206.txt	Seep14	1169308.47	3156721.16	8/30/2012	0	0.003975	0.166712	A	772.6	35.9	30-08-2012 11:52:06	0	0.017000001	0.713	0.233817533
Seep14_10	Seep14_10_30082012_115509.txt	Seep14	1169265.97	3156657.397	8/30/2012	0	0.011892	0.086272	A	772.7	36.8	30-08-2012 11:55:09	0	0.050999999	0.370000005	0.233168766
Seep14_11	Seep14_11_30082012_115812.txt	Seep14	1169211.357	3156673.871	8/30/2012	0	0.007909	0.184928	A	772.6	37.5	30-08-2012 11:58:12	0	0.034000002	0.795000017	0.232613251
Seep14_12	Seep14_12_30082012_120116.txt	Seep14	1169156.212	3156663.92	8/30/2012	0	0.002554	0.081274	A	773.0	38.2	30-08-2012 12:01:16	0	0.011	0.349999994	0.232210442
Seep14_13	Seep14_13_30082012_120506.txt	Seep14	1169097.515	3156672.902	8/30/2012	0	0.002085	0.177497	A	773.1	38.9	30-08-2012 12:05:06	0	0.009	0.765999973	0.231719509
Seep14_14	Seep14_14_30082012_120924.txt	Seep14	1169031.717	3156648.639	8/30/2012	0	0.004857	0.312915	A	773.1	39.5	30-08-2012 12:09:24	0	0.021	1.353000045	0.231274813
Seep14_15	Seep14_15_30082012_121317.txt	Seep14	1169011.017	3156589.347	8/30/2012	0	0.003922	0.261135	A	773.1	40.3	30-08-2012 12:13:17	0	0.017000001	1.131999969	0.230684549
Seep14_16	Seep14_16_30082012_121609.txt	Seep14	1168947.834	3156516.837	8/30/2012	0	0.001842	0.047891	A	773.1	40.9	30-08-2012 12:16:09	0	0.008	0.208000004	0.230243817
Seep14_17	Seep14_17_30082012_122014.txt	Seep14	1168896.4	3156452.106	8/30/2012	0	0.000689	0.088659	A	772.7	41.5	30-08-2012 12:20:14	0	0.003	0.386000007	0.229685873
Seep14_18	Seep14_18_30082012_122427.txt	Seep14	1168906.183	3156410.219	8/30/2012	0	0.00504	0.436436	A	772.2	42.1	30-08-2012 12:24:27	0	0.022	1.904999971	0.229100376
Seep14_19	Seep14_19_30082012_122813.txt	Seep14	1168894.815	3156355.067	8/30/2012	0	0.001828	0.083181	A	772.2	42.9	30-08-2012 12:28:13	0	0.008	0.363999993	0.228520468

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep14_20	Seep14_20_30082012_123133.txt	Seep14	1168947.621	3156360.578	8/30/2012	0	0.003418	0.099577	A	771.2	43.4	30-08-2012 12:31:33	0	0.015	0.437000006	0.227864057
Seep14_21	Seep14_21_30082012_123405.txt	Seep14	1168996.885	3156358.835	8/30/2012	0	0.002731	0.106051	A	771.2	43.8	30-08-2012 12:34:05	0	0.012	0.465999991	0.227576479
Seep14_22	Seep14_22_30082012_123747.txt	Seep14	1169053.176	3156413.333	8/30/2012	0	0.002726	0.091772	A	771.0	44.3	30-08-2012 12:37:47	0	0.012	0.404000014	0.227159113
Seep14_23	Seep14_23_30082012_124043.txt	Seep14	1168996.891	3156414.941	8/30/2012	0	0.004542	0.064494	A	771.5	44.6	30-08-2012 12:40:43	0	0.02	0.284000009	0.227091819
Seep14_24	Seep14_24_30082012_124331.txt	Seep14	1168956.989	3156406.817	8/30/2012	0	0.003857	0.060127	A	771.8	45.0	30-08-2012 12:43:31	0	0.017000001	0.264999986	0.226894498
Seep14_25	Seep14_25_30082012_124637.txt	Seep14	1168958.328	3156445.792	8/30/2012	0	0.005441	0.220589	A	771.9	45.3	30-08-2012 12:46:37	0	0.024	0.97299999	0.226710111
Seep14_26	Seep14_26_30082012_124913.txt	Seep14	1168994.635	3156453.372	8/30/2012	0	0.004077	0.075433	A	772.0	45.6	30-08-2012 12:49:13	-0.001	0.017999999	0.333000004	0.226526082
Seep14_27	Seep14_27_30082012_125200.txt	Seep14	1169052.829	3156459.426	8/30/2012	0	0.010181	0.104982	A	771.8	45.9	30-08-2012 12:52:00	0	0.045000002	0.463999987	0.226254448
Seep14_28	Seep14_28_30082012_125531.txt	Seep14	1169002.218	3156505.549	8/30/2012	0	0.009039	0.139432	A	771.6	46.2	30-08-2012 12:55:31	0	0.039999999	0.616999984	0.225983337
Seep14_29	Seep14_29_30082012_125902.txt	Seep14	1169060.744	3156510.581	8/30/2012	0	0.002938	0.067793	A	772.3	46.5	30-08-2012 12:59:02	0	0.013	0.300000012	0.225976065
Seep14_30	Seep14_30_30082012_130201.txt	Seep14	1169108.163	3156515.853	8/30/2012	0	0.002935	0.073142	A	772.0	46.7	30-08-2012 13:02:01	0	0.013	0.324000001	0.225747034
Seep14_31	Seep14_31_30082012_130503.txt	Seep14	1169117.671	3156557.165	8/30/2012	0	0.00203	0	A	771.9	46.9	30-08-2012 13:05:03	0	0.009	-0.122000001	0.225576743
Seep14_32	Seep14_32_30082012_130800.txt	Seep14	1169106.93	3156613.474	8/30/2012	0	0.001353	0.025935	A	772.2	47.1	30-08-2012 13:08:00	0	0.006	0.115000002	0.225523487
Seep14_33	Seep14_33_30082012_131035.txt	Seep14	1169164.19	3156611.758	8/30/2012	0	0.000451	0.029533	A	772.4	47.3	30-08-2012 13:10:35	0	0.002	0.130999997	0.225441098
Seep14_34	Seep14_34_30082012_131311.txt	Seep14	1169177.823	3156563.943	8/30/2012	0	0.002252	0.097522	A	771.9	47.4	30-08-2012 13:13:11	0	0.01	0.432999998	0.225224882
Seep14_35	Seep14_35_30082012_131618.txt	Seep14	1169165.081	3156512.259	8/30/2012	0	0.007654	0.118191	A	771.8	47.5	30-08-2012 13:16:18	0	0.034000002	0.524999976	0.225125477
Seep14_36	Seep14_36_30082012_131857.txt	Seep14	1169211.341	3156511.046	8/30/2012	0	0.004722	0.120536	A	771.2	47.6	30-08-2012 13:18:57	0	0.021	0.536000013	0.224880323
Seep14_37	Seep14_37_30082012_132150.txt	Seep14	1169219.57	3156557.286	8/30/2012	0	0.00809	0.107412	A	771.1	47.8	30-08-2012 13:21:50	0	0.035999998	0.477999985	0.224711046
Seep14_38	Seep14_38_30082012_132735.txt	Seep14	1169213.351	3156616.875	8/30/2012	0	0.000449	0.013259	A	771.4	47.9	30-08-2012 13:27:35	0	0.002	0.059	0.22472845
Seep14_39	Seep14_39_30082012_133029.txt	Seep14	1169263.693	3156610.313	8/30/2012	0	0.002472	0	A	771.9	48.1	30-08-2012 13:30:29	0	0.011	-0.022	0.224734128
Seep14_40	Seep14_40_30082012_133335.txt	Seep14	1169268.851	3156561.686	8/30/2012	0	0.00247	0.084419	A	771.4	48.2	30-08-2012 13:33:35	0	0.011	0.375999987	0.224518657
Seep14_41	Seep14_41_30082012_133653.txt	Seep14	1169312.098	3156559.09	8/30/2012	0	0.003816	0.002918	A	771.5	48.3	30-08-2012 13:36:53	0	0.017000001	0.013	0.224477917
Seep14_42	Seep14_42_30082012_134016.txt	Seep14	1169308.983	3156609.184	8/30/2012	0	0.006727	0.186553	A	771.1	48.5	30-08-2012 13:40:16	0	0.029999999	0.832000017	0.224222019
Seep14_43	Seep14_43_30082012_134305.txt	Seep14	1169372.967	3156611.638	8/30/2012	0	0.003588	0.135665	A	771.4	48.6	30-08-2012 13:43:05	0	0.016000001	0.605000019	0.224239543
Seep14_44	Seep14_44_30082012_134525.txt	Seep14	1169410.496	3156606.745	8/30/2012	0	0.004709	0.252929	A	771.6	48.7	30-08-2012 13:45:25	0	0.021	1.128000021	0.22422798
Seep14_45	Seep14_45_30082012_134752.txt	Seep14	1169421.29	3156558.548	8/30/2012	0	0.006273	0.056683	A	771.2	48.8	30-08-2012 13:47:52	0	0.028000001	0.252999991	0.224042132
Seep14_46	Seep14_46_30082012_135023.txt	Seep14	1169367.949	3156559.141	8/30/2012	0	0.002463	0.097851	A	771.0	48.9	30-08-2012 13:50:23	0	0.011	0.437000006	0.223914489
Seep15_01	Seep15_01_29082012_085314.txt	Seep15	1146536.097	3161605.796	8/29/2012	0	0.000251	0.021577	A	782.1	18.4	29-08-2012 08:53:14	0	0.001	0.086000003	0.250899822
Seep15_02	Seep15_02_29082012_085833.txt	Seep15	1146551.619	3161365.448	8/29/2012	0	0.001245	0.110067	A	782.1	20.6	29-08-2012 08:58:33	0	0.005	0.442000002	0.24902074
Seep15_03	Seep15_03_29082012_090301.txt	Seep15	1146563.771	3161316.466	8/29/2012	0	0.000494	0.042983	A	780.6	22.4	29-08-2012 09:03:01	0	0.002	0.173999995	0.247029424
Seep15_04	Seep15_04_29082012_090722.txt	Seep15	1146567.784	3161272.965	8/29/2012	0	0.000983	0.170573	A	780.6	23.9	29-08-2012 09:07:22	0	0.004	0.694000006	0.245782018
Seep15_05	Seep15_05_29082012_091047.txt	Seep15	1146568.324	3161221.84	8/29/2012	0	0.000734	0	A	780.6	25.2	29-08-2012 09:10:47	0	0.003	-0.071999997	0.244711071
Seep15_06	Seep15_06_29082012_091618.txt	Seep15	1146559.474	3161167.334	8/29/2012	0	0.000244	0.064572	A	780.4	26.4	29-08-2012 09:16:18	0	0.001	0.264999986	0.243668303
Seep15_07	Seep15_07_29082012_092006.txt	Seep15	1146563.999	3161110.128	8/29/2012	0	0.000243	0.01554	A	780.5	27.5	29-08-2012 09:20:06	0	0.001	0.064000003	0.242807895
Seep15_08	Seep15_08_29082012_092434.txt	Seep15	1146563.037	3161001.666	8/29/2012	0	0.000242	0	A	780.4	28.5	29-08-2012 09:24:34	0	0.001	-0.078000002	0.241971955
Seep15_09	Seep15_09_29082012_093045.txt	Seep15	1146462.181	3161009.051	8/29/2012	0	0.000241	0.004824	A	780.8	29.6	29-08-2012 09:30:45	-0.02	0.001	0.02	0.241216362
Seep15_10	Seep15_10_29082012_093513.txt	Seep15	1146504.472	3161154.717	8/29/2012	0	0	0.007203	A	780.8	31.0	29-08-2012 09:35:13	0	0	0.029999999	0.240106046
Seep15_11	Seep15_11_29082012_093909.txt	Seep15	1146497.738	3161202.968	8/29/2012	0	0.000239	0	A	781.1	32.0	29-08-2012 09:39:09	-0.105999999	0.001	-0.026000001	0.239411145
Seep15_12	Seep15_12_29082012_094143.txt	Seep15	1146502.76	3161257.399	8/29/2012	0	0	0.098999	A	781.1	33.1	29-08-2012 09:41:43	0	0	0.414999992	0.238551229
Seep15_13	Seep15_13_29082012_094357.txt	Seep15	1146506.161	3161304.412	8/29/2012	0	0	0	A	781.2	33.8	29-08-2012 09:43:57	0	0	-0.071000002	0.238037676
Seep15_14	Seep15_14_29082012_094650.txt	Seep15	1146499.932	3161361.574	8/29/2012	0	0.000237	0	A	781.1	34.6	29-08-2012 09:46:50	0	0.001	-0.067000002	0.237388507
Seep15_15	Seep15_15_29082012_095005.txt	Seep15	1146404.511	3161334.408	8/29/2012	0	0	0	A	781.1	35.4	29-08-2012 09:50:05	0	0	-0.041999999	0.236773014
Seep15_16	Seep15_16_29082012_095320.txt	Seep15	1146406.301	3161194.407	8/29/2012	0	0	0	A	782.0	36.2	29-08-2012 09:53:20	0	0	-0.584999979	0.236432806
Seep15_17	Seep15_17_29082012_095712.txt	Seep15	1146304.892	3161023.032	8/29/2012	0	0.000471	0.045924	A	781.2	37.1	29-08-2012 09:57:12	0	0.002	0.194999993	0.235505775
Seep15_18	Seep15_18_29082012_100112.txt	Seep15	1146274.825	3161105.317	8/29/2012	0	0.00047	0	A	781.3	37.9	29-08-2012 10:01:12	0	0.002	-0.209999993	0.234930143
Seep15_19	Seep15_19_29082012_100557.txt	Seep15	1146304.164	3161302.194	8/29/2012	0	0.000703	0.033025	A	781.2	38.8	29-08-2012 10:05:57	0	0.003	0.141000003	0.234222367
Seep15_20	Seep15_20_29082012_101009.txt	Seep15	1146272.365	3161472.276	8/29/2012	0	0.000935	0.070375	A	781.3	39.4	29-08-2012 10:10:09	0	0.004	0.300999999	0.233802646
Seep15_21	Seep15_21_29082012_101340.txt	Seep15	1146309.473	3161618.622	8/29/2012	0	0.000233	0	A	781.3	39.9	29-08-2012 10:13:40	0	0.001	-0.105999999	0.233429223
Seep15_22	Seep15_22_29082012_101635.txt	Seep15	1146403.68	3161673.574	8/29/2012	0	0	0	A	781.5	40.2	29-08-2012 10:16:35	0	0	-0.156000003	0.23326543
Seep15_23	Seep15_23_29082012_101929.txt	Seep15	1146453.002	3161572.366	8/29/2012	0	0	0	A	781.2	40.6	29-08-2012 10:19:29	0	-0.001	-0.156000003	0.23287861
Seep17_01	Seep17_01_28082012_132451.txt	Seep17	1144801.893	3159124.251	8/28/2012	0	0.005195	0.14342	A	776.0	48.2	28-08-2012 13:24:51	0	0.023	0.63499999	0.225857511
Seep17_02	Seep17_02_28082012_132911.txt	Seep17	1144876.659	3159218.212	8/28/2012	0	0.00271	0.017842	A	776.2	48.3	28-08-2012 13:29:11	0	0.012	0.079000004	0.225845441
Seep17_03	Seep17_03_28082012_133310.txt	Seep17	1144944.711	3159299.015	8/28/2012	0	0.007227	0.351171	A	776.4	48.4	28-08-2012 13:33:10	0	0.032000002	1.554999948	0.225833371
Seep17_04	Seep17_04_28082012_133731.txt	Seep17	1144928.159	3159368.782	8/28/2012	0	0.001355	0.338237	A	776.5	48.5	28-08-2012 13:37:31	0	0.006	1.498000026	0.225792244
Seep17_05	Seep17_05_28082012_134010.txt	Seep17	1144969.46	3159357.756	8/28/2012	0	0.00451	0.086599	A	775.8	48.6	28-08-2012 13:40:10	0	0.02	0.384000003	0.225518584
Seep17_06	Seep17_06_28082012_134356.txt	Seep17	1144989.76	3159388.643	8/28/2012	0	0.005863	0.060661	A	776.0	48.7	28-08-2012 13:43:56	0	0.026000001	0.268999994	0.225506634
Seep17_07	Seep17_07_28082012_134839.txt	Seep17	1145031.897	3159479.461	8/28/2012	0	0.01194	0.227983	A	775.7	48.9	28-08-2012 13:48:39	0	0.052999999	1.011999965	0.225279465
Seep17_08	Seep17_08_28082012_135237.txt	Seep17	1145105.452	3159548.704	8/28/2012	0	0.002701	0.253038	A	775.4	49.0	28-08-2012 13:52:37	0	0.012	1.123999953	0.225122437
Seep17_09	Seep17_09_28082012_135748.txt	Seep17	1145232.783	3159628.834	8/28/2012	0	0.003827	0.212504	A	775.6	49.1	28-08-2012 13:57:48	0	0.017000001	0.944000006	0.22511062
Seep17_10	Seep17_10_28082012_140140.txt	Seep17	1145314.567	3159590.954	8/28/2012	0	0.009009	0.060136	A	776.0	49.1	28-08-2012 14:01:40	0	0.039999999	0.26699999	0.225226715
Seep17_11	Seep17_11_28082012_140611.txt	Seep17	1145229.856	3159463.113	8/28/2012	0	0.006316	0.407184	A	777.0	49.0	28-08-2012 14:06:11	0	0.028000001	1.804999948	0.225586966
Seep17_12	Seep17_12_28082012_141118.txt	Seep17	1145252.418	3159414.663	8/28/2012	0	0.0079	0.258909	A	777.0	48.8	28-08-2012 14:11:18	0	0.035	1.146999955	0.225727096
Seep17_13	Seep17_13_28082012_141525.txt	Seep17	1145292.28	3159406.372	8/28/2012	0	0.00384	0.254139	A	777.6	48.8	28-08-2012 14:15:25	0	0.017000001	1.125	0.22590141
Seep17_14	Seep17_14_28082012_142108.txt	Seep17	1145260.117	3159369.147	8/28/2012	0	0.00294	0.19244	A	778.4	48.8	28-08-2012 14:21:08	0	0.013	0.851000011	0.226133808
Seep17_15	Seep17_15_28082012_142753.txt	Seep17	1145160.727	3159390.52	8/28/2012	0	0.002944	0.081063	A	778.7	48.5	28-08-2012 14:27:53	0	0.013	0.35800001	0.226431966

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep17_16	Seep17_16_28082012_143207.txt	Seep17	1145048.612	3159296.041	8/28/2012	0	0.00837	0.058588	A	777.2	48.2	28-08-2012 14:32:07	0	0.037	0.259000003	0.226206765
Seep17_17	Seep17_17_28082012_143501.txt	Seep17	1144994.306	3159291.734	8/28/2012	0	0.010627	0.35679	A	776.6	48.1	28-08-2012 14:35:01	0	0.046999998	1.577999949	0.226102501
Seep17_18	Seep17_18_28082012_143946.txt	Seep17	1145043.924	3159236.889	8/28/2012	0	0.003845	0.808508	A	776.3	47.9	28-08-2012 14:39:46	0	0.017000001	3.575000048	0.226155952
Seep17_19	Seep17_19_28082012_144308.txt	Seep17	1145017.949	3159177.438	8/28/2012	0	0.00634	0.419802	A	777.0	47.8	28-08-2012 14:43:08	0	0.028000001	1.853999972	0.226430401
Seep17_20	Seep17_20_28082012_144659.txt	Seep17	1144983.803	3159113.57	8/28/2012	0	0.002716	0.336529	A	776.6	47.8	28-08-2012 14:46:59	0	0.012	1.486999989	0.226313844
Seep17_21	Seep17_21_28082012_145006.txt	Seep17	1144912.079	3159115.357	8/28/2012	0	0.00181	0.145022	A	776.6	47.9	28-08-2012 14:50:06	0	0.008	0.640999973	0.226243347
Seep17_22	Seep17_22_28082012_145324.txt	Seep17	1144929.425	3159182.786	8/28/2012	0	0.00475	0.342871	A	776.1	47.8	28-08-2012 14:53:24	0	0.021	1.516000032	0.226168141
Seep17_23	Seep17_23_28082012_145921.txt	Seep17	1144928.323	3159067.674	8/28/2012	0	0.003847	0.236719	A	776.1	47.6	28-08-2012 14:59:21	0	0.017000001	1.046000004	0.226309165
Seep17_24	Seep17_24_28082012_150422.txt	Seep17	1144959.993	3159001.313	8/28/2012	0	0.002494	0.258467	A	776.8	47.3	28-08-2012 15:04:22	0	0.011	1.139999986	0.22672534
Seep17_25	Seep17_25_28082012_150946.txt	Seep17	1145012.662	3159013.859	8/28/2012	0	0.002269	0.427472	A	776.9	47.1	28-08-2012 15:09:46	0	0.01	1.883999944	0.226896137
Seep17_26	Seep17_26_28082012_151344.txt	Seep17	1145019.95	3159095.012	8/28/2012	0	0.011359	0.122454	A	777.9	47.1	28-08-2012 15:13:44	0	0.050000001	0.538999975	0.227188185
Seep17_27	Seep17_27_28082012_151727.txt	Seep17	1145064.455	3159075.416	8/28/2012	0	0.003628	0.676359	A	776.6	47.2	28-08-2012 15:17:27	0	0.016000001	2.98300004	0.226737723
Seep17_28	Seep17_28_28082012_152129.txt	Seep17	1145084.217	3159149.422	8/28/2012	0	0.003855	0.46536	A	777.0	47.3	28-08-2012 15:21:29	0	0.017000001	2.052000046	0.226783708
Seep17_29	Seep17_29_28082012_152455.txt	Seep17	1145107.434	3159184.901	8/28/2012	0	0.008612	0.592669	A	777.0	47.5	28-08-2012 15:24:55	0	0.037999999	2.61500001	0.226642251
Seep17_30	Seep17_30_28082012_152948.txt	Seep17	1145147.655	3159248.702	8/28/2012	0	0.004757	0.134995	A	777.0	47.7	28-08-2012 15:29:48	0	0.021	0.596000016	0.226500973
Seep17_31	Seep17_31_28082012_153409.txt	Seep17	1145174.916	3159276.14	8/28/2012	0	0.003851	0.39683	A	777.0	47.7	28-08-2012 15:34:09	0	0.017000001	1.751999974	0.226500973
Seep17_32	Seep17_32_28082012_154510.txt	Seep17	1145194.558	3159029.213	8/28/2012	0	0.002952	0.050634	A	777.7	47.2	28-08-2012 15:45:10	0	0.013	0.223000005	0.227058873
Seep17_33	Seep17_33_28082012_154847.txt	Seep17	1145124.211	3159001.356	8/28/2012	0	0.002499	0.171751	A	777.4	46.9	28-08-2012 15:48:47	0	0.011	0.755999982	0.227184042
Seep17_34	Seep17_34_28082012_155245.txt	Seep17	1145260.392	3159132.466	8/28/2012	0	0.004774	0.07821	A	777.5	46.7	28-08-2012 15:52:45	0	0.021	0.344000012	0.227355331
Seep17_35	Seep17_35_28082012_155838.txt	Seep17	1145344.457	3159076.939	8/28/2012	0	0.00455	0.069159	A	777.5	46.5	28-08-2012 15:58:38	0	0.02	0.30399999	0.227497593
Seep17_36	Seep17_36_28082012_160108.txt	Seep17	1145324.647	3159056.483	8/28/2012	0	0.00227	0.003178	A	775.7	46.5	28-08-2012 16:01:08	0	0.01	0.014	0.226970911
Seep17_37	Seep17_37_28082012_160527.txt	Seep17	1145374.041	3159184.234	8/28/2012	0	0.003859	0.092162	A	775.8	46.5	28-08-2012 16:05:27	0	0.017000001	0.405999988	0.227000162
Seep17_38	Seep17_38_28082012_161139.txt	Seep17	1145511.287	3159302.546	8/28/2012	0	0.00227	0.058113	A	776.3	46.7	28-08-2012 16:11:39	0	0.01	0.256000012	0.227004439
Seep18_01	Seep18_01_28082012_112802.txt	Seep18	1144464.855	3158249.599	8/28/2012	0	0.002802	0.109287	A	783.1	40.5	28-08-2012 11:28:02	0	0.012	0.467999995	0.233519435
Seep18_02	Seep18_02_28082012_113132.txt	Seep18	1144506.305	3158243.823	8/28/2012	0	0.003003	0.078993	A	775.3	40.8	28-08-2012 11:31:32	0	0.013	0.342000008	0.230972573
Seep18_03	Seep18_03_28082012_113440.txt	Seep18	1144544.464	3158252.535	8/28/2012	0	0.001848	0.08568	A	775.7	41.0	28-08-2012 11:34:40	0	0.008	0.370999992	0.230944619
Seep18_04	Seep18_04_28082012_113814.txt	Seep18	1144550.795	3158294.256	8/28/2012	0	0.00346	0.064817	A	775.5	41.3	28-08-2012 11:38:14	0	0.015	0.280999988	0.23066479
Seep18_05	Seep18_05_28082012_115109.txt	Seep18	1144497.318	3158292.748	8/28/2012	0	0.001839	0.138846	A	775.8	42.5	28-08-2012 11:51:09	0	0.008	0.603999972	0.229876772
Seep18_06	Seep18_06_28082012_115555.txt	Seep18	1144451.591	3158297.742	8/28/2012	0	0.004356	0.4585	A	775.4	43.2	28-08-2012 11:55:55	0	0.018999999	2	0.22924985
Seep18_07	Seep18_07_28082012_115838.txt	Seep18	1144458.884	3158357.588	8/28/2012	0	0.007098	0.112877	A	775.4	43.6	28-08-2012 11:58:38	0	0.030999999	0.493000001	0.22896035
Seep18_08	Seep18_08_28082012_120208.txt	Seep18	1144502.63	3158345.191	8/28/2012	0	0.004116	0.121425	A	775.4	44.0	28-08-2012 12:02:08	0	0.017999999	0.531000018	0.228671581
Seep18_09	Seep18_09_28082012_120557.txt	Seep18	1144554.194	3158358.094	8/28/2012	0	0.00548	0.113035	A	775.3	44.4	28-08-2012 12:05:57	-0.059	0.024	0.495000005	0.228354082
Seep18_10	Seep18_10_28082012_121007.txt	Seep18	1144598.659	3158320.778	8/28/2012	0	0.001597	0.133233	A	775.3	44.7	28-08-2012 12:10:07	-0.016000001	0.007	0.583999991	0.228138551
Seep18_11	Seep18_11_28082012_121428.txt	Seep18	1144598.844	3158420.309	8/28/2012	0	0.002508	0.074778	A	775.5	45.0	28-08-2012 12:14:28	-0.174999997	0.011	0.328000009	0.227982223
Seep18_12	Seep18_12_28082012_121925.txt	Seep18	1144474.015	3158480.74	8/28/2012	0	0.002733	0.082907	A	775.5	45.3	28-08-2012 12:19:25	0	0.012	0.363999993	0.227767453
Seep18_13	Seep18_13_28082012_122241.txt	Seep18	1144395.425	3158515.32	8/28/2012	0	0.001821	0.137002	A	775.1	45.4	28-08-2012 12:22:41	0	0.008	0.601999998	0.227578506
Seep18_14	Seep18_14_28082012_122624.txt	Seep18	1144371.579	3158612.34	8/28/2012	0	0.003869	0.208466	A	775.6	45.6	28-08-2012 12:26:24	0	0.017000001	0.916000009	0.227582425
Seep18_15	Seep18_15_28082012_122937.txt	Seep18	1144421.67	3158726.141	8/28/2012	0	0.007734	0.207679	A	775.7	45.8	28-08-2012 12:29:37	0	0.034000002	0.912999988	0.227469042
Seep18_16	Seep18_16_28082012_123432.txt	Seep18	1144564.37	3158835.851	8/28/2012	0	0.002728	0.1673	A	775.4	45.9	28-08-2012 12:34:32	0	0.012	0.736000001	0.227309793
Seep18_17	Seep18_17_28082012_123828.txt	Seep18	1144553.639	3158781.317	8/28/2012	0	0.006137	0.383884	A	775.8	46.1	28-08-2012 12:38:28	0	0.027000001	1.68900001	0.22728458
Seep18_18	Seep18_18_28082012_124159.txt	Seep18	1144559.965	3158727.419	8/28/2012	0	0.009086	0.361383	A	775.8	46.3	28-08-2012 12:41:59	0	0.039999999	1.590999961	0.227142289
Seep18_19	Seep18_19_28082012_124509.txt	Seep18	1144609.955	3158741.481	8/28/2012	0	0.002951	0.148231	A	775.8	46.5	28-08-2012 12:45:09	-0.061999999	0.013	0.652999997	0.227000162
Seep18_20	Seep18_20_28082012_124933.txt	Seep18	1144602.396	3158784.525	8/28/2012	0	0.00295	0.390246	A	775.9	46.7	28-08-2012 12:49:33	0	0.013	1.720000029	0.226887465
Seep18_21	Seep18_21_28082012_125341.txt	Seep18	1144612.048	3158839.601	8/28/2012	0	0.003401	0.126961	A	775.8	46.9	28-08-2012 12:53:41	-0.163000003	0.015	0.560000002	0.226716459
Seep18_22	Seep18_22_28082012_125633.txt	Seep18	1144657.97	3158833.252	8/28/2012	0	0.006118	0.205503	A	775.8	47.1	28-08-2012 12:56:33	0	0.027000001	0.907000005	0.226574868
Seep18_23	Seep18_23_28082012_125953.txt	Seep18	1144685.929	3158786.184	8/28/2012	0	0.002717	0.147389	A	775.7	47.3	28-08-2012 12:59:53	0	0.012	0.651000023	0.226404279
Seep18_24	Seep18_24_28082012_130417.txt	Seep18	1144662.421	3158740.116	8/28/2012	0	0.006567	0.514948	A	776.1	47.4	28-08-2012 13:04:17	0	0.028999999	2.273999929	0.226450354
Seep18_25	Seep18_25_28082012_130809.txt	Seep18	1144742.049	3158739.044	8/28/2012	0	0.007242	0.31638	A	776.1	47.6	28-08-2012 13:08:09	0	0.032000002	1.398000002	0.226309165
Seep18_26	Seep18_26_28082012_131341.txt	Seep18	1144768.228	3158839.262	8/28/2012	0	0.001131	0.357031	A	776.4	47.8	28-08-2012 13:13:41	-0.046	0.005	1.577999949	0.226255566
Seep18_27	Seep18_27_28082012_131743.txt	Seep18	1144703.669	3158863.462	8/28/2012	0	0.002939	0.188531	A	776.2	48.0	28-08-2012 13:17:43	0	0.013	0.833999991	0.226056412
Seep19_01	Seep19_01_28082012_095708.txt	Seep19	1146464.118	3158675.134	8/28/2012	0	0.0005	0.199867	A	784.3	20.1	28-08-2012 09:57:08	0	0.002	0.799000025	0.250147015
Seep19_02	Seep19_02_28082012_100047.txt	Seep19	1146453.371	3158738.871	8/28/2012	0	0.001742	0.350912	A	784.3	21.6	28-08-2012 10:00:47	0	0.007	1.409999967	0.248873994
Seep19_03	Seep19_03_28082012_100531.txt	Seep19	1146327.192	3158826.27	8/28/2012	0	0.000989	0.413871	A	783.1	23.1	28-08-2012 10:05:31	0	0.004	1.674000025	0.247235015
Seep19_04	Seep19_04_28082012_100845.txt	Seep19	1146382.332	3158882.068	8/28/2012	0	0	0.085926	A	783.0	24.3	28-08-2012 10:08:45	0	-0.001	0.349000007	0.246206149
Seep19_05	Seep19_05_28082012_101409.txt	Seep19	1146485.354	3158875.642	8/28/2012	0	0.003185	0.095784	A	783.0	25.8	28-08-2012 10:14:09	-0.393999994	0.013	0.391000003	0.244970798
Seep19_06	Seep19_06_28082012_101832.txt	Seep19	1146488.064	3158912.075	8/28/2012	0.296307	0.001218	0.032652	A	782.5	27.2	28-08-2012 10:18:32	1.215999961	0.005	0.134000003	0.243673235
Seep19_07	Seep19_07_28082012_102152.txt	Seep19	1146511.589	3158906.388	8/28/2012	0	0.001457	0.034715	A	782.7	28.4	28-08-2012 10:21:52	0	0.006	0.143000007	0.242765576
Seep19_08	Seep19_08_28082012_102552.txt	Seep19	1146517.479	3158858.351	8/28/2012	0	0.002174	0.100467	A	782.0	29.7	28-08-2012 10:25:52	0	0.009	0.416000009	0.241507307
Seep19_09	Seep19_09_28082012_103103.txt	Seep19	1146511.086	3158964.923	8/28/2012	0	0.002403	0.229503	A	782.0	31.2	28-08-2012 10:31:03	0	0.01	0.954999983	0.240317032
Seep19_10	Seep19_10_28082012_103457.txt	Seep19	1146466.986	3158987.993	8/28/2012	0	0.004555	0.155583	A	782.9	32.3	28-08-2012 10:34:57	0	0.018999999	0.648999989	0.239727184
Seep19_11	Seep19_11_28082012_103746.txt	Seep19	1146465.532	3158955.954	8/28/2012	0	0.001913	0.084631	A	782.8	33.1	28-08-2012 10:37:46	0	0.008	0.354000002	0.239070415
Seep19_12	Seep19_12_28082012_104019.txt	Seep19	1146458.165	3158907.789	8/28/2012	0	0.002864	0.022434	A	783.0	33.7	28-08-2012 10:40:19	0	0.012	0.093999997	0.238663912
Seep19_13	Seep19_13_28082012_104340.txt	Seep19	1146461.297	3158860.15	8/28/2012	0	0.004046	0.077825	A	783.1	34.6	28-08-2012 10:43:40	-0.149000004	0.017000001	0.326999992	0.23799634
Seep19_14	Seep19_14_28082012_104642.txt	Seep19	1146393.022	3158942.736	8/28/2012	0	0.002374	0.069077	A	783.1	35.4	28-08-2012 10:46:42	0	0.01	0.291000009	0.237379268
Seep19_15	Seep19_15_28082012_104942.txt	Seep19	1146400.871	3159047.025	8/28/2012	0	0.001184	0.069404	A	783.2	36.1	28-08-2012 10:49:42	0	0.005	0.293000013	0.236872196

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep21,33,617,L100_01	Seep21,33,617,L100_01_03092012_143838.txt	Seep21,33,617,L100	1179438.196	3165951.622	9/3/2012	0	0.001895	0.048083	A	785.2	36.9	03-09-2012 14:38:38	0	0.008	0.202999994	0.236864328
Seep21,33,617,L100_02	Seep21,33,617,L100_02_03092012_144322.txt	Seep21,33,617,L100	1179454.405	3165911.187	9/3/2012	0	0.000708	0.108371	A	785.2	37.9	03-09-2012 14:43:22	0	0.003	0.458999991	0.236102834
Seep21,33,617,L100_03	Seep21,33,617,L100_03_03092012_144851.txt	Seep21,33,617,L100	1179482.872	3165966.024	9/3/2012	0	0.00141	0.007989	A	785.2	39.4	03-09-2012 14:48:51	0	0.006	0.034000002	0.23496972
Seep21,33,617,L100_04	Seep21,33,617,L100_04_03092012_145419.txt	Seep21,33,617,L100	1179527.747	3165934.533	9/3/2012	0	0.001403	0.017065	A	784.2	40.6	03-09-2012 14:54:19	0	0.006	0.072999999	0.233772933
Seep21,33,617,L100_05	Seep21,33,617,L100_05_03092012_150537.txt	Seep21,33,617,L100	1179565.861	3165868.819	9/3/2012	0	0.001164	0	A	784.6	42.1	03-09-2012 15:05:37	-0.583999991	0.005	-0.181999996	0.232779279
Seep21,33,617,L100_06	Seep21,33,617,L100_06_03092012_150925.txt	Seep21,33,617,L100	1179578.17	3165852.436	9/3/2012	0	0.002093	0.131138	A	784.7	42.5	03-09-2012 15:09:25	-1.001000047	0.009	0.56400001	0.232513919
Seep21,33,617,L100_07	Seep21,33,617,L100_07_03092012_151331.txt	Seep21,33,617,L100	1179624.455	3165885.728	9/3/2012	0	0.00488	0.067851	A	784.7	42.7	03-09-2012 15:13:31	0	0.021	0.291999996	0.232366696
Seep21,33,617,L100_08	Seep21,33,617,L100_08_03092012_151830.txt	Seep21,33,617,L100	1179538.817	3165849.211	9/3/2012	0	0.002089	0.137198	A	784.2	42.8	03-09-2012 15:18:30	0	0.009	0.591000021	0.232145131
Seep21,33,617,L100_09	Seep21,33,617,L100_09_03092012_152144.txt	Seep21,33,617,L100	1179506.799	3165871.264	9/3/2012	0	0.001394	0.130366	A	785.0	42.8	03-09-2012 15:21:44	0	0.006	0.56099999	0.232381955
Seep21,33,617,L100_10	Seep21,33,617,L100_10_03092012_152717.txt	Seep21,33,617,L100	1179505.483	3165806.828	9/3/2012	0	0.001162	0.026956	A	785.0	42.8	03-09-2012 15:27:17	0	0.005	0.115999997	0.232381955
Seep21,33,617,L100_11	Seep21,33,617,L100_11_03092012_153139.txt	Seep21,33,617,L100	1179519.643	3165762.32	9/3/2012	0	0.004414	0.072257	A	784.6	42.7	03-09-2012 15:31:39	-1.25999999	0.018999999	0.31099999	0.232337087
Seep21,33,617,L100_12	Seep21,33,617,L100_12_03092012_153517.txt	Seep21,33,617,L100	1179550.68	3165726.406	9/3/2012	0	0.001858	0.111225	A	783.9	42.6	03-09-2012 15:35:17	0	0.008	0.479000002	0.23220332
Seep21,33,617,L100_13	Seep21,33,617,L100_13_03092012_154046.txt	Seep21,33,617,L100	1179570.327	3165473.376	9/3/2012	0	0.000464	0.1686	A	783.5	42.4	03-09-2012 15:40:46	0	0.002	0.726000011	0.23223193
Seep21,33,617,L100_14	Seep21,33,617,L100_14_03092012_154513.txt	Seep21,33,617,L100	1179619.436	3165477.986	9/3/2012	0	0.001626	0.04832	A	783.5	42.3	03-09-2012 15:45:13	0	0.007	0.208000004	0.232305542
Seep21,33,617,L100_15	Seep21,33,617,L100_15_03092012_154810.txt	Seep21,33,617,L100	1179600.38	3165412.62	9/3/2012	0	0.002091	0.095031	A	783.4	42.2	03-09-2012 15:48:10	-0.017999999	0.009	0.409000009	0.23234956
Seep21,33,617,L100_16	Seep21,33,617,L100_16_03092012_155111.txt	Seep21,33,617,L100	1179616.802	3165376.367	9/3/2012	0	0.001627	0.100633	A	783.6	42.2	03-09-2012 15:51:11	-0.094999999	0.007	0.432999998	0.232408866
Seep21,33,617,L100_17	Seep21,33,617,L100_17_03092012_155528.txt	Seep21,33,617,L100	1179614.869	3165301.139	9/3/2012	0	0.001394	0.095502	A	783.2	42.1	03-09-2012 15:55:28	-0.061000001	0.006	0.411000013	0.232363924
Seep21,33,617,L100_18	Seep21,33,617,L100_18_03092012_155919.txt	Seep21,33,617,L100	1179624.334	3165196.658	9/3/2012	0	0.001163	0.019303	A	783.4	41.9	03-09-2012 15:59:19	0	0.005	0.082999997	0.232570797
Seep21,33,617,L100_19	Seep21,33,617,L100_19_03092012_160254.txt	Seep21,33,617,L100	1179620.229	3165148.606	9/3/2012	0	0.000698	0.006286	A	784.0	41.8	03-09-2012 16:02:54	-0.377999991	0.003	0.027000001	0.232822835
Seep21,33,617,L100_20	Seep21,33,617,L100_20_03092012_160919.txt	Seep21,33,617,L100	1179574.521	3165207.625	9/3/2012	0	0.001396	0.051437	A	783.5	41.7	03-09-2012 16:09:19	0	0.006	0.221000001	0.23274824
Seep21,33,617,L100_21	Seep21,33,617,L100_21_03092012_161405.txt	Seep21,33,617,L100	1179524.289	3165194.992	9/3/2012	0	0.000932	0.1069	A	784.0	41.7	03-09-2012 16:14:05	0	0.004	0.458999991	0.232896775
Seep21,33,617,L100_22	Seep21,33,617,L100_22_03092012_161958.txt	Seep21,33,617,L100	1179571.956	3165315.85	9/3/2012	0	0.0007	0.042447	A	784.6	41.5	03-09-2012 16:19:58	0	0.003	0.181999996	0.233223155
Seep21,33,617,L100_23	Seep21,33,617,L100_23_03092012_162537.txt	Seep21,33,617,L100	1179474.632	3165179	9/3/2012	0	0.000933	0.053405	A	783.8	41.2	03-09-2012 16:25:37	0	0.004	0.229000002	0.233207718
Seep21,33,617,L100_24	Seep21,33,617,L100_24_03092012_162808.txt	Seep21,33,617,L100	1179461.79	3165233.143	9/3/2012	0	0	0.138244	A	784.6	41.1	03-09-2012 16:28:08	0	-0.001	0.592000008	0.233520031
Seep21,33,617,L100_25	Seep21,33,617,L100_25_03092012_163100.txt	Seep21,33,617,L100	1179466.149	3165299.299	9/3/2012	0	0.000234	0.024066	A	784.8	41.0	03-09-2012 16:31:00	0	0.001	0.103	0.233653903
Seep21,33,617,L100_26	Seep21,33,617,L100_26_03092012_163337.txt	Seep21,33,617,L100	1179473.92	3165344.916	9/3/2012	0	0	0.081852	A	785.0	40.8	03-09-2012 16:33:37	0	0	0.349999994	0.23386234
Seep21,33,617,L100_27	Seep21,33,617,L100_27_03092012_163651.txt	Seep21,33,617,L100	1179454.947	3165597.429	9/3/2012	0	0.002573	0.506909	A	784.7	40.6	03-09-2012 16:36:51	0	0.011	2.167000055	0.233921975
Seep21,33,617,L100_28	Seep21,33,617,L100_28_03092012_163950.txt	Seep21,33,617,L100	1179498.288	3165639.274	9/3/2012	0	0.001171	0.018026	A	784.8	40.4	03-09-2012 16:39:50	0	0.005	0.077	0.234101012
Seep21,33,617,L100_29	Seep21,33,617,L100_29_03092012_164214.txt	Seep21,33,617,L100	1179485.073	3165707.671	9/3/2012	0	0.000469	0.04076	A	784.8	40.2	03-09-2012 16:42:14	0	0.002	0.173999995	0.234250441
Seep21,33,617,L100_30	Seep21,33,617,L100_30_03092012_164508.txt	Seep21,33,617,L100	1179439.966	3165656.786	9/3/2012	0	0	0.09001	A	784.8	40.0	03-09-2012 16:45:08	0	0	0.384000003	0.234400049
Seep21,33,617,L100_31	Seep21,33,617,L100_31_03092012_164816.txt	Seep21,33,617,L100	1179410.268	3165768.874	9/3/2012	0	0.000938	0.166765	A	784.8	39.8	03-09-2012 16:48:16	0	0.004	0.711000025	0.23454985
Seep21,33,617,L100_32	Seep21,33,617,L100_32_03092012_165149.txt	Seep21,33,617,L100	1179469.034	3165814.533	9/3/2012	0	0	0.044616	A	785.2	39.6	03-09-2012 16:51:49	0	0	0.189999998	0.234819457
Seep32L1049_01	Seep32L1049_01_31082012_074320.txt	Seep32L1049	1174151.969	3178165.477	8/31/2012	0	0	0.689894	A	793.0	16.8	31-08-2012 07:43:20	0	-0.001	2.697000027	0.255800366
Seep32L1049_02	Seep32L1049_02_31082012_075055.txt	Seep32L1049	1174252.569	3178039.932	8/31/2012	1.336444	0	1.301421	A	793.0	19.1	31-08-2012 07:50:55	5.265999794	-0.001	5.127999783	0.253787249
Seep32L1049_03	Seep32L1049_03_31082012_075512.txt	Seep32L1049	1174247.588	3178143.965	8/31/2012	0	0.000757	1.257105	A	792.0	20.3	31-08-2012 07:55:12	0	0.003	4.980000019	0.252430707
Seep32L1049_04	Seep32L1049_04_31082012_075924.txt	Seep32L1049	1174347.446	3178157.466	8/31/2012	0.948723	0	1.088455	A	792.0	21.6	31-08-2012 07:59:24	3.775000095	0	4.330999851	0.251317352
Seep32L1049_05	Seep32L1049_05_31082012_080421.txt	Seep32L1049	1174445.218	3178148.688	8/31/2012	0	0	0.062053	A	792.0	22.9	31-08-2012 08:04:21	0	0	0.247999996	0.250213772
Seep32L1049_06	Seep32L1049_06_31082012_080911.txt	Seep32L1049	1174441.018	3178248.171	8/31/2012	0	0.000249	0.095943	A	791.2	23.8	31-08-2012 08:09:11	0	0.001	0.38499999	0.249203458
Seep32L1049_07	Seep32L1049_07_31082012_081308.txt	Seep32L1049	1174348.937	3178248.22	8/31/2012	0	0.000994	0.039779	A	791.2	24.5	31-08-2012 08:13:08	0	0.004	0.159999996	0.248617396
Seep32L1049_08	Seep32L1049_08_31082012_081652.txt	Seep32L1049	1174248.74	3178241.967	8/31/2012	0	0.000744	0.029768	A	791.3	25.2	31-08-2012 08:16:52	0	0.003	0.119999997	0.248065427
Seep32L1049_09	Seep32L1049_09_31082012_082213.txt	Seep32L1049	1174166.873	3178074.455	8/31/2012	0	0.000495	0.337267	A	791.7	26.1	31-08-2012 08:22:13	0	0.002	1.363000035	0.247444376
Seep32L1049_10	Seep32L1049_10_31082012_082704.txt	Seep32L1049	1174253.933	3177943.131	8/31/2012	0	0.00074	0.461567	A	792.1	27.0	31-08-2012 08:27:04	0	0.003	1.870000005	0.246827066
Seep32L1049_100	Seep32L1049_100_31082012_150547.txt	Seep32L1049	1174541.558	3176343.807	8/31/2012	0	0.00161	0.003221	A	788.9	47.6	31-08-2012 15:05:47	0	0.007	0.014	0.230041608
Seep32L1049_101	Seep32L1049_101_31082012_150945.txt	Seep32L1049	1174548.299	3176247.959	8/31/2012	0	0.002301	0.112757	A	789.4	47.7	31-08-2012 15:09:45	0	0.01	0.49000001	0.230115667
Seep32L1049_102	Seep32L1049_102_31082012_151220.txt	Seep32L1049	1174544.028	3176148.871	8/31/2012	0	0.00092	0.109953	A	789.1	47.7	31-08-2012 15:12:20	0	0.004	0.477999985	0.230028212
Seep32L1049_103	Seep32L1049_103_31082012_151445.txt	Seep32L1049	1174449.206	3176148.576	8/31/2012	0	0.00092	0.073835	A	789.3	47.8	31-08-2012 15:14:45	0	0.004	0.32100001	0.230014831
Seep32L1049_104	Seep32L1049_104_31082012_151716.txt	Seep32L1049	1174343.111	3176144.093	8/31/2012	0	0.00138	0.020477	A	789.5	47.8	31-08-2012 15:17:16	0	0.006	0.089000002	0.230073109
Seep32L1049_105	Seep32L1049_105_31082012_152147.txt	Seep32L1049	1174344.7	3176248.37	8/31/2012	0	0.002073	0	A	789.3	47.3	31-08-2012 15:21:47	0	0.009	-0.002	0.230373725
Seep32L1049_106	Seep32L1049_106_31082012_152421.txt	Seep32L1049	1174349.136	3176346.564	8/31/2012	0	0.001153	0.121022	A	789.3	47.1	31-08-2012 15:24:21	0	0.005	0.524999976	0.230517596
Seep32L1049_107	Seep32L1049_107_31082012_153053.txt	Seep32L1049	1174458.223	3176253.462	8/31/2012	0.348027	0.000231	0.393753	A	790.5	47.0	31-08-2012 15:30:53	1.506999969	0.001	1.705000043	0.230940163
Seep32L1049_108	Seep32L1049_108_31082012_153419.txt	Seep32L1049	1174446.028	3176350.794	8/31/2012	0	0.001844	0.119646	A	789.1	47.0	31-08-2012 15:34:19	0	0.008	0.518999994	0.230531171
Seep32L1049_109	Seep32L1049_109_31082012_155739.txt	Seep32L1049	1174261.49	3177839.629	8/31/2012	0	0.001863	1.032624	A	788.7	43.6	31-08-2012 15:57:39	0	0.008	4.434000015	0.232887581
Seep32L1049_11	Seep32L1049_11_31082012_083100.txt	Seep32L1049	1174348.746	3178051.329	8/31/2012	0	0.00123	0.321583	A	791.7	27.8	31-08-2012 08:31:00	0	0.005	1.307000041	0.246046618
Seep32L1049_110	Seep32L1049_110_31082012_160253.txt	Seep32L1049	1174452.704	3177446.343	8/31/2012	0	0.002557	0.856051	A	788.9	44.3	31-08-2012 16:02:53	0	0.011	3.683000088	0.232432976
Seep32L1049_111	Seep32L1049_111_31082012_160619.txt	Seep32L1049	1174433.003	3177348.404	8/31/2012	0	0.003015	0.51576	A	788.6	44.9	31-08-2012 16:06:19	0	0.013	2.223999977	0.231906265
Seep32L1049_112	Seep32L1049_112_31082012_160915.txt	Seep32L1049	1174540.269	3177246.275	8/31/2012	0	0.003939	0.094992	A	788.6	45.2	31-08-2012 16:09:15	0	0.017000001	0.409999996	0.231687725
Seep32L1049_113	Seep32L1049_113_31082012_161206.txt	Seep32L1049	1174554.552	3177151.391	8/31/2012	3.54587	0.002315	1.05332	A	788.7	45.5	31-08-2012 16:12:06	15.31700039	0.01	4.550000191	0.231498957
Seep32L1049_114	Seep32L1049_114_31082012_161546.txt	Seep32L1049	1174654.899	3176948.22	8/31/2012	0	0.002315	0.934505	A	788.9	45.6	31-08-2012 16:15:46	0	0.01	4.037000179	0.231485009
Seep32L1049_115	Seep32L1049_115_31082012_161924.txt	Seep32L1049	1174638.068	3176844.418	8/31/2012	0	0.003934	0.483388	A	788.6	45.6	31-08-2012 16:19:24	0	0.017000001	2.088999987	0.231396988
Seep32L1049_116	Seep32L1049_116_31082012_162347.txt	Seep32L1049	1174745.961	3176654.776	8/31/2012	0	0.002545	0.623152	A	788.6	45.6	31-08-2012 16:23:47	0	0.011	2.693000078	0.231396988
Seep32L1049_117	Seep32L1049_117_31082012_162734.txt	Seep32L1049	1174749.071	3176554.266	8/31/2012	0	0.001852	0.34144	A	788.9	45.6	31-08-2012 16:27:34	0	0.008	1.475000024	0.231485009
Seep32L1049_118	Seep32L1049_118_31082012_163034.txt	Seep32L1049	1174765.88	3176445.96	8/31/2012	0	0.002544	0.201458	A	788.5	45.7	31-08-2012 16:30:34	0	0.011	0.870999992	0.231295079
Seep32L1049_119	Seep32L1049_119_31082012_163505.txt	Seep32L1049	1174845.698	3176245.532	8/31/2012	0	0.002082	0.059905	A	788.5	45.7	31-08-2012 16:35:05	0	0.009	0.259000003	0.231295079
Seep32L1049_12	Seep32L1049_12_31082012_083439.txt	Seep32L1049	1174459.379	3178038.67	8/31/2012	0	0.000491	0.160958	A	791.6	28.6	31-08-2012 08:34:39	0	0.002	0.656000018	0.24536331
Seep32L1049_120	Seep32L1049_120_31082012_163804.txt	Seep32L1049	1174856.026	3176141.195	8/31/2012	0	0.002544	0.080953	A	788.5	45.7	31-08-2012 16:38:04	0	0.011	0.349999994	0.231295079

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep32L1049_121	Seep32L1049_121_31082012_164108.txt	Seep32L1049	1174849.528	3176044.864	8/31/2012	0	0.001851	0.035399	A	788.5	45.6	31-08-2012 16:41:08	0	0.008	0.152999997	0.231367633
Seep32L1049_122	Seep32L1049_122_01092012_075757.txt	Seep32L1049	1174858.681	3176352.436	9/1/2012	0	0	0.040898	A	791.0	19.9	01-09-2012 07:57:57	0	-0.004	0.162	0.252456099
Seep32L1049_123	Seep32L1049_123_01092012_080144.txt	Seep32L1049	1174949.892	3176332.452	9/1/2012	0	0	0.166671	A	791.0	20.7	01-09-2012 08:01:44	0	0	0.662	0.251768798
Seep32L1049_124	Seep32L1049_124_01092012_080558.txt	Seep32L1049	1174942.667	3176240.741	9/1/2012	8.143198	0.000502	2.506179	A	791.0	21.4	01-09-2012 08:05:58	32.42100143	0.002	9.977999687	0.251170456
Seep32L1049_125	Seep32L1049_125_01092012_080847.txt	Seep32L1049	1174947.144	3176145.396	9/1/2012	0	0.000752	0.509104	A	790.9	22.1	01-09-2012 08:08:47	0	0.003	2.032000065	0.250543296
Seep32L1049_126	Seep32L1049_126_01092012_081247.txt	Seep32L1049	1174947.004	3176050.442	9/1/2012	5.45165	0.0005	1.107827	A	791.2	22.9	01-09-2012 08:12:47	21.80999947	0.002	4.43200016	0.249961033
Seep32L1049_127	Seep32L1049_127_01092012_081654.txt	Seep32L1049	1174957.192	3175945.525	9/1/2012	6.899117	0	0.362967	A	791.2	23.9	01-09-2012 08:16:54	27.69400024	0	1.457000017	0.249119565
Seep32L1049_128	Seep32L1049_128_01092012_082109.txt	Seep32L1049	1174964.456	3175823.436	9/1/2012	0	0.000993	0.492057	A	791.0	25.0	01-09-2012 08:21:09	0	0.004	1.98300004	0.248137712
Seep32L1049_129	Seep32L1049_129_01092012_082458.txt	Seep32L1049	1174854.397	3175825.774	9/1/2012	0	0.000247	0.181406	A	791.3	25.9	01-09-2012 08:24:58	0	0.001	0.73299998	0.247484758
Seep32L1049_13	Seep32L1049_13_31082012_083841.txt	Seep32L1049	1174445.527	3177945.486	8/31/2012	0	0.000979	0.246867	A	791.7	29.5	31-08-2012 08:38:41	0	0.004	1.008999944	0.244664565
Seep32L1049_130	Seep32L1049_130_01092012_082746.txt	Seep32L1049	1174832.421	3175949.501	9/1/2012	0	0.000741	0.046204	A	791.6	26.5	01-09-2012 08:27:46	0	0.003	0.187000006	0.247082859
Seep32L1049_131	Seep32L1049_131_01092012_083245.txt	Seep32L1049	1175054.549	3175943.838	9/1/2012	0	0.000739	0.150288	A	791.7	27.4	01-09-2012 08:32:45	0	0.003	0.610000014	0.246374086
Seep32L1049_132	Seep32L1049_132_01092012_083610.txt	Seep32L1049	1175058.396	3175829.022	9/1/2012	0	0	0.257803	A	789.8	28.0	01-09-2012 08:36:10	0	0	1.050999999	0.245293126
Seep32L1049_133	Seep32L1049_133_01092012_084312.txt	Seep32L1049	1175047.217	3176041.686	9/1/2012	0	0.000733	0.355485	A	789.8	29.2	01-09-2012 08:43:12	0	0.003	1.455000043	0.244319573
Seep32L1049_134	Seep32L1049_134_01092012_084732.txt	Seep32L1049	1175159.142	3176042.805	9/1/2012	3.120369	0.000975	0.813373	A	790.0	29.9	01-09-2012 08:47:32	12.79800034	0.004	3.335999966	0.243816957
Seep32L1049_135	Seep32L1049_135_01092012_085301.txt	Seep32L1049	1175155.855	3175940.619	9/1/2012	0	0.000485	0.427839	A	788.9	30.9	01-09-2012 08:53:01	0	0.002	1.763000011	0.24267669
Seep32L1049_136	Seep32L1049_136_01092012_085834.txt	Seep32L1049	1175263.87	3175941.86	9/1/2012	0	0.003385	0.061906	A	788.7	31.9	01-09-2012 08:58:34	0	0.014	0.256000012	0.241819829
Seep32L1049_137	Seep32L1049_137_01092012_090326.txt	Seep32L1049	1175255.204	3176046.042	9/1/2012	0	0.000482	0.038526	A	787.4	32.7	01-09-2012 09:03:26	0	0.002	0.159999996	0.240789771
Seep32L1049_138	Seep32L1049_138_01092012_090739.txt	Seep32L1049	1175256.661	3176161.114	9/1/2012	1.74425	0.001443	1.050541	A	788.1	33.4	01-09-2012 09:07:39	7.254000187	0.006	4.368999958	0.240453511
Seep32L1049_139	Seep32L1049_139_01092012_091204.txt	Seep32L1049	1175337.266	3176042.838	9/1/2012	0.958124	0.00072	1.509567	A	788.9	34.2	01-09-2012 09:12:04	3.990999937	0.003	6.288000107	0.240071088
Seep32L1049_14	Seep32L1049_14_31082012_084230.txt	Seep32L1049	1174351.123	3177953.15	8/31/2012	0	0.000976	0.2382	A	791.3	30.1	31-08-2012 08:42:30	0	0.004	0.976000011	0.244057119
Seep32L1049_140	Seep32L1049_140_01092012_091628.txt	Seep32L1049	1175446.033	3176045.587	9/1/2012	0	0.000717	0.306966	A	787.4	34.9	01-09-2012 09:16:28	0	0.003	1.284000039	0.239070117
Seep32L1049_141	Seep32L1049_141_01092012_091959.txt	Seep32L1049	1175354.46	3175928.698	9/1/2012	0	0.001428	0.055947	A	785.9	35.6	01-09-2012 09:19:59	0	0.006	0.234999999	0.238073707
Seep32L1049_142	Seep32L1049_142_01092012_092349.txt	Seep32L1049	1175458.423	3175908.469	9/1/2012	0	0.001425	0.050586	A	785.5	36.2	01-09-2012 09:23:49	0	0.006	0.213	0.237491012
Seep32L1049_143	Seep32L1049_143_01092012_092947.txt	Seep32L1049	1175454.747	3176140.866	9/1/2012	0	0.001656	0.090631	A	785.2	37.2	01-09-2012 09:29:47	0	0.007	0.382999986	0.236635372
Seep32L1049_144	Seep32L1049_144_01092012_093458.txt	Seep32L1049	1175360.227	3176142.879	9/1/2012	0	0.002361	0.22127	A	785.6	38.0	01-09-2012 09:34:58	0	0.01	0.936999977	0.236147195
Seep32L1049_145	Seep32L1049_145_01092012_093839.txt	Seep32L1049	1175362.735	3176246.852	9/1/2012	0	0.004967	0.141193	A	787.8	38.4	01-09-2012 09:38:39	0	0.021	0.597000003	0.236504465
Seep32L1049_146	Seep32L1049_146_01092012_094321.txt	Seep32L1049	1175248.238	3176240.89	9/1/2012	15.94247	0.000236	1.859848	A	787.5	38.8	01-09-2012 09:43:21	67.52100372	0.001	7.876999855	0.236111253
Seep32L1049_147	Seep32L1049_147_01092012_094652.txt	Seep32L1049	1175250.87	3176340.516	9/1/2012	0	0.004015	0.201937	A	788.5	39.1	01-09-2012 09:46:52	0	0.017000001	0.855000019	0.236183941
Seep32L1049_148	Seep32L1049_148_01092012_095059.txt	Seep32L1049	1175358.082	3176329.649	9/1/2012	0	0.006136	0.702859	A	788.7	39.4	01-09-2012 09:50:59	0	0.026000001	2.977999926	0.236017093
Seep32L1049_149	Seep32L1049_149_01092012_095618.txt	Seep32L1049	1175172.038	3176145.491	9/1/2012	0	0.002355	0.568584	A	788.1	39.8	01-09-2012 09:56:18	0	0.01	2.414000034	0.235536098
Seep32L1049_15	Seep32L1049_15_31082012_084721.txt	Seep32L1049	1174554.465	3177847.366	8/31/2012	0	0.000487	0.084741	A	791.6	30.9	31-08-2012 08:47:21	0	0.002	0.34799999	0.243507251
Seep32L1049_150	Seep32L1049_150_01092012_095927.txt	Seep32L1049	1175083.362	3176134.209	9/1/2012	1.615981	0.001414	1.180936	A	789.3	40.1	01-09-2012 09:59:27	6.856999874	0.006	5.011000156	0.235668823
Seep32L1049_151	Seep32L1049_151_01092012_100628.txt	Seep32L1049	1175171.096	3176234.392	9/1/2012	65.98908	0	2.210817	A	789.3	40.7	01-09-2012 10:06:28	280.5440063	-0.002	9.399000168	0.235218287
Seep32L1049_152	Seep32L1049_152_01092012_101017.txt	Seep32L1049	1175159.954	3176334.147	9/1/2012	0	0.007045	0.26326	A	789.3	41.2	01-09-2012 10:10:17	0	0.029999999	1.121000051	0.234844148
Seep32L1049_153	Seep32L1049_153_01092012_101331.txt	Seep32L1049	1175069.54	3176335.112	9/1/2012	0	0.006568	0.167476	A	789.1	41.5	01-09-2012 10:13:31	0	0.028000001	0.713999987	0.234560788
Seep32L1049_154	Seep32L1049_154_01092012_101631.txt	Seep32L1049	1175053.449	3176240.093	9/1/2012	0	0.00493	0.245067	A	790.2	41.7	01-09-2012 10:16:31	0	0.021	1.04400003	0.234738559
Seep32L1049_155	Seep32L1049_155_01092012_102125.txt	Seep32L1049	1174857.972	3176431.889	9/1/2012	0	0.002111	0.188622	A	790.5	42.0	01-09-2012 10:21:25	0	0.009	0.80400002	0.234604135
Seep32L1049_156	Seep32L1049_156_01092012_102429.txt	Seep32L1049	1174954.293	3176432.839	9/1/2012	13.22317	0.00563	1.769392	A	790.9	42.2	01-09-2012 10:24:29	56.37099838	0.024	7.543000221	0.23457399
Seep32L1049_157	Seep32L1049_157_01092012_102747.txt	Seep32L1049	1175053.247	3176432.794	9/1/2012	0	0.00985	0.99692	A	791.2	42.4	01-09-2012 10:27:47	0	0.041999999	4.250999928	0.234514236
Seep32L1049_158	Seep32L1049_158_01092012_103027.txt	Seep32L1049	1175163.353	3176440.421	9/1/2012	0	0.007256	0.802858	A	790.2	42.6	01-09-2012 10:30:27	0	0.030999999	3.430000067	0.234069467
Seep32L1049_159	Seep32L1049_159_01092012_103315.txt	Seep32L1049	1175261.589	3176446.004	9/1/2012	0	0.003506	0.284448	A	789.8	42.9	01-09-2012 10:33:15	0	0.015	1.217000008	0.233728915
Seep32L1049_16	Seep32L1049_16_31082012_085123.txt	Seep32L1049	1174466.308	3177843.613	8/31/2012	0	0.000243	0.954841	A	790.9	31.7	31-08-2012 08:51:23	-0.041999999	0.001	3.934999943	0.242653459
Seep32L1049_160	Seep32L1049_160_01092012_103703.txt	Seep32L1049	1175356.726	3176539.356	9/1/2012	0	0.004202	0.292259	A	789.8	43.3	01-09-2012 10:37:03	0	0.017999999	1.251999974	0.233433485
Seep32L1049_161	Seep32L1049_161_01092012_103954.txt	Seep32L1049	1175461.538	3176537.288	9/1/2012	0	0.005599	0.342019	A	790.1	43.6	01-09-2012 10:39:54	0	0.024	1.465999961	0.233300969
Seep32L1049_162	Seep32L1049_162_01092012_104301.txt	Seep32L1049	1175461.159	3176636.776	9/1/2012	0	0.00163	0.017234	A	789.7	44.0	01-09-2012 10:43:01	0	0.007	0.074000001	0.232888758
Seep32L1049_163	Seep32L1049_163_01092012_104643.txt	Seep32L1049	1175461.635	3176729.095	9/1/2012	0	0.003024	0.038376	A	789.4	44.3	01-09-2012 10:46:43	0	0.013	0.165000007	0.232580289
Seep32L1049_164	Seep32L1049_164_01092012_105246.txt	Seep32L1049	1175372.468	3176833.561	9/1/2012	0	0.003712	0.11926	A	788.5	44.7	01-09-2012 10:52:46	0	0.016000001	0.513999999	0.232022762
Seep32L1049_165	Seep32L1049_165_01092012_105921.txt	Seep32L1049	1175273.213	3176846.887	9/1/2012	0	0.003701	0.328031	A	786.9	45.0	01-09-2012 10:59:21	0	0.016000001	1.417999983	0.231333613
Seep32L1049_166	Seep32L1049_166_01092012_110451.txt	Seep32L1049	1175263.423	3176949.687	9/1/2012	0	0.003471	0.043739	A	787.7	45.2	01-09-2012 11:04:51	0	0.015	0.188999996	0.231423303
Seep32L1049_167	Seep32L1049_167_01092012_110920.txt	Seep32L1049	1175176.578	3176939.83	9/1/2012	0	0.002773	0.040666	A	786.7	45.3	01-09-2012 11:09:20	0	0.012	0.175999999	0.231056929
Seep32L1049_168	Seep32L1049_168_01092012_111505.txt	Seep32L1049	1175164.467	3177047.677	9/1/2012	0	0.00301	0.047231	A	787.8	45.1	01-09-2012 11:15:05	0	0.013	0.203999996	0.231525421
Seep32L1049_169	Seep32L1049_169_01092012_111939.txt	Seep32L1049	1175063.92	3177037.797	9/1/2012	1.034218	0.002547	0.974484	A	787.3	44.9	01-09-2012 11:19:39	4.467000008	0.011	4.209000111	0.231523976
Seep32L1049_17	Seep32L1049_17_31082012_085617.txt	Seep32L1049	1174367.081	3177856.982	8/31/2012	3.290035	0	1.397218	A	791.2	32.5	31-08-2012 08:56:17	13.58899975	-0.001	5.770999908	0.242110148
Seep32L1049_170	Seep32L1049_170_01092012_112342.txt	Seep32L1049	1175156.298	3177156.962	9/1/2012	0	0.006499	0.1251	A	788.5	44.6	01-09-2012 11:23:42	0	0.028000001	0.538999975	0.232095778
Seep32L1049_171	Seep32L1049_171_01092012_112648.txt	Seep32L1049	1175062.043	3177145.721	9/1/2012	0	0.002318	0.089243	A	787.0	44.4	01-09-2012 11:26:48	0	0.01	0.38499999	0.231800154
Seep32L1049_172	Seep32L1049_172_01092012_113004.txt	Seep32L1049	1175070.462	3177238.107	9/1/2012	0	0.002553	0.045722	A	787.5	44.2	01-09-2012 11:30:04	0	0.011	0.196999997	0.232093602
Seep32L1049_173	Seep32L1049_173_01092012_113418.txt	Seep32L1049	1174964.403	3177243.528	9/1/2012	0	0.003485	0.174932	A	787.5	43.9	01-09-2012 11:34:18	0	0.015	0.753000021	0.232313216
Seep32L1049_174	Seep32L1049_174_01092012_113740.txt	Seep32L1049	1174950.092	3177343.324	9/1/2012	0	0.003258	0.009775	A	788.7	43.8	01-09-2012 11:37:40	0	0.014	0.041999999	0.232740626
Seep32L1049_175	Seep32L1049_175_01092012_114103.txt	Seep32L1049	1174951.442	3177446.527	9/1/2012	0	0.002095	0.067986	A	788.5	43.6	01-09-2012 11:41:03	0	0.009	0.291999996	0.232828528
Seep32L1049_176	Seep32L1049_176_01092012_114415.txt	Seep32L1049	1174855.643	3177438.829	9/1/2012	0	0.005588	0.229088	A	788.2	43.5	01-09-2012 11:44:15	-1.004999995	0.024	0.984000027	0.232813448
Seep32L1049_177	Seep32L1049_177_01092012_114733.txt	Seep32L1049	1174857.619	3177535.748	9/1/2012	0	0.001865	0.020985	A	788.9	43.3	01-09-2012 11:47:33	0	0.008	0.090000004	0.23316747
Seep32L1049_178	Seep32L1049_178_01092012_115122.txt	Seep32L1049	1174774.841	3177548.746	9/1/2012	0	0.002563	0.253726	A	788.3	43.3	01-09-2012 11:51:22	0	0.011	1.088999987	0.232990131
Seep32L1049_179	Seep32L1049_179_01092012_115447.txt	Seep32L1049	1174678.773	3177551.124	9/1/2012	0.238109	0.001166	0.869414	A	789.3	43.4	01-09-2012 11:54:47	1.021000028	0.005	3.727999926	0.233211994
Seep32L1049_18	Seep32L1049_18_31082012_090125.txt	Seep32L1049	1174359.206	3177746.902	8/31/2012	2.113786	0.001208	1.44616	A	791.7	33.3	31-08-2012 09:01:25	8.748000145	0.005	5.985000134	0.241630703

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep32L1049_180	Seep32L1049_180_01092012_115842.txt	Seep32L1049	1174567.6	3177539.909	9/1/2012	1.000714	0.000933	1.146939	A	789.8	43.6	01-09-2012 11:58:42	4.290999889	0.004	4.918000221	0.233212382
Seep32L1049_181	Seep32L1049_181_01092012_120134.txt	Seep32L1049	1174461.959	3177555.656	9/1/2012	0	0.002099	0.456222	A	790.4	43.8	01-09-2012 12:01:34	0	0.009	1.95599997	0.233242288
Seep32L1049_182	Seep32L1049_182_01092012_120515.txt	Seep32L1049	1174564.649	3177451.347	9/1/2012	6.614447	0.000932	1.651222	A	790.5	44.0	01-09-2012 12:05:15	28.37299919	0.004	7.083000183	0.233124688
Seep32L1049_183	Seep32L1049_183_01092012_120814.txt	Seep32L1049	1174556.195	3177354.507	9/1/2012	0	0.001863	0.1225	A	790.2	44.2	01-09-2012 12:08:14	0	0.008	0.526000023	0.232889354
Seep32L1049_184	Seep32L1049_184_01092012_121338.txt	Seep32L1049	1174653.041	3177444.689	9/1/2012	43.11152	0.000698	1.10469	A	790.1	44.4	01-09-2012 12:13:38	185.2559967	0.003	4.747000217	0.232713223
Seep32L1049_185	Seep32L1049_185_01092012_121622.txt	Seep32L1049	1174758.332	3177445.56	9/1/2012	0	0.004883	1.919703	A	789.7	44.5	01-09-2012 12:16:22	0	0.021	8.255999565	0.232522175
Seep32L1049_186	Seep32L1049_186_01092012_122040.txt	Seep32L1049	1174848.436	3177348.424	9/1/2012	0.239513	0.000698	0.627383	A	789.5	44.4	01-09-2012 12:20:40	1.029999971	0.003	2.697999954	0.232536495
Seep32L1049_187	Seep32L1049_187_01092012_122401.txt	Seep32L1049	1174747.793	3177356.696	9/1/2012	0.241189	0.002324	1.026566	A	788.9	44.4	01-09-2012 12:24:01	1.037999988	0.01	4.418000221	0.232359782
Seep32L1049_188	Seep32L1049_188_01092012_122710.txt	Seep32L1049	1174648.227	3177352.109	9/1/2012	15.94083	0.003723	1.529099	A	789.7	44.3	01-09-2012 12:27:10	68.51300049	0.016000001	6.572000027	0.232668668
Seep32L1049_189	Seep32L1049_189_01092012_122937.txt	Seep32L1049	1174644.033	3177243.787	9/1/2012	0	0.003027	0.171618	A	790.1	44.2	01-09-2012 12:29:37	0	0.013	0.736999989	0.23285988
Seep32L1049_19	Seep32L1049_19_31082012_090541.txt	Seep32L1049	1174463.017	3177753.709	8/31/2012	4.339341	0.002411	1.176223	A	791.6	33.9	31-08-2012 09:05:41	17.99600029	0.01	4.877999783	0.241128087
Seep32L1049_190	Seep32L1049_190_01092012_123221.txt	Seep32L1049	1174754.628	3177248.048	9/1/2012	0	0.003028	0.415759	A	789.8	44.0	01-09-2012 12:32:21	-0.017000001	0.013	1.784999967	0.232918248
Seep32L1049_191	Seep32L1049_191_01092012_123539.txt	Seep32L1049	1174854.74	3177249.221	9/1/2012	25.45756	0.001397	1.143731	A	789.3	43.9	01-09-2012 12:35:39	109.3330002	0.006	4.912000179	0.232844219
Seep32L1049_192	Seep32L1049_192_01092012_124058.txt	Seep32L1049	1174949.152	3177156.042	9/1/2012	11.23225	0.001165	0.24812	A	789.0	43.6	01-09-2012 12:40:58	48.2120018	0.005	1.065000057	0.232976168
Seep32L1049_193	Seep32L1049_193_01092012_124412.txt	Seep32L1049	1174847.379	3177154.614	9/1/2012	0	0.00373	0.209098	A	788.7	43.3	01-09-2012 12:44:12	0	0.016000001	0.897000015	0.233108357
Seep32L1049_194	Seep32L1049_194_01092012_124646.txt	Seep32L1049	1174747.05	3177154.788	9/1/2012	0	0.002334	0.726165	A	789.5	43.2	01-09-2012 12:46:46	0	0.01	3.111000061	0.233418569
Seep32L1049_195	Seep32L1049_195_01092012_124950.txt	Seep32L1049	1174642.484	3177156.271	9/1/2012	0.744146	0.000935	0.326499	A	790.0	43.0	01-09-2012 12:49:50	3.184000015	0.004	1.396999955	0.233714148
Seep32L1049_196	Seep32L1049_196_01092012_125556.txt	Seep32L1049	1174648.117	3177049.877	9/1/2012	5.090861	0.002106	1.157897	A	790.1	42.7	01-09-2012 12:55:56	21.75900078	0.009	4.948999882	0.233965755
Seep32L1049_197	Seep32L1049_197_01092012_125931.txt	Seep32L1049	1174749.993	3177049.038	9/1/2012	14.30873	0.002808	0.947393	A	790.1	42.6	01-09-2012 12:59:31	61.13800049	0.012	4.047999859	0.234039858
Seep32L1049_198	Seep32L1049_198_01092012_130243.txt	Seep32L1049	1174850.189	3177045.979	9/1/2012	0	0.004682	0.331463	A	790.0	42.5	01-09-2012 13:02:43	-0.192000002	0.02	1.416000009	0.234084368
Seep32L1049_199	Seep32L1049_199_01092012_130554.txt	Seep32L1049	1174949.999	3177050.858	9/1/2012	0	0.003976	0	A	789.1	42.4	01-09-2012 13:05:54	-0.039999999	0.017000001	-0.44600001	0.233891785
Seep32L1049_20	Seep32L1049_20_31082012_090947.txt	Seep32L1049	1174557.365	3177754.108	8/31/2012	0	0.002166	0.074604	A	791.6	34.5	31-08-2012 09:09:47	-0.555999994	0.009	0.310000002	0.240657821
Seep32L1049_200	Seep32L1049_200_01092012_130920.txt	Seep32L1049	1175051.743	3176950.029	9/1/2012	0	0.002571	0.939182	A	788.6	42.4	01-09-2012 13:09:20	-0.041000001	0.011	4.018000126	0.233743578
Seep32L1049_201	Seep32L1049_201_01092012_131313.txt	Seep32L1049	1174948.044	3176955.194	9/1/2012	1.246084	0.002804	1.403831	A	788.7	42.5	01-09-2012 13:13:13	5.331999779	0.012	6.006999969	0.233699158
Seep32L1049_202	Seep32L1049_202_01092012_131641.txt	Seep32L1049	1174843.563	3176946.435	9/1/2012	0.474757	0.001635	0.65279	A	789.0	42.7	01-09-2012 13:16:41	2.032000065	0.007	2.79399991	0.233640015
Seep32L1049_203	Seep32L1049_203_01092012_131922.txt	Seep32L1049	1174745.277	3176952.157	9/1/2012	0	0.005371	0.478984	A	789.4	43.0	01-09-2012 13:19:22	0	0.023	2.051000118	0.233536646
Seep32L1049_204	Seep32L1049_204_01092012_132259.txt	Seep32L1049	1174749.838	3176847.461	9/1/2012	0	0.001167	0.219703	A	789.7	43.2	01-09-2012 13:22:59	0	0.005	0.940999985	0.233477697
Seep32L1049_205	Seep32L1049_205_01092012_132536.txt	Seep32L1049	1174846.58	3176850.945	9/1/2012	0	0.001633	0.109899	A	789.7	43.4	01-09-2012 13:25:36	0	0.007	0.470999986	0.23333019
Seep32L1049_206	Seep32L1049_206_01092012_132818.txt	Seep32L1049	1174952.71	3176850.16	9/1/2012	0	0.003729	0.502488	A	789.3	43.6	01-09-2012 13:28:18	0	0.016000001	2.155999899	0.233064741
Seep32L1049_207	Seep32L1049_207_01092012_133107.txt	Seep32L1049	1175046.113	3176850.61	9/1/2012	0	0.004192	0.922294	A	789.0	43.7	01-09-2012 13:31:07	0	0.017999999	3.960000038	0.232902631
Seep32L1049_208	Seep32L1049_208_01092012_133605.txt	Seep32L1049	1175145.376	3176845.433	9/1/2012	0.309155	0.002094	0.966082	A	788.3	43.8	01-09-2012 13:36:05	1.328999996	0.009	4.152999878	0.232622594
Seep32L1049_209	Seep32L1049_209_01092012_134138.txt	Seep32L1049	1175243.644	3176753.761	9/1/2012	49.52569	0.002788	0.113609	A	787.8	44.0	01-09-2012 13:41:38	213.1710052	0.012	0.488999993	0.232328445
Seep32L1049_21	Seep32L1049_21_31082012_091450.txt	Seep32L1049	1174656.704	3177747.327	8/31/2012	0	0.00096	0.31509	A	790.9	35.1	31-08-2012 09:14:50	-0.012	0.004	1.312999964	0.239976987
Seep32L1049_210	Seep32L1049_210_01092012_134620.txt	Seep32L1049	1175350.644	3176739.954	9/1/2012	0	0.006273	0.685181	A	788.1	44.1	01-09-2012 13:46:20	-0.100000001	0.027000001	2.948999882	0.232343644
Seep32L1049_211	Seep32L1049_211_01092012_135336.txt	Seep32L1049	1175351.246	3176659.381	9/1/2012	83.3376	0.003021	1.11632	A	788.2	44.1	01-09-2012 13:53:36	358.6369934	0.013	4.803999901	0.232373133
Seep32L1049_212	Seep32L1049_212_01092012_135733.txt	Seep32L1049	1175247.71	3176645.556	9/1/2012	0	0.008368	0.410035	A	788.2	44.0	01-09-2012 13:57:33	0	0.035999998	1.764000058	0.232446402
Seep32L1049_213	Seep32L1049_213_01092012_140021.txt	Seep32L1049	1175245.733	3176549.718	9/1/2012	0	0.001862	0.510601	A	788.9	43.9	01-09-2012 14:00:21	-0.048999999	0.008	2.194000006	0.232726216
Seep32L1049_214	Seep32L1049_214_01092012_140327.txt	Seep32L1049	1175146.552	3176547.796	9/1/2012	23.32368	0.001862	1.04055	A	789.1	43.9	01-09-2012 14:03:27	100.1940002	0.008	4.46999979	0.23278521
Seep32L1049_215	Seep32L1049_215_01092012_140623.txt	Seep32L1049	1175148.534	3176652.138	9/1/2012	0	0.003726	0.251022	A	789.1	43.8	01-09-2012 14:06:23	0	0.016000001	1.077999949	0.232858658
Seep32L1049_216	Seep32L1049_216_01092012_141032.txt	Seep32L1049	1175146.246	3176755.306	9/1/2012	5.098287	0.003723	2.832899	A	788.5	43.8	01-09-2012 14:10:32	21.9109993	0.016000001	12.17500019	0.232681602
Seep32L1049_217	Seep32L1049_217_01092012_141500.txt	Seep32L1049	1175052.888	3176747.7	9/1/2012	0	0.006288	0.122026	A	788.9	43.7	01-09-2012 14:15:00	-0.169	0.027000001	0.523999989	0.232873112
Seep32L1049_218	Seep32L1049_218_01092012_141757.txt	Seep32L1049	1174947.195	3176749.312	9/1/2012	0	0.002096	0.334406	A	788.9	43.7	01-09-2012 14:17:57	0	0.009	1.43599999	0.232873112
Seep32L1049_219	Seep32L1049_219_01092012_142107.txt	Seep32L1049	1174848.797	3176747.815	9/1/2012	0	0.002096	0.2709	A	789.1	43.7	01-09-2012 14:21:07	0	0.009	1.162999988	0.23293215
Seep32L1049_22	Seep32L1049_22_31082012_091905.txt	Seep32L1049	1174770.369	3177657.008	8/31/2012	0	0.001436	0.130944	A	791.0	35.9	31-08-2012 09:19:05	0	0.006	0.546999991	0.239386052
Seep32L1049_220	Seep32L1049_220_01092012_142418.txt	Seep32L1049	1174751.217	3176747.645	9/1/2012	1.286577	0.001864	0.140494	A	789.3	43.7	01-09-2012 14:24:18	5.521999836	0.008	0.602999985	0.232991189
Seep32L1049_221	Seep32L1049_221_01092012_142827.txt	Seep32L1049	1174852.924	3176651.316	9/1/2012	0	0.001864	0.11185	A	789.4	43.7	01-09-2012 14:28:27	-0.041000001	0.008	0.479999989	0.233020708
Seep32L1049_222	Seep32L1049_222_01092012_143119.txt	Seep32L1049	1174955.594	3176648.907	9/1/2012	0	0.001864	0.325023	A	789.3	43.7	01-09-2012 14:31:19	0	0.008	1.394999981	0.232991189
Seep32L1049_223	Seep32L1049_223_01092012_143358.txt	Seep32L1049	1175054.864	3176647.658	9/1/2012	0	0.001397	0.813529	A	789.0	43.7	01-09-2012 14:33:58	0	0.006	3.493000031	0.232902631
Seep32L1049_224	Seep32L1049_224_01092012_143651.txt	Seep32L1049	1175053.573	3176550.794	9/1/2012	3.978404	0.002329	1.945888	A	788.9	43.7	01-09-2012 14:36:51	17.08399963	0.01	8.355999947	0.232873112
Seep32L1049_225	Seep32L1049_225_01092012_143938.txt	Seep32L1049	1174944.455	3176545.647	9/1/2012	2.215788	0.003261	6.45169	A	788.9	43.6	01-09-2012 14:39:38	9.512000084	0.014	27.69599915	0.232946634
Seep32L1049_226	Seep32L1049_226_01092012_144308.txt	Seep32L1049	1174849.314	3176549.817	9/1/2012	114.6839	0.003263	1.937001	A	789.3	43.6	01-09-2012 14:43:08	492.0690002	0.014	8.31099987	0.233064741
Seep32L1049_23	Seep32L1049_23_31082012_092357.txt	Seep32L1049	1174667.48	3177640.6	8/31/2012	0	0.001192	0.584094	A	789.8	36.7	31-08-2012 09:23:57	0	0.005	2.450000048	0.238405764
Seep32L1049_24	Seep32L1049_24_31082012_092732.txt	Seep32L1049	1174567.725	3177651.238	8/31/2012	5.00633	0.002381	1.607987	A	790.5	37.4	31-08-2012 09:27:32	21.02799988	0.01	6.754000187	0.238079205
Seep32L1049_25	Seep32L1049_25_31082012_093131.txt	Seep32L1049	1174464.738	3177647.865	8/31/2012	7.412749	0.001665	1.025704	A	790.9	37.9	31-08-2012 09:31:31	31.17000008	0.007	4.313000202	0.237816766
Seep32L1049_26	Seep32L1049_26_31082012_093551.txt	Seep32L1049	1174379.238	3177646.681	8/31/2012	3.68832	0.001424	1.861606	A	790.9	38.5	31-08-2012 09:35:51	15.53899956	0.006	7.842999935	0.237358913
Seep32L1049_27	Seep32L1049_27_31082012_100334.txt	Seep32L1049	1173961.27	3178149.835	8/31/2012	21.80104	0.001895	3.014326	A	791.4	39.3	31-08-2012 10:03:34	92.02600098	0.008	12.72399998	0.236900851
Seep32L1049_28	Seep32L1049_28_31082012_100849.txt	Seep32L1049	1173866.372	3178154.422	8/31/2012	8.467218	0.001423	2.074578	A	792.5	39.3	31-08-2012 10:08:49	35.69200134	0.006	8.744999886	0.237230137
Seep32L1049_29	Seep32L1049_29_31082012_101220.txt	Seep32L1049	1173781.634	3178156.865	8/31/2012	0	0.001424	0.087808	A	792.8	39.3	31-08-2012 10:12:20	0	0.006	0.370000005	0.237319931
Seep32L1049_30	Seep32L1049_30_31082012_101555.txt	Seep32L1049	1173771.194	3178054.584	8/31/2012	0	0.001661	0.074513	A	793.0	39.4	31-08-2012 10:15:55	0	0.007	0.31400001	0.237303853
Seep32L1049_31	Seep32L1049_31_31082012_101944.txt	Seep32L1049	1173874.054	3178054.718	8/31/2012	0	0.001898	0.126687	A	793.3	39.6	31-08-2012 10:19:44	0	0.008	0.533999979	0.23724182
Seep32L1049_32	Seep32L1049_32_31082012_102602.txt	Seep32L1049	1173780.637	3178249.339	8/31/2012	0	0.001657	0.098473	A	792.8	40.1	31-08-2012 10:26:02	0	0.007	0.416000009	0.236713856
Seep32L1049_33	Seep32L1049_33_31082012_102934.txt	Seep32L1049	1173873.048	3178267.06	8/31/2012	0	0.003311	0.363054	A	792.9	40.4	31-08-2012 10:29:34	0	0.014	1.534999967	0.236517191
Seep32L1049_34	Seep32L1049_34_31082012_103310.txt	Seep32L1049	1173957.382	3178274.203	8/31/2012	0	0.006141	0.589087	A	792.6	40.7	31-08-2012 10:33:10	0	0.026000001	2.493999958	0.236201718
Seep32L1049_35	Seep32L1049_35_31082012_103608.txt	Seep32L1049	1174039.191	3178267.743	8/31/2012	0	0.002124	0.295735	A	792.5	40.9	31-08-2012 10:36:08	0	0.009	1.253000021	0.236021504
Seep32L1049_36	Seep32L1049_36_31082012_103944.txt	Seep32L1049	1174062.012	3178153.427	8/31/2012	0	0.00165	0.717075	A	792.0	41.2	31-08-2012 10:39:44	0	0.007	3.042999983	0.2356475

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep32L1049_37	Seep32L1049_37_31082012_104318.txt	Seep32L1049	1174061.408	3178050.276	8/31/2012	0	0.001177	0.89038	A	791.8	41.5	31-08-2012 10:43:18	0	0.005	3.782999992	0.235363364
Seep32L1049_38	Seep32L1049_38_31082012_104707.txt	Seep32L1049	1173964.919	3178037.714	8/31/2012	4.175094	0.001883	0.342923	A	792.3	41.7	31-08-2012 10:47:07	17.73900032	0.008	1.457000017	0.235362396
Seep32L1049_39	Seep32L1049_39_31082012_105126.txt	Seep32L1049	1173849.441	3177980.081	8/31/2012	0	0.00141	0.055222	A	792.3	42.2	31-08-2012 10:51:26	-0.097000003	0.006	0.234999999	0.234989211
Seep32L1049_40	Seep32L1049_40_31082012_105549.txt	Seep32L1049	1174150.843	3177956.592	8/31/2012	0	0.002112	0.073454	A	792.5	42.7	31-08-2012 10:55:49	0	0.009	0.312999994	0.23467645
Seep32L1049_41	Seep32L1049_41_31082012_105856.txt	Seep32L1049	1174063.73	3177945.091	8/31/2012	3.798502	0.001639	0.675737	A	791.7	43.1	31-08-2012 10:58:56	16.22299957	0.007	2.885999918	0.234143019
Seep32L1049_42	Seep32L1049_42_31082012_110246.txt	Seep32L1049	1173961.732	3177952.762	8/31/2012	0	0.003277	0.307605	A	792.3	43.4	31-08-2012 11:02:46	0	0.014	1.31400001	0.234098405
Seep32L1049_43	Seep32L1049_43_31082012_110556.txt	Seep32L1049	1173955.426	3177854.964	8/31/2012	0	0.00304	0.026662	A	792.3	43.7	31-08-2012 11:05:56	0	0.013	0.114	0.23387675
Seep32L1049_44	Seep32L1049_44_31082012_110844.txt	Seep32L1049	1173955.722	3177752.429	8/31/2012	0	0.002103	0.013086	A	792.1	43.9	31-08-2012 11:08:44	0	0.009	0.056000002	0.23367022
Seep32L1049_45	Seep32L1049_45_31082012_111156.txt	Seep32L1049	1173946.486	3177651.735	8/31/2012	0	0.001401	0.330902	A	792.1	44.1	31-08-2012 11:11:56	0	0.006	1.417000055	0.233522907
Seep32L1049_46	Seep32L1049_46_31082012_111513.txt	Seep32L1049	1173927.514	3177645.662	8/31/2012	3.674276	0.001633	1.168303	A	791.8	44.3	31-08-2012 11:15:13	15.75	0.007	5.007999897	0.233287394
Seep32L1049_47	Seep32L1049_47_31082012_111914.txt	Seep32L1049	1173845.609	3177744.382	8/31/2012	0	0.002333	0.105446	A	792.3	44.5	31-08-2012 11:19:14	-0.189999998	0.01	0.451999992	0.233287737
Seep32L1049_48	Seep32L1049_48_31082012_112240.txt	Seep32L1049	1173837.121	3177649.171	8/31/2012	0	0.00373	0.612694	A	792.3	44.7	31-08-2012 11:22:40	0	0.016000001	2.628000021	0.233140945
Seep32L1049_49	Seep32L1049_49_31082012_112550.txt	Seep32L1049	1173868.268	3177550.577	8/31/2012	0	0.002332	0.029378	A	792.6	44.8	31-08-2012 11:25:50	0	0.01	0.126000002	0.233155861
Seep32L1049_50	Seep32L1049_50_31082012_112902.txt	Seep32L1049	1173950.777	3177553.536	8/31/2012	0	0.00163	0.7269	A	792.0	44.9	31-08-2012 11:29:02	0	0.007	3.121000051	0.232906118
Seep32L1049_51	Seep32L1049_51_31082012_113220.txt	Seep32L1049	1174052.175	3177554.03	8/31/2012	0	0.001397	0.066599	A	792.1	45.0	31-08-2012 11:32:20	0	0.006	0.286000013	0.232862309
Seep32L1049_52	Seep32L1049_52_31082012_113538.txt	Seep32L1049	1174062.833	3177645.731	8/31/2012	6.212741	0.001862	1.239988	A	791.8	45.0	31-08-2012 11:35:38	26.69000053	0.008	5.327000141	0.232774109
Seep32L1049_53	Seep32L1049_53_31082012_113939.txt	Seep32L1049	1174150.794	3177550.087	8/31/2012	0	0.004191	0.050525	A	792.0	45.0	31-08-2012 11:39:39	-17.57500076	0.017999999	0.216999993	0.232832909
Seep32L1049_54	Seep32L1049_54_31082012_114312.txt	Seep32L1049	1174246.883	3177549.957	8/31/2012	0	0.001862	0.184311	A	791.6	45.0	31-08-2012 11:43:12	0	0.008	0.791999996	0.232715324
Seep32L1049_55	Seep32L1049_55_31082012_114623.txt	Seep32L1049	1174335.67	3177550.672	8/31/2012	0.649838	0.001628	3.189184	A	791.4	45.1	31-08-2012 11:46:23	2.79399991	0.007	13.71199989	0.232583418
Seep32L1049_56	Seep32L1049_56_31082012_114936.txt	Seep32L1049	1174253.785	3177448.111	8/31/2012	0	0.005347	0.009764	A	791.0	45.1	31-08-2012 11:49:36	0	0.023	0.041999999	0.232465863
Seep32L1049_57	Seep32L1049_57_31082012_115305.txt	Seep32L1049	1174255.236	3177637.445	8/31/2012	2.419027	0.002093	2.396702	A	791.3	45.1	31-08-2012 11:53:05	10.40200043	0.009	10.30599976	0.232554033
Seep32L1049_58	Seep32L1049_58_31082012_115605.txt	Seep32L1049	1174246.759	3177739.557	8/31/2012	0	0.002093	0.123277	A	791.2	45.0	31-08-2012 11:56:05	0	0.009	0.529999971	0.232597724
Seep32L1049_59	Seep32L1049_59_31082012_120121.txt	Seep32L1049	1174162.873	3177840.035	8/31/2012	39.53254	0.001396	1.46397	A	791.2	45.0	31-08-2012 12:01:21	169.9609985	0.006	6.294000149	0.232597724
Seep32L1049_60	Seep32L1049_60_31082012_120450.txt	Seep32L1049	1174060.165	3177855.137	8/31/2012	0	0.002792	0.078168	A	791.6	45.1	31-08-2012 12:04:50	-0.098999999	0.012	0.335999995	0.232642189
Seep32L1049_61	Seep32L1049_61_31082012_120814.txt	Seep32L1049	1174047.417	3177750.239	8/31/2012	0	0.001163	0.044892	A	791.7	45.2	31-08-2012 12:08:14	0	0.005	0.193000004	0.232598498
Seep32L1049_62	Seep32L1049_62_31082012_121316.txt	Seep32L1049	1174149.929	3177749.843	8/31/2012	0	0.002091	0.146854	A	791.4	45.4	31-08-2012 12:13:16	0	0.009	0.632000029	0.232364371
Seep32L1049_63	Seep32L1049_63_31082012_121619.txt	Seep32L1049	1174149.532	3177658.265	8/31/2012	0	0.003019	0.103357	A	791.3	45.5	31-08-2012 12:16:19	0	0.013	0.444999993	0.232262105
Seep32L1049_64	Seep32L1049_64_31082012_122430.txt	Seep32L1049	1174364.66	3177456.403	8/31/2012	0.294973	0.002319	2.865551	A	790.8	45.8	31-08-2012 12:24:30	1.271999955	0.01	12.35700035	0.231897011
Seep32L1049_65	Seep32L1049_65_31082012_122857.txt	Seep32L1049	1174247.162	3177351.723	8/31/2012	0	0.004635	0.023407	A	790.8	46.0	31-08-2012 12:28:57	0	0.02	0.101000004	0.231751695
Seep32L1049_66	Seep32L1049_66_31082012_123221.txt	Seep32L1049	1174362.715	3177350.44	8/31/2012	0	0.002782	0.01275	A	791.0	46.0	31-08-2012 12:32:21	0	0.012	0.055	0.231810302
Seep32L1049_67	Seep32L1049_67_31082012_123605.txt	Seep32L1049	1174346.129	3177254.134	8/31/2012	0	0.00255	0.003477	A	791.0	46.0	31-08-2012 12:36:05	0	0.011	0.015	0.231810302
Seep32L1049_68	Seep32L1049_68_31082012_123904.txt	Seep32L1049	1174447.176	3177250.911	8/31/2012	0	0.002086	0.429027	A	790.9	46.0	31-08-2012 12:39:04	0	0.009	1.850999951	0.231781006
Seep32L1049_69	Seep32L1049_69_31082012_124226.txt	Seep32L1049	1174456.201	3177152.948	8/31/2012	0	0.002549	0.012283	A	790.8	46.0	31-08-2012 12:42:26	0	0.011	0.052999999	0.231751695
Seep32L1049_70	Seep32L1049_70_31082012_124506.txt	Seep32L1049	1174354.2	3177154.595	8/31/2012	0	0.002549	0.215489	A	790.9	46.1	31-08-2012 12:45:06	0	0.011	0.930000007	0.231708407
Seep32L1049_71	Seep32L1049_71_31082012_124740.txt	Seep32L1049	1174260.262	3177150.886	8/31/2012	0	0.002319	0.080484	A	791.7	46.1	31-08-2012 12:47:40	0	0.01	0.347000003	0.231942773
Seep32L1049_72	Seep32L1049_72_31082012_125002.txt	Seep32L1049	1174160.453	3177144.16	8/31/2012	0	0.001158	0.115369	A	791.0	46.2	31-08-2012 12:50:02	0	0.005	0.497999996	0.231665134
Seep32L1049_73	Seep32L1049_73_31082012_125246.txt	Seep32L1049	1174050.363	3177151.528	8/31/2012	0	0.00139	0.35894	A	791.2	46.2	31-08-2012 12:52:46	0	0.006	1.549000025	0.231723711
Seep32L1049_74	Seep32L1049_74_31082012_125541.txt	Seep32L1049	1174046.291	3177055.341	8/31/2012	0	0.001622	0.077627	A	791.2	46.2	31-08-2012 12:55:41	0	0.007	0.335000008	0.231723711
Seep32L1049_75	Seep32L1049_75_31082012_125827.txt	Seep32L1049	1174148.915	3177041.926	8/31/2012	0	0.004633	0.235821	A	791.2	46.3	31-08-2012 12:58:27	0	0.02	1.018000007	0.231651172
Seep32L1049_76	Seep32L1049_76_31082012_130153.txt	Seep32L1049	1174251.526	3177043.674	8/31/2012	0.444195	0.000926	0.7983	A	791.0	46.3	31-08-2012 13:01:53	1.917999983	0.004	3.447000027	0.23159261
Seep32L1049_77	Seep32L1049_77_31082012_130416.txt	Seep32L1049	1174356.639	3177045.722	8/31/2012	0	0.001852	0.036339	A	790.8	46.4	31-08-2012 13:04:16	-0.239999995	0.008	0.157000005	0.231461599
Seep32L1049_78	Seep32L1049_78_31082012_130649.txt	Seep32L1049	1174446.515	3177040.389	8/31/2012	0	0.000231	0.04002	A	790.6	46.5	31-08-2012 13:06:49	-0.048999999	0.001	0.172999993	0.231330663
Seep32L1049_79	Seep32L1049_79_31082012_135235.txt	Seep32L1049	1174550.839	3177044.157	8/31/2012	0	0.001654	0.308391	A	790.2	39.6	31-08-2012 13:52:35	0	0.007	1.304999948	0.236314744
Seep32L1049_80	Seep32L1049_80_31082012_135551.txt	Seep32L1049	1174547.213	3176945.845	8/31/2012	0	0.00165	0.068601	A	789.8	40.2	31-08-2012 13:55:51	0	0.007	0.291000009	0.235742852
Seep32L1049_81	Seep32L1049_81_31082012_135854.txt	Seep32L1049	1174450.019	3176940.515	8/31/2012	0	0.001394	0.144554	A	780.1	40.8	31-08-2012 13:58:54	0	0.006	0.621999979	0.232402563
Seep32L1049_82	Seep32L1049_82_31082012_140220.txt	Seep32L1049	1174355.999	3176940.042	8/31/2012	0	0.00094	0.394862	A	790.2	41.3	31-08-2012 14:02:20	0	0.004	1.679999948	0.235037163
Seep32L1049_83	Seep32L1049_83_31082012_140511.txt	Seep32L1049	1174251.773	3176947.465	8/31/2012	0	0.000939	0.384452	A	790.6	41.9	31-08-2012 14:05:11	0	0.004	1.638000011	0.234708294
Seep32L1049_84	Seep32L1049_84_31082012_140742.txt	Seep32L1049	1174152.472	3176943.836	8/31/2012	0	0.000703	0.078283	A	790.5	42.3	31-08-2012 14:07:42	0	0.003	0.333999991	0.23438102
Seep32L1049_85	Seep32L1049_85_31082012_141038.txt	Seep32L1049	1174051.192	3176943.099	8/31/2012	0	0.000936	0.00117	A	790.8	42.8	31-08-2012 14:10:38	0	0.004	0.005	0.234098926
Seep32L1049_86	Seep32L1049_86_31082012_141517.txt	Seep32L1049	1174349.75	3176849.287	8/31/2012	0	0.00257	0.013318	A	790.8	43.4	31-08-2012 14:15:17	0	0.011	0.057	0.233655199
Seep32L1049_87	Seep32L1049_87_31082012_141823.txt	Seep32L1049	1174350.331	3176748.603	8/31/2012	0	0.001399	0.0429	A	790.1	43.8	31-08-2012 14:18:23	-0.012	0.006	0.184	0.23315376
Seep32L1049_88	Seep32L1049_88_31082012_142148.txt	Seep32L1049	1174451.88	3176753.384	8/31/2012	0	0.002095	0.037008	A	790.0	44.3	31-08-2012 14:21:48	0	0.009	0.158999994	0.232757062
Seep32L1049_89	Seep32L1049_89_31082012_142451.txt	Seep32L1049	1174452.709	3176850.504	8/31/2012	0	0.001394	0.030445	A	789.8	44.7	31-08-2012 14:24:51	0	0.006	0.130999997	0.232405305
Seep32L1049_90	Seep32L1049_90_31082012_142931.txt	Seep32L1049	1174557.916	3176847.558	8/31/2012	0	0.001392	0.130631	A	790.0	45.3	31-08-2012 14:29:31	0	0.006	0.563000023	0.23202616
Seep32L1049_91	Seep32L1049_91_31082012_143356.txt	Seep32L1049	1174655.114	3176746.629	8/31/2012	2.379751	0.001852	3.616277	A	789.5	45.8	31-08-2012 14:33:56	10.27900028	0.008	15.61999989	0.231515795
Seep32L1049_92	Seep32L1049_92_31082012_143732.txt	Seep32L1049	1174548.248	3176741.191	8/31/2012	0	0.002774	0	A	789.3	46.2	31-08-2012 14:37:32	0	0.012	-0.037999999	0.231167242
Seep32L1049_93	Seep32L1049_93_31082012_144016.txt	Seep32L1049	1174548.423	3176643.904	8/31/2012	0	0.001155	0.009705	A	789.7	46.5	31-08-2012 14:40:16	0	0.005	0.041999999	0.23106733
Seep32L1049_94	Seep32L1049_94_31082012_144307.txt	Seep32L1049	1174647.45	3176647.26	8/31/2012	0	0.003924	0.180952	A	789.3	46.7	31-08-2012 14:43:07	-0.119000003	0.017000001	0.783999979	0.230805874
Seep32L1049_95	Seep32L1049_95_31082012_144658.txt	Seep32L1049	1174645.594	3176548.734	8/31/2012	0	0.002075	0.038045	A	789.0	46.9	31-08-2012 14:46:58	-0.081	0.009	0.165000007	0.230573967
Seep32L1049_96	Seep32L1049_96_31082012_145021.txt	Seep32L1049	1174549.462	3176543.413	8/31/2012	0	0.002074	0.000922	A	789.1	47.1	31-08-2012 14:50:21	0	0.009	0.004	0.230459183
Seep32L1049_97	Seep32L1049_97_31082012_145345.txt	Seep32L1049	1174543.93	3176449.11	8/31/2012	0	0.001613	0.02972	A	789.1	47.2	31-08-2012 14:53:45	-0.247999996	0.007	0.128999993	0.230387241
Seep32L1049_98	Seep32L1049_98_31082012_145717.txt	Seep32L1049	1174649.788	3176443.916	8/31/2012	0	0.001843	0.009673	A	789.1	47.3	31-08-2012 14:57:17	0	0.008	0.041999999	0.230315343
Seep32L1049_99	Seep32L1049_99_31082012_150230.txt	Seep32L1049	1174649.497	3176342.26	8/31/2012	0	0.004143	0.022784	A	789.0	47.5	31-08-2012 15:02:30	0	0.017999999	0.098999999	0.230142519
Seep5_01	Seep5_01_02092012_093126.txt	Seep5	1172614.834	3176611.806	9/2/2012	0	0	0.249957	A	787.0	23.1	02-09-2012 09:31:26	0	-0.006	1.006000042	0.248466298
Seep5_02	Seep5_02_02092012_093504.txt	Seep5	1172661.795	3176599.307	9/2/2012	0	0.000495	0.567698	A	787.1	24.2	02-09-2012 09:35:04	0	0.002	2.292999983	0.247578591

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep5_03	Seep5_03_02092012_093746.txt	Seep5	1172706.941	3176599.289	9/2/2012	0	0.000494	0.186096	A	787.3	25.2	02-09-2012 09:37:46	0	0.002	0.754000008	0.246811464
Seep5_04	Seep5_04_02092012_094245.txt	Seep5	1172698.583	3176575.812	9/2/2012	2.107404	0	0.879356	A	787.3	26.3	02-09-2012 09:42:45	8.569999695	-0.002	3.575999975	0.245904818
Seep5_05	Seep5_05_02092012_094658.txt	Seep5	1172753.661	3176595.582	9/2/2012	0	0.000733	0.0303	A	787.3	28.2	02-09-2012 09:46:58	0	0.003	0.123999998	0.244354397
Seep5_06	Seep5_06_02092012_095332.txt	Seep5	1172657.801	3176551.012	9/2/2012	0	0.00291	1.210244	A	787.5	30.6	02-09-2012 09:53:32	0	0.012	4.991000175	0.242485285
Seep5_07	Seep5_07_02092012_095637.txt	Seep5	1172655.914	3176503.044	9/2/2012	0	0.001208	0.075639	A	787.4	31.6	02-09-2012 09:56:37	0	0.005	0.312999994	0.241658911
Seep5_08	Seep5_08_02092012_095938.txt	Seep5	1172712.063	3176500.175	9/2/2012	0	0.000482	0.201257	A	787.4	32.4	02-09-2012 09:59:38	0	0.002	0.834999979	0.241026193
Seep5_09	Seep5_09_02092012_100215.txt	Seep5	1172750.764	3176491.526	9/2/2012	0	0.001923	0.218237	A	787.5	33.3	02-09-2012 10:02:15	0	0.008	0.907999992	0.240348846
Seep5_10	Seep5_10_02092012_100656.txt	Seep5	1172751.955	3176557.63	9/2/2012	0	0.000719	0.200354	A	787.8	34.3	02-09-2012 10:06:56	0	0.003	0.836000025	0.239658371
Seep5_11	Seep5_11_02092012_101114.txt	Seep5	1172800.307	3176552.659	9/2/2012	0	0.001672	0.326532	A	787.5	35.2	02-09-2012 10:11:14	0	0.007	1.366999984	0.238867864
Seep5_12	Seep5_12_02092012_101423.txt	Seep5	1172844.477	3176552.257	9/2/2012	0	0.000953	0.057418	A	787.5	36.0	02-09-2012 10:14:23	0	0.004	0.240999997	0.238249734
Seep5_13	Seep5_13_02092012_101736.txt	Seep5	1172851.126	3176504.084	9/2/2012	0	0.003811	0.215569	A	788.6	36.5	02-09-2012 10:17:36	-0.046999998	0.016000001	0.904999971	0.238197282
Seep5_14	Seep5_14_02092012_102343.txt	Seep5	1172814.457	3176497.615	9/2/2012	3.348226	0.000237	0.76356	A	788.6	37.7	02-09-2012 10:23:43	14.11100006	0.001	3.217999935	0.237277746
Seep5_15	Seep5_15_02092012_102729.txt	Seep5	1172799.009	3176459.606	9/2/2012	1.629061	0.001655	0.632801	A	788.2	38.6	02-09-2012 10:27:29	6.888999939	0.007	2.676000118	0.236472741
Seep5_16	Seep5_16_02092012_103112.txt	Seep5	1172860.947	3176457.513	9/2/2012	0	0.001887	0.148106	A	788.1	39.4	02-09-2012 10:31:12	0	0.008	0.628000021	0.235837534
Seep5_17	Seep5_17_02092012_103345.txt	Seep5	1172853.468	3176402.24	9/2/2012	0	0.001649	0.172927	A	788.3	39.8	02-09-2012 10:33:45	-0.234999999	0.007	0.734000027	0.235595882
Seep5_18	Seep5_18_02092012_103644.txt	Seep5	1172853.014	3176349.922	9/2/2012	0	0.00306	0.212055	A	788.5	40.2	02-09-2012 10:36:44	0	0.013	0.901000023	0.235354826
Seep5_19	Seep5_19_02092012_104019.txt	Seep5	1172849.171	3176297.2	9/2/2012	0	0.002115	0.005405	A	788.5	40.7	02-09-2012 10:40:19	-0.018999999	0.009	0.023	0.234979883
Seep5_20	Seep5_20_02092012_104355.txt	Seep5	1172850.783	3176252.721	9/2/2012	0	0.001174	0.006807	A	788.9	41.2	02-09-2012 10:43:55	0	0.005	0.028999999	0.234725133
Seep5_21	Seep5_21_02092012_104735.txt	Seep5	1172858.336	3176208.291	9/2/2012	0	0.001876	0.020163	A	789.0	41.6	02-09-2012 10:47:35	0	0.008	0.086000003	0.234456554
Seep5_22	Seep5_22_02092012_105238.txt	Seep5	1172806.069	3176256.94	9/2/2012	0	0.001874	0.097238	A	789.5	42.0	02-09-2012 10:52:38	0	0.008	0.414999992	0.234307364
Seep5_23	Seep5_23_02092012_105614.txt	Seep5	1172798.125	3176210.885	9/2/2012	0	0.000935	0.045127	A	788.1	42.1	02-09-2012 10:56:14	0	0.004	0.193000004	0.233817682
Seep5_24	Seep5_24_02092012_105949.txt	Seep5	1172752.852	3176216.242	9/2/2012	0	0.002105	0.055656	A	788.2	42.1	02-09-2012 10:59:49	0	0.009	0.238000005	0.23384735
Seep5_25	Seep5_25_02092012_110242.txt	Seep5	1172762.921	3176250.79	9/2/2012	0	0.003273	0.075504	A	787.9	42.1	02-09-2012 11:02:42	-0.039999999	0.014	0.323000014	0.233758345
Seep5_26	Seep5_26_02092012_110602.txt	Seep5	1172773.532	3176322.942	9/2/2012	0.316195	0.001168	0.207291	A	787.7	42.1	02-09-2012 11:06:02	1.353000045	0.005	0.887000024	0.233699009
Seep5_27	Seep5_27_02092012_110905.txt	Seep5	1172794.426	3176300.763	9/2/2012	0	0.001872	0.106689	A	788.6	42.1	02-09-2012 11:09:05	-0.016000001	0.008	0.456	0.233966023
Seep5_28	Seep5_28_02092012_111318.txt	Seep5	1172807.57	3176353.441	9/2/2012	0.234485	0.000234	0.306652	A	787.7	42.3	02-09-2012 11:13:18	1.003999949	0.001	1.312999964	0.233550832
Seep5_29	Seep5_29_02092012_111549.txt	Seep5	1172805.466	3176396.334	9/2/2012	0	0.002101	0.661697	A	787.7	42.5	02-09-2012 11:15:49	0	0.009	2.835000038	0.233402848
Seep5_30	Seep5_30_02092012_111908.txt	Seep5	1172756.638	3176453.367	9/2/2012	0	0.004195	0.417649	A	787.3	42.8	02-09-2012 11:19:08	0	0.017999999	1.792000055	0.233062819
Seep5_31	Seep5_31_02092012_112156.txt	Seep5	1172757.049	3176401.441	9/2/2012	0	0.002095	0.244592	A	786.9	43.1	02-09-2012 11:21:56	0	0.009	1.050999999	0.23272343
Seep5_32	Seep5_32_02092012_112450.txt	Seep5	1172750.252	3176355.647	9/2/2012	0	0.001395	0.10112	A	787.0	43.5	02-09-2012 11:24:50	0	0.006	0.435000002	0.232458994
Seep5_33	Seep5_33_02092012_112844.txt	Seep5	1172704.702	3176352.618	9/2/2012	0	0.001393	0.005571	A	787.1	44.0	02-09-2012 11:28:44	0	0.006	0.024	0.232122004
Seep5_34	Seep5_34_02092012_113128.txt	Seep5	1172702.073	3176301.357	9/2/2012	0	0.004406	0.620108	A	787.1	44.3	02-09-2012 11:31:28	0	0.018999999	2.674000025	0.231902644
Seep5_35	Seep5_35_02092012_113427.txt	Seep5	1172696.718	3176259.446	9/2/2012	0	0.002782	0.036856	A	787.5	44.6	02-09-2012 11:34:27	0	0.012	0.158999994	0.231801435
Seep5_36	Seep5_36_02092012_113725.txt	Seep5	1172700.175	3176205.086	9/2/2012	0	0.002547	0.178087	A	787.5	44.9	02-09-2012 11:37:25	0	0.011	0.768999994	0.231582791
Seep5_37	Seep5_37_02092012_114126.txt	Seep5	1172664.069	3176314.975	9/2/2012	0	0	0.247145	A	787.9	45.3	02-09-2012 11:41:26	0	-0.128000006	1.067999959	0.231409386
Seep5_38	Seep5_38_02092012_114351.txt	Seep5	1172607.075	3176354.463	9/2/2012	0	0.001155	0.229933	A	787.3	45.5	02-09-2012 11:43:51	0	0.005	0.995000005	0.231088027
Seep5_39	Seep5_39_02092012_114651.txt	Seep5	1172577.462	3176349.211	9/2/2012	0	0.001616	0.076885	A	787.1	45.7	02-09-2012 11:46:51	0	0.007	0.333000004	0.230884403
Seep5_40	Seep5_40_02092012_115040.txt	Seep5	1172503.83	3176350.047	9/2/2012	0	0.001615	0.135196	A	787.0	45.9	02-09-2012 11:50:40	0	0.007	0.586000025	0.230710357
Seep5_41	Seep5_41_02092012_115319.txt	Seep5	1172461.203	3176310.824	9/2/2012	0	0.002304	0.395423	A	786.3	46.0	02-09-2012 11:53:19	0	0.01	1.715999961	0.230432928
Seep5_42	Seep5_42_02092012_115553.txt	Seep5	1172513.922	3176306.018	9/2/2012	0	0.002994	0.158007	A	786.2	46.1	02-09-2012 11:55:53	0	0.013	0.68599999	0.230331451
Seep5_43	Seep5_43_02092012_115856.txt	Seep5	1172565.721	3176300.415	9/2/2012	0	0.004837	0.787787	A	786.5	46.2	02-09-2012 11:58:56	0	0.021	3.420000076	0.230347186
Seep5_44	Seep5_44_02092012_120134.txt	Seep5	1172616.115	3176304.659	9/2/2012	0	0.001843	0.049541	A	787.0	46.3	02-09-2012 12:01:34	0	0.008	0.215000004	0.230421469
Seep5_45	Seep5_45_02092012_120415.txt	Seep5	1172614.592	3176251.489	9/2/2012	0	0.001382	0.019582	A	787.1	46.4	02-09-2012 12:04:15	0	0.006	0.085000001	0.230378643
Seep5_46	Seep5_46_02092012_120710.txt	Seep5	1172557.233	3176255.205	9/2/2012	0	0.000921	0.197503	A	786.7	46.5	02-09-2012 12:07:10	-0.023	0.004	0.85799998	0.230189517
Seep5_47	Seep5_47_02092012_120959.txt	Seep5	1172504.63	3176257.354	9/2/2012	0	0.001611	0.05754	A	786.6	46.5	02-09-2012 12:09:59	0	0.007	0.25	0.230160266
Seep5_48	Seep5_48_02092012_121252.txt	Seep5	1172450.435	3176256.047	9/2/2012	0	0.004142	0.387974	A	786.2	46.4	02-09-2012 12:12:52	0	0.017999999	1.68599999	0.230115205
Seep5_49	Seep5_49_02092012_121545.txt	Seep5	1172412.433	3176242.608	9/2/2012	0	0.00276	0.316897	A	785.7	46.4	02-09-2012 12:15:45	0	0.012	1.378000021	0.229968861
Seep5_50	Seep5_50_02092012_121837.txt	Seep5	1172463.869	3176197.337	9/2/2012	0	0.002989	0.126704	A	785.4	46.3	02-09-2012 12:18:37	0	0.013	0.550999999	0.229953021
Seep5_51	Seep5_51_02092012_122127.txt	Seep5	1172518.313	3176212.44	9/2/2012	0	0.001151	0.225654	A	786.2	46.2	02-09-2012 12:21:27	0	0.005	0.980000019	0.230259329
Seep5_52	Seep5_52_02092012_122455.txt	Seep5	1172549.609	3176207.573	9/2/2012	0	0.003918	0.306054	A	786.4	46.0	02-09-2012 12:24:55	0	0.017000001	1.327999949	0.230462238
Seep5_53	Seep5_53_02092012_122740.txt	Seep5	1172604.809	3176199.879	9/2/2012	0	0.003459	0.083244	A	786.6	45.9	02-09-2012 12:27:40	0	0.015	0.361000001	0.2305931
Seep5_54	Seep5_54_02092012_123039.txt	Seep5	1172599.208	3176163.122	9/2/2012	0	0.005306	0.142108	A	786.7	45.8	02-09-2012 12:30:39	0	0.023	0.615999997	0.230694726
Seep5_55	Seep5_55_02092012_123333.txt	Seep5	1172555.888	3176151.831	9/2/2012	0	0.002769	0.110999	A	786.7	45.7	02-09-2012 12:33:33	0	0.012	0.481000006	0.230767071
Seep5_56	Seep5_56_02092012_123716.txt	Seep5	1172510.45	3176152.642	9/2/2012	0.517578	0.002537	0.750304	A	786.3	45.7	02-09-2012 12:37:16	2.243999958	0.011	3.253000021	0.23064974
Seep5_57	Seep5_57_02092012_124006.txt	Seep5	1172454.484	3176145.823	9/2/2012	0	0.001614	0.102395	A	786.2	45.7	02-09-2012 12:40:06	0	0.007	0.444000006	0.230620399
Seep5_58	Seep5_58_02092012_124336.txt	Seep5	1172409.794	3176153.54	9/2/2012	0	0.003458	0.299884	A	785.8	45.7	02-09-2012 12:43:36	0	0.015	1.300999999	0.230503067
Seep5_59	Seep5_59_02092012_124815.txt	Seep5	1172343.85	3176111.048	9/2/2012	0	0.001382	0.239832	A	785.4	45.7	02-09-2012 12:48:15	0	0.006	1.041000009	0.230385736
Seep5_60	Seep5_60_02092012_125136.txt	Seep5	1172337.474	3176061.843	9/2/2012	0	0.002992	0.147989	A	785.1	45.9	02-09-2012 12:51:36	0	0.013	0.643000007	0.230153367
Seep5_61	Seep5_61_02092012_125539.txt	Seep5	1172337.532	3176002.967	9/2/2012	0	0.00138	0.080969	A	785.4	46.2	02-09-2012 12:55:39	0	0.006	0.351999998	0.230025023
Seep5_62	Seep5_62_02092012_125810.txt	Seep5	1172387.606	3176006.738	9/2/2012	0	0.00184	0.254148	A	785.8	46.4	02-09-2012 12:58:10	-0.012	0.008	1.105000019	0.229998142
Seep5_63	Seep5_63_02092012_130047.txt	Seep5	1172396.611	3176054.662	9/2/2012	0	0.00621	0.432141	A	786.0	46.5	02-09-2012 13:00:47	-0.015	0.027000001	1.878999949	0.229984701
Seep5_64	Seep5_64_02092012_130328.txt	Seep5	1172417.277	3176063.273	9/2/2012	0	0.004826	0.406767	A	785.9	46.7	02-09-2012 13:03:28	0	0.021	1.769999981	0.229811653
Seep5_65	Seep5_65_02092012_130622.txt	Seep5	1172393.062	3176100.991	9/2/2012	0	0.002297	0.114626	A	785.8	46.8	02-09-2012 13:06:22	0	0.01	0.499000013	0.229710594
Seep5_66	Seep5_66_02092012_130931.txt	Seep5	1172447.449	3176101.548	9/2/2012	0	0.001377	0.406689	A	785.6	47.0	02-09-2012 13:09:31	0	0.006	1.771999955	0.229508668
Seep5_67	Seep5_67_02092012_131306.txt	Seep5	1172444.404	3176046.123	9/2/2012	0	0.003213	0.340112	A	785.8	47.1	02-09-2012 13:13:06	0	0.014	1.481999993	0.229495406

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
Seep5_68	Seep5_68_02092012_131636.txt	Seep5	1172431.453	3175996.286	9/2/2012	0	0.002525	0.033738	A	786.1	47.2	02-09-2012 13:16:36	0	0.011	0.147	0.22951135
Seep5_69	Seep5_69_02092012_132020.txt	Seep5	1172498.668	3175998.193	9/2/2012	0	0.001377	0.068871	A	786.3	47.2	02-09-2012 13:20:20	0	0.006	0.300000012	0.229569748
Seep5_70	Seep5_70_02092012_132311.txt	Seep5	1172553.479	3176052.815	9/2/2012	0	0.001378	0.087281	A	786.7	47.2	02-09-2012 13:23:11	0	0.006	0.379999995	0.229686528
Seep5_71	Seep5_71_02092012_132824.txt	Seep5	1172507.734	3176064.535	9/2/2012	0	0.004368	0.374948	A	786.9	47.0	02-09-2012 13:28:24	0	0.018999999	1.631000042	0.229888454
Seep5_72	Seep5_72_02092012_133128.txt	Seep5	1172501.004	3176099.101	9/2/2012	0	0.001839	0.817219	A	786.4	46.9	02-09-2012 13:31:28	0	0.008	3.555999994	0.229814157
Seep5_73	Seep5_73_02092012_133522.txt	Seep5	1172548.183	3176093.919	9/2/2012	0	0.001149	0.080925	A	786.2	46.7	02-09-2012 13:35:22	0	0.005	0.351999998	0.229899377
Seep5_74	Seep5_74_02092012_133809.txt	Seep5	1172607.563	3176100.646	9/2/2012	0	0.004141	0.026457	A	786.5	46.6	02-09-2012 13:38:09	0	0.017999999	0.115000002	0.230059028
Seep5_75	Seep5_75_02092012_134210.txt	Seep5	1172554.358	3176002.816	9/2/2012	0	0.001843	0.164679	A	786.9	46.4	02-09-2012 13:42:10	0	0.008	0.714999974	0.230320096
Seep5_76	Seep5_76_02092012_134823.txt	Seep5	1172625.43	3175881.311	9/2/2012	0	0.001385	0.06947	A	787.3	45.9	02-09-2012 13:48:23	-0.046999998	0.006	0.300999999	0.230798304
Seep5_77	Seep5_77_02092012_135130.txt	Seep5	1172704.985	3175910.737	9/2/2012	0	0.000927	0.049817	A	789.9	45.7	02-09-2012 13:51:30	0	0.004	0.215000004	0.23170574
Seep5_78	Seep5_78_02092012_135737.txt	Seep5	1172717.355	3176033.763	9/2/2012	0	0.003017	0.030867	A	790.2	45.3	02-09-2012 13:57:37	0	0.013	0.133000001	0.2320849
Seep5_79	Seep5_79_02092012_140149.txt	Seep5	1172773.796	3175987.794	9/2/2012	0	0.001854	0.036393	A	788.5	45.0	02-09-2012 14:01:49	0	0.008	0.157000005	0.231803969
Seep5_80	Seep5_80_02092012_140432.txt	Seep5	1172831.198	3176069.532	9/2/2012	0	0.000465	0.385158	A	789.7	44.8	02-09-2012 14:04:32	0	0.002	1.657999992	0.232302785
Seep5_81	Seep5_81_02092012_140719.txt	Seep5	1172930.578	3176171.586	9/2/2012	0	0.000232	0.093886	A	789.5	44.6	02-09-2012 14:07:19	0	0.001	0.404000014	0.232390136
Seep5_82	Seep5_82_02092012_141158.txt	Seep5	1172922.308	3176299.908	9/2/2012	0	0.001163	0.074919	A	789.7	44.3	02-09-2012 14:11:58	0	0.005	0.321999997	0.232668668
Seep5_83	Seep5_83_02092012_141521.txt	Seep5	1172992.232	3176360.621	9/2/2012	0	0.001163	0.064873	A	788.7	44.1	02-09-2012 14:15:21	0	0.005	0.279000014	0.232520536
Seep623L99_01	Seep623L99_01_05092012_125642.txt	Seep623L99	1184553.451	3159867.353	9/5/2012	0	0.001413	0	A	780.7	37.0	05-09-2012 12:56:42	0	0.006	-0.541000009	0.235430926
Seep623L99_02	Seep623L99_02_05092012_130115.txt	Seep623L99	1184391.891	3159961.489	9/5/2012	0	0.00188	0.161173	A	781.1	37.8	05-09-2012 13:01:15	0	0.008	0.68599999	0.234945536
Seep623L99_03	Seep623L99_03_05092012_130433.txt	Seep623L99	1184342.783	3159990.96	9/5/2012	0	0.001408	0.063382	A	781.7	38.3	05-09-2012 13:04:33	0	0.006	0.270000011	0.234748527
Seep623L99_04	Seep623L99_04_05092012_130843.txt	Seep623L99	1184228.546	3160086.469	9/5/2012	0	0.002344	0.364073	A	781.9	38.8	05-09-2012 13:08:43	0	0.01	1.552999973	0.234432235
Seep623L99_05	Seep623L99_05_05092012_131133.txt	Seep623L99	1184177.828	3160080.638	9/5/2012	0	0.001639	0.097867	A	781.9	39.2	05-09-2012 13:11:33	0	0.007	0.418000013	0.234132022
Seep623L99_06	Seep623L99_06_05092012_131431.txt	Seep623L99	1184120.807	3160114.497	9/5/2012	0	0.000702	0	A	781.9	39.5	05-09-2012 13:14:31	0	0.003	-0.123999998	0.233907357
Seep623L99_07	Seep623L99_07_05092012_132009.txt	Seep623L99	1184106.257	3160235.563	9/5/2012	0	0.001167	0.085424	A	781.7	40.1	05-09-2012 13:20:09	0	0.005	0.365999997	0.233399615
Seep623L99_08	Seep623L99_08_05092012_132546.txt	Seep623L99	1184146.082	3160291.968	9/5/2012	0	0.002563	0.061985	A	781.7	40.6	05-09-2012 13:25:46	0	0.011	0.266000003	0.233027667
Seep623L99_09	Seep623L99_09_05092012_133402.txt	Seep623L99	1184244.848	3160251.236	9/5/2012	0	0.001859	0.135277	A	781.2	41.2	05-09-2012 13:34:02	0	0.008	0.582000017	0.232434124
Seep623L99_10	Seep623L99_10_05092012_133807.txt	Seep623L99	1184322.466	3160286.632	9/5/2012	0	0.002556	0.057858	A	781.2	41.3	05-09-2012 13:38:07	-0.617999971	0.011	0.248999998	0.232360199
Seep623L99_11	Seep623L99_11_05092012_134135.txt	Seep623L99	1184336.674	3160235.201	9/5/2012	0	0.001855	0.018088	A	779.9	41.4	05-09-2012 13:41:35	0	0.008	0.078000002	0.231899783
Seep623L99_12	Seep623L99_12_05092012_134503.txt	Seep623L99	1184332.773	3160218.846	9/5/2012	0	0.00116	0.017627	A	780.5	41.6	05-09-2012 13:45:03	0	0.005	0.075999998	0.231930718
Seep623L99_13	Seep623L99_13_05092012_134754.txt	Seep623L99	1184259.192	3160197.711	9/5/2012	0	0.002086	0.022718	A	780.6	41.8	05-09-2012 13:47:54	0	0.009	0.097999997	0.231813133
Seep623L99_14	Seep623L99_14_05092012_135053.txt	Seep623L99	1184278.26	3160136.719	9/5/2012	0	0.001854	0.038935	A	780.9	42.0	05-09-2012 13:50:53	0	0.008	0.167999998	0.231755063
Seep623L99_15	Seep623L99_15_05092012_135353.txt	Seep623L99	1184362.091	3160170.834	9/5/2012	0	0.000926	0.008568	A	780.8	42.2	05-09-2012 13:53:53	0	0.004	0.037	0.23157841
Seep623L99_16	Seep623L99_16_05092012_135649.txt	Seep623L99	1184418.277	3160219.148	9/5/2012	0	0.000694	0.069625	A	780.4	42.4	05-09-2012 13:56:49	0	0.003	0.300999999	0.23131308
Seep623L99_17	Seep623L99_17_05092012_135928.txt	Seep623L99	1184398.01	3160260.327	9/5/2012	0	0.000693	0.007393	A	779.9	42.6	05-09-2012 13:59:28	0	0.003	0.032000002	0.231018454
Seep623L99_18	Seep623L99_18_05092012_140248.txt	Seep623L99	1184472.12	3160167.275	9/5/2012	0	0.002076	0.072199	A	779.7	43.0	05-09-2012 14:02:48	0	0.009	0.312999994	0.230666995
Seep623L99_19	Seep623L99_19_05092012_140538.txt	Seep623L99	1184418.852	3160172.371	9/5/2012	0	0.002305	0.223131	A	779.9	43.3	05-09-2012 14:05:38	0	0.01	0.967999995	0.230507433
Seep623L99_20	Seep623L99_20_05092012_140847.txt	Seep623L99	1184511.011	3160139.15	9/5/2012	0	0.001612	0.056428	A	780.0	43.6	05-09-2012 14:08:47	0	0.007	0.245000005	0.230318636
Seep623L99_21	Seep623L99_21_05092012_141153.txt	Seep623L99	1184453.363	3160089.221	9/5/2012	0	0.00046	0.007593	A	780.0	43.9	05-09-2012 14:11:53	0	0.002	0.033	0.230100706
Seep623L99_22	Seep623L99_22_05092012_141422.txt	Seep623L99	1184418.873	3160114.48	9/5/2012	0	0.00046	0.013568	A	780.3	44.2	05-09-2012 14:14:22	0	0.002	0.059	0.229971603
Seep623L99_23	Seep623L99_23_05092012_141706.txt	Seep623L99	1184378.864	3160112.475	9/5/2012	0	0.000919	0.221184	A	780.3	44.6	05-09-2012 14:17:06	0	0.004	0.963	0.229682103
Seep623L99_24	Seep623L99_24_05092012_141938.txt	Seep623L99	1184388.2	3160064.943	9/5/2012	0	0.000689	0.00505	A	780.6	44.9	05-09-2012 14:19:38	0	0.003	0.022	0.229553685
Seep623L99_25	Seep623L99_25_05092012_142203.txt	Seep623L99	1184424.494	3160012.827	9/5/2012	0	0	0	A	781.1	45.1	05-09-2012 14:22:03	0	-0.002	-0.072999999	0.229556367
Seep623L99_26	Seep623L99_26_05092012_142453.txt	Seep623L99	1184497.164	3160002.296	9/5/2012	0	0.001376	0.002523	A	780.9	45.3	05-09-2012 14:24:53	0	0.006	0.011	0.229353458
Seep623L99_27	Seep623L99_27_05092012_142732.txt	Seep623L99	1184540.223	3160035.209	9/5/2012	0	0.000458	0.002519	A	780.3	45.5	05-09-2012 14:27:32	0	0.002	0.011	0.229033381
SeepL1021_01	SeepL1021_01_01092012_153642.txt	SeepL1021	1174232.429	3178828.906	9/1/2012	0	0.00166	0	A	788.6	37.8	01-09-2012 15:36:42	-0.816999972	0.007	-0.003	0.237201437
SeepL1021_02	SeepL1021_02_01092012_154108.txt	SeepL1021	1174209.107	3178898.704	9/1/2012	0	0.001656	0	A	788.6	38.6	01-09-2012 15:41:08	0	0.007	-0.123000003	0.23659274
SeepL1021_03	SeepL1021_03_01092012_154653.txt	SeepL1021	1174050.742	3178839.478	9/1/2012	0	0.000944	0.097903	A	788.6	39.5	01-09-2012 15:46:53	0	0.004	0.414999992	0.235911682
SeepL1021_04	SeepL1021_04_01092012_154920.txt	SeepL1021	1174056.282	3178810.271	9/1/2012	0	0.002831	0.075953	A	789.5	39.9	01-09-2012 15:49:20	0	0.012	0.321999997	0.235879138
SeepL1021_05	SeepL1021_05_01092012_155226.txt	SeepL1021	1174055.364	3178758.57	9/1/2012	0	0.001178	0.085986	A	789.5	40.3	01-09-2012 15:52:26	0	0.005	0.36500001	0.235578135
SeepL1021_06	SeepL1021_06_01092012_155527.txt	SeepL1021	1174063.413	3178711.05	9/1/2012	0	0.001882	0.069398	A	789.4	40.7	01-09-2012 15:55:27	0	0.008	0.294999987	0.235248089
SeepL1021_07	SeepL1021_07_01092012_155904.txt	SeepL1021	1174006.328	3178669.865	9/1/2012	0	0.002584	0.105693	A	789.4	41.2	01-09-2012 15:59:04	0	0.011	0.449999988	0.234873906
SeepL1021_08	SeepL1021_08_01092012_160245.txt	SeepL1021	1174010.603	3178600.844	9/1/2012	0	0.003282	0	A	789.5	41.8	01-09-2012 16:02:45	-0.501999974	0.014	-0.005	0.234456152
SeepL1021_09	SeepL1021_09_01092012_160837.txt	SeepL1021	1174006.521	3178563.446	9/1/2012	0	0.000468	0.095607	A	789.4	42.7	01-09-2012 16:08:37	-0.075999998	0.002	0.409000009	0.233758464
SeepL1021_10	SeepL1021_10_01092012_162036.txt	SeepL1021	1174012.6	3178718.17	9/1/2012	0	0.000464	0.025755	A	789.5	45.1	01-09-2012 16:20:36	0	0.002	0.111000001	0.232025027
SeepL1021_11	SeepL1021_11_01092012_162425.txt	SeepL1021	1173969.041	3178716.008	9/1/2012	2.072364	0.001622	0.93261	A	789.4	45.5	01-09-2012 16:24:25	8.944000244	0.007	4.025000095	0.231704414
SeepL1021_12	SeepL1021_12_01092012_162751.txt	SeepL1021	1173960.63	3178784.523	9/1/2012	0	0.004166	0.374732	A	789.8	46.0	01-09-2012 16:27:51	0	0.017999999	1.618999958	0.231458634
SeepL1021_13	SeepL1021_13_01092012_163128.txt	SeepL1021	1174012.264	3178773.705	9/1/2012	0	0.005547	0.096841	A	789.4	46.3	01-09-2012 16:31:28	0	0.024	0.419	0.231124163
SeepL1021_14	SeepL1021_14_01092012_163405.txt	SeepL1021	1174011.036	3178815.81	9/1/2012	0	0.001616	0.020312	A	789.1	46.6	01-09-2012 16:34:05	-0.064999998	0.007	0.088	0.230819553
SeepL1021_15	SeepL1021_15_01092012_163747.txt	SeepL1021	1173963.914	3178819.538	9/1/2012	0	0.002307	0.289357	A	789.1	46.7	01-09-2012 16:37:47	-0.305999994	0.01	1.253999949	0.230747387
SeepL1021_16	SeepL1021_16_01092012_164113.txt	SeepL1021	1173928.897	3178829.17	9/1/2012	15.17913	0.008077	4.264269	A	789.4	46.8	01-09-2012 16:41:13	65.77799988	0.035	18.47900009	0.230762973
SeepL1021_17	SeepL1021_17_01092012_164352.txt	SeepL1021	1173909.925	3178862.173	9/1/2012	0	0.003465	0.137426	A	790.1	46.8	01-09-2012 16:43:52	0	0.015	0.595000029	0.230967596
SeepL1021_18	SeepL1021_18_01092012_164644.txt	SeepL1021	1173859.857	3178869.64	9/1/2012	0	0.00208	0.216512	A	790.2	46.7	01-09-2012 16:46:44	-0.072999999	0.009	0.936999977	0.231069058
SeepL1021_19	SeepL1021_19_01092012_164912.txt	SeepL1021	1173870.984	3178815.685	9/1/2012	0	0.001386	0.136545	A	790.1	46.7	01-09-2012 16:49:12	0	0.006	0.591000021	0.231039807
SeepL1021_20	SeepL1021_20_01092012_165225.txt	SeepL1021	1173889.715	3178769.037	9/1/2012	0	0.004158	0.218536	A	790.0	46.7	01-09-2012 16:52:25	0	0.017999999	0.94599998	0.231010571
SeepL1021_21	SeepL1021_21_01092012_165449.txt	SeepL1021	1173902.715	3178716.385	9/1/2012	0	0.002772	0.203751	A	790.0	46.7	01-09-2012 16:54:49	0	0.012	0.882000029	0.231010571
SeepL1021_22	SeepL1021_22_01092012_165709.txt	SeepL1021	1173954.316	3178666.01	9/1/2012	0	0.005774	0.369985	A	789.8	46.7	01-09-2012 16:57:09	0	0.025	1.601999998	0.230952084

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
SeepL1021_23	SeepL1021_23_01092012_165940.txt	SeepL1021	1173967.78	3178617.27	9/1/2012	1.336164	0.001847	0.269172	A	789.7	46.8	01-09-2012 16:59:40	5.788000107	0.008	1.166000009	0.230850667
SeepL1021_24	SeepL1021_24_01092012_170206.txt	SeepL1021	1173979.595	3178561.609	9/1/2012	0	0.00554	0.495405	A	789.7	46.8	01-09-2012 17:02:06	0	0.024	2.145999908	0.230850667
SeepL1021_25	SeepL1021_25_01092012_170704.txt	SeepL1021	1173968.338	3178883.765	9/1/2012	0	0.003692	0.164965	A	789.5	46.9	01-09-2012 17:07:04	0	0.016000001	0.714999974	0.230720088
SeepL1021_26	SeepL1021_26_01092012_170930.txt	SeepL1021	1174015.159	3178868.222	9/1/2012	0	0.001613	0.095168	A	789.0	47.1	01-09-2012 17:09:30	0	0.007	0.412999988	0.230429977
SeepL1021_27	SeepL1021_27_02092012_152713.txt	SeepL1021	1173851.306	3178763.501	9/2/2012	0	0.001188	0.078383	A	791.2	38.4	02-09-2012 15:27:13	0	0.005	0.330000013	0.237525165
SeepL1021_28	SeepL1021_28_02092012_152955.txt	SeepL1021	1173845.599	3178710.112	9/2/2012	0	0.005217	0.134698	A	791.2	38.9	02-09-2012 15:29:55	0	0.022	0.568000019	0.237144575
SeepL1021_29	SeepL1021_29_02092012_153205.txt	SeepL1021	1173842.281	3178653.916	9/2/2012	0	0.006632	0.12435	A	791.0	39.2	02-09-2012 15:32:05	0	0.028000001	0.524999976	0.236856923
SeepL1021_30	SeepL1021_30_02092012_153445.txt	SeepL1021	1173901.488	3178658.264	9/2/2012	0	0.00355	0.088043	A	790.9	39.4	02-09-2012 15:34:45	0	0.015	0.372000009	0.236675441
SeepL1021_31	SeepL1021_31_02092012_154028.txt	SeepL1021	1173901.637	3178609.366	9/2/2012	1.413983	0.003073	2.760127	A	790.9	39.8	02-09-2012 15:40:28	5.981999874	0.013	11.67700005	0.236372933
SeepL1021_32	SeepL1021_32_02092012_154357.txt	SeepL1021	1173844.323	3178611.891	9/2/2012	0	0.005669	0	A	790.8	40.0	02-09-2012 15:43:57	-0.131999999	0.024	-1.467000008	0.236192092
SeepL1021_33	SeepL1021_33_02092012_154618.txt	SeepL1021	1173842.766	3178553.524	9/2/2012	0	0.004723	0.073442	A	790.9	40.1	02-09-2012 15:46:18	0	0.02	0.31099999	0.236146554
SeepL1021_34	SeepL1021_34_02092012_154911.txt	SeepL1021	1173902.163	3178552.293	9/2/2012	0	0.004485	0.111648	A	790.8	40.2	02-09-2012 15:49:11	0	0.018999999	0.47299999	0.236041337
SeepL1021_35	SeepL1021_35_02092012_155226.txt	SeepL1021	1173931.054	3178571.413	9/2/2012	0	0.003539	0.001888	A	790.8	40.3	02-09-2012 15:52:26	0	0.015	0.008	0.235966042
SeepL1021_36	SeepL1021_36_02092012_155446.txt	SeepL1021	1173904.719	3178512.585	9/2/2012	0	0.005427	0.209066	A	790.8	40.3	02-09-2012 15:54:46	0	0.023	0.885999978	0.235966042
SeepL1021_37	SeepL1021_37_02092012_155655.txt	SeepL1021	1173908.406	3178458.726	9/2/2012	0	0.005896	0.026413	A	790.6	40.4	02-09-2012 15:56:55	0	0.025	0.112000003	0.235831127
SeepL1021_38	SeepL1021_38_02092012_155925.txt	SeepL1021	1173904.496	3178410.246	9/2/2012	0	0.004244	0.108448	A	790.6	40.5	02-09-2012 15:59:25	0	0.017999999	0.460000008	0.235755935
SeepL1021_39	SeepL1021_39_02092012_160152.txt	SeepL1021	1173902.386	3178354.646	9/2/2012	0	0.004006	0.08884	A	790.5	40.6	02-09-2012 16:01:52	0	0.017000001	0.377000004	0.235650986
SeepL1021_40	SeepL1021_40_02092012_160418.txt	SeepL1021	1173855.488	3178358.413	9/2/2012	0	0.004005	0.196966	A	790.6	40.7	02-09-2012 16:04:18	0	0.017000001	0.836000025	0.235605702
SeepL1021_41	SeepL1021_41_02092012_160645.txt	SeepL1021	1173804.24	3178356.584	9/2/2012	0	0.003533	0.052523	A	790.6	40.8	02-09-2012 16:06:45	0	0.015	0.223000005	0.235530645
SeepL1021_42	SeepL1021_42_02092012_160910.txt	SeepL1021	1173802.288	3178400.777	9/2/2012	0	0.004241	0.046176	A	790.8	40.8	02-09-2012 16:09:10	0	0.017999999	0.195999995	0.235590234
SeepL1021_43	SeepL1021_43_02092012_161216.txt	SeepL1021	1173849.373	3178412.15	9/2/2012	0.924043	0.00212	2.656712	A	790.9	40.9	02-09-2012 16:12:16	3.923000097	0.009	11.27900028	0.235544994
SeepL1021_44	SeepL1021_44_02092012_161622.txt	SeepL1021	1173856.71	3178452.218	9/2/2012	3.423142	0.002825	0.606105	A	790.6	41.0	02-09-2012 16:16:22	14.54300022	0.012	2.575000048	0.235380709
SeepL1021_45	SeepL1021_45_02092012_162037.txt	SeepL1021	1173804.725	3178456.594	9/2/2012	0	0.00306	0	A	790.8	41.1	02-09-2012 16:20:37	0	0.013	-0.165999994	0.235365331
SeepL1021_46	SeepL1021_46_02092012_162249.txt	SeepL1021	1173802.267	3178513.046	9/2/2012	0	0.002119	0.021656	A	790.9	41.1	02-09-2012 16:22:49	0	0.009	0.092	0.235395089
SeepL1021_47	SeepL1021_47_02092012_162501.txt	SeepL1021	1173851.998	3178507.988	9/2/2012	0	0.002589	0.161716	A	790.9	41.1	02-09-2012 16:25:01	0	0.011	0.686999977	0.235395089
SeepL1030_01	SeepL1030_01_29082012_103649.txt	SeepL1030	1146211.354	3164701.953	8/29/2012	0	0.000464	0	A	780.9	41.6	29-08-2012 10:36:49	0	0.002	-0.158999994	0.232049584
SeepL1030_02	SeepL1030_02_29082012_104020.txt	SeepL1030	1146201.989	3164664.461	8/29/2012	0	0.000464	0.030886	A	782.0	41.8	29-08-2012 10:40:20	0	0.002	0.133000001	0.23222889
SeepL1030_03	SeepL1030_03_29082012_104450.txt	SeepL1030	1146262.329	3164649.263	8/29/2012	0	0	0.060349	A	782.1	42.0	29-08-2012 10:44:50	0	-0.005	0.25999999	0.232111201
SeepL1030_04	SeepL1030_04_29082012_105200.txt	SeepL1030	1146307.689	3164646.204	8/29/2012	0	0.001623	0.142559	A	782.3	42.5	29-08-2012 10:52:00	-0.054000001	0.007	0.61500001	0.231802776
SeepL1030_05	SeepL1030_05_29082012_105813.txt	SeepL1030	1146358.759	3164660.404	8/29/2012	0	0.002084	0.062276	A	782.3	42.9	29-08-2012 10:58:13	0	0.009	0.268999994	0.231509402
SeepL1030_06	SeepL1030_06_29082012_110227.txt	SeepL1030	1146359.166	3164712.814	8/29/2012	0	0.00208	0.18347	A	782.3	43.5	29-08-2012 11:02:27	0	0.009	0.79400003	0.231070742
SeepL1030_07	SeepL1030_07_29082012_110807.txt	SeepL1030	1146313.684	3164713.394	8/29/2012	0	0.000462	0	A	782.3	43.9	29-08-2012 11:08:07	0	0.002	-0.195999995	0.230779216
SeepL1030_08	SeepL1030_08_29082012_111151.txt	SeepL1030	1146262.591	3164709.24	8/29/2012	0.349672	0.000922	1.636795	A	782.1	44.2	29-08-2012 11:11:51	1.51699996	0.004	7.100999832	0.230502099
SeepL1030_09	SeepL1030_09_29082012_111550.txt	SeepL1030	1146210.198	3164761.402	8/29/2012	0	0.005755	0.431647	A	782.1	44.6	29-08-2012 11:15:50	0	0.025	1.875	0.230211943
SeepL1030_10	SeepL1030_10_29082012_111853.txt	SeepL1030	1146257.391	3164753.798	8/29/2012	12.79628	0.00345	3.475885	A	781.9	44.8	29-08-2012 11:18:53	55.63399887	0.015	15.11200047	0.230008289
SeepL1030_11	SeepL1030_11_29082012_112222.txt	SeepL1030	1146311.145	3164761.489	8/29/2012	35.30769	0.002987	8.678765	A	781.9	45.1	29-08-2012 11:22:22	153.651001	0.013	37.76800156	0.229791477
SeepL1030_12	SeepL1030_12_29082012_112535.txt	SeepL1030	1146357.649	3164757.609	8/29/2012	0	0.005971	0.193822	A	781.9	45.3	29-08-2012 11:25:35	-0.015	0.026000001	0.843999982	0.22964716
SeepL1030_13	SeepL1030_13_29082012_112847.txt	SeepL1030	1146362.3	3164808.373	8/29/2012	0	0.001377	0.134056	A	782.3	45.6	29-08-2012 11:28:47	0	0.006	0.583999991	0.229548395
SeepL1030_14	SeepL1030_14_29082012_113149.txt	SeepL1030	1146316.012	3164801.508	8/29/2012	0	0.002982	0.23514	A	782.3	45.8	29-08-2012 11:31:49	0	0.013	1.024999976	0.229404449
SeepL1030_15	SeepL1030_15_29082012_113436.txt	SeepL1030	1146263.611	3164806.693	8/29/2012	0	0.002293	0.143984	A	782.1	45.9	29-08-2012 11:34:36	0	0.01	0.628000021	0.229273915
SeepL1030_16	SeepL1030_16_29082012_113735.txt	SeepL1030	1146205.817	3164807.854	8/29/2012	0	0.001604	0.111149	A	782.0	46.0	29-08-2012 11:37:35	-0.470999986	0.007	0.485000014	0.229172766
SeepL1030_17	SeepL1030_17_29082012_114044.txt	SeepL1030	1146100.638	3164850.634	8/29/2012	0	0.001603	0	A	781.5	46.1	29-08-2012 11:40:44	0	0.007	-0.041999999	0.228954509
SeepL1033_01	SeepL1033_01_03092012_091516.txt	SeepL1033	1167594.552	3188518.681	9/3/2012	0	0.001271	0.168287	A	798.4	20.6	03-09-2012 09:15:16	0	0.005	0.662	0.254210651
SeepL1033_02	SeepL1033_02_03092012_091845.txt	SeepL1033	1167701.295	3188500.396	9/3/2012	0	0.003032	0.197055	A	797.5	22.1	03-09-2012 09:18:45	0	0.012	0.779999971	0.252634048
SeepL1033_03	SeepL1033_03_03092012_092416.txt	SeepL1033	1167762.661	3188514.39	9/3/2012	0	0.001505	0.188897	A	797.8	24.3	03-09-2012 09:24:16	0	0.006	0.753000021	0.250859857
SeepL1033_04	SeepL1033_04_03092012_092730.txt	SeepL1033	1167811.969	3188496.365	9/3/2012	0	0.001748	0.162808	A	797.6	25.6	03-09-2012 09:27:30	0	0.007	0.65200001	0.249705628
SeepL1033_05	SeepL1033_05_03092012_093050.txt	SeepL1033	1167764.747	3188482.014	9/3/2012	0	0.001989	0.135031	A	797.5	26.8	03-09-2012 09:30:50	0	0.008	0.542999983	0.248675466
SeepL1033_06	SeepL1033_06_03092012_093509.txt	SeepL1033	1167729.647	3188470.38	9/3/2012	0	0.004204	0.403602	A	797.6	28.5	03-09-2012 09:35:09	0	0.017000001	1.631999969	0.247305021
SeepL1033_07	SeepL1033_07_03092012_094113.txt	SeepL1033	1167759.072	3188410.161	9/3/2012	0	0.001963	0.156567	A	797.5	30.8	03-09-2012 09:41:13	0	0.008	0.638000011	0.245402873
SeepL1033_08	SeepL1033_08_03092012_094432.txt	SeepL1033	1167813.056	3188449.842	9/3/2012	0	0.002933	0.076982	A	797.6	32.1	03-09-2012 09:44:32	0	0.012	0.314999998	0.244388402
SeepL1033_09	SeepL1033_09_03092012_094747.txt	SeepL1033	1167814.905	3188423.585	9/3/2012	0.351586	0.004626	0.352316	A	797.5	33.2	03-09-2012 09:47:47	1.444000006	0.018999999	1.447000027	0.243480355
SeepL1033_10	SeepL1033_10_03092012_095032.txt	SeepL1033	1167851.213	3188415.774	9/3/2012	0	0.003155	0.072564	A	797.5	34.2	03-09-2012 09:50:32	0	0.013	0.298999995	0.242688164
SeepL1033_11	SeepL1033_11_03092012_095326.txt	SeepL1033	1167857.576	3188459.744	9/3/2012	0.301227	0.003871	0.189204	A	797.4	35.1	03-09-2012 09:53:26	1.245000005	0.016000001	0.782000005	0.24194923
SeepL1033_12	SeepL1033_12_03092012_095607.txt	SeepL1033	1167870.704	3188503.435	9/3/2012	0	0.002654	0.00386	A	797.4	36.0	03-09-2012 09:56:07	0	0.011	0.016000001	0.241244867
SeepL1033_13	SeepL1033_13_03092012_095825.txt	SeepL1033	1167912.047	3188507.819	9/3/2012	0	0.003129	0.039956	A	797.4	36.7	03-09-2012 09:58:25	0	0.013	0.165999994	0.240699857
SeepL1033_14	SeepL1033_14_03092012_100051.txt	SeepL1033	1167907.116	3188460.66	9/3/2012	0.243218	0.002641	0.24706	A	797.2	37.4	03-09-2012 10:00:51	1.013000011	0.011	1.029000044	0.240097076
SeepL1033_15	SeepL1033_15_03092012_100500.txt	SeepL1033	1167909.729	3188409.509	9/3/2012	0	0.002153	0.054549	A	797.2	38.5	03-09-2012 10:05:00	0	0.009	0.228	0.239249632
SeepL1033_16	SeepL1033_16_03092012_100809.txt	SeepL1033	1167965.606	3188409.593	9/3/2012	0	0.001431	0.040309	A	796.8	39.3	03-09-2012 10:08:09	0	0.006	0.169	0.238517314
SeepL1033_17	SeepL1033_17_03092012_101051.txt	SeepL1033	1167960.559	3188457.364	9/3/2012	0	0.001429	0.054309	A	797.0	39.8	03-09-2012 10:10:51	0	0.006	0.228	0.238196
SeepL1033_18	SeepL1033_18_03092012_101303.txt	SeepL1033	1167958.402	3188511.43	9/3/2012	0	0.001666	0.08497	A	797.4	40.2	03-09-2012 10:13:03	0	0.007	0.356999993	0.23801133
SeepL1033_19	SeepL1033_19_03092012_101618.txt	SeepL1033	1167854.289	3188371.003	9/3/2012	0	0.002616	0.029961	A	797.4	40.5	03-09-2012 10:16:18	0	0.011	0.126000002	0.237783685
SeepL1033_20	SeepL1033_20_03092012_101920.txt	SeepL1033	1167808.622	3188365.689	9/3/2012	0	0.001663	0.05059	A	797.0	40.7	03-09-2012 10:19:20	0	0.007	0.213	0.237512946
SeepL1033_21	SeepL1033_21_03092012_102157.txt	SeepL1033	1167759.392	3188363.281	9/3/2012	0	0.002374	0.014009	A	797.0	40.8	03-09-2012 10:21:57	0	0.01	0.059	0.237437293
SeepL1033_22	SeepL1033_22_03092012_102431.txt	SeepL1033	1167713.057	3188413.779	9/3/2012	0	0.002375	0.151532	A	797.5	40.9	03-09-2012 10:24:31	0	0.01	0.638000011	0.237510607
SeepL1033_23	SeepL1033_23_03092012_103012.txt	SeepL1033	1167590.908	3188633.83	9/3/2012	0	0.003088	0.11258	A	797.5	40.9	03-09-2012 10:30:12	0	0.013	0.474000007	0.237510607

APPENDIX B - FLUX METER DATA

SitePt	Filename	Site	Northing	Easting	Date	CH4flux	H2Sflux	CO2flux	ACCUMULATION CHAMBER:	PRESSURE (HPa):	TEMP DegC	TIME:	CH4slope	H2Sslope	CO2slope	AcK
SeepL1033_24	SeepL1033_24_03092012_103502.txt	SeepL1033	1167470.234	3188587.372	9/3/2012	0	0.004275	0.084781	A	797.4	40.9	03-09-2012 10:35:02	0	0.017999999	0.356999993	0.237480819
SeepL1033_25	SeepL1033_25_03092012_104150.txt	SeepL1033	1167394.058	3188674.536	9/3/2012	0	0.001423	0.017319	A	797.1	41.1	03-09-2012 10:41:50	0	0.006	0.072999999	0.237240389
SeepL1033_26	SeepL1033_26_03092012_104520.txt	SeepL1033	1167258.095	3188843.949	9/3/2012	0	0.002134	0.039115	A	797.0	41.3	03-09-2012 10:45:20	0	0.009	0.165000007	0.237059757
SeepL1033_27	SeepL1033_27_03092012_104832.txt	SeepL1033	1167473.122	3188790.398	9/3/2012	0	0.001658	0.023448	A	796.8	41.5	03-09-2012 10:48:32	0	0.007	0.098999999	0.236849621
SeepL1033_28	SeepL1033_28_03092012_105131.txt	SeepL1033	1167559.861	3188922.952	9/3/2012	0	0.001184	0.020841	A	797.0	41.6	03-09-2012 10:51:31	0	0.005	0.088	0.236833811
SeepL1033_29	SeepL1033_29_03092012_105505.txt	SeepL1033	1167611.079	3188808.723	9/3/2012	0	0.002132	0.018949	A	797.1	41.6	03-09-2012 10:55:05	-0.07	0.009	0.079999998	0.236863524
SeepL1033_30	SeepL1033_30_03092012_105746.txt	SeepL1033	1167657.2	3188859.633	9/3/2012	0	0.001658	0.162746	A	797.2	41.6	03-09-2012 10:57:46	-0.013	0.007	0.686999977	0.236893237
SeepL1033_31	SeepL1033_31_03092012_110054.txt	SeepL1033	1167707.931	3188857.282	9/3/2012	0	0.000711	0.018241	A	797.2	41.6	03-09-2012 11:00:54	0	0.003	0.077	0.236893237
SeepL1033_32	SeepL1033_32_03092012_110332.txt	SeepL1033	1167769.615	3188859.736	9/3/2012	0	0.001184	0.023689	A	797.2	41.6	03-09-2012 11:03:32	0	0.005	0.100000001	0.236893237
SeepL1033_33	SeepL1033_33_03092012_110551.txt	SeepL1033	1167760.912	3188814.893	9/3/2012	0	0.000947	0.031266	A	797.1	41.6	03-09-2012 11:05:51	0	0.004	0.131999999	0.236863524
SeepL1033_34	SeepL1033_34_03092012_110904.txt	SeepL1033	1167746.789	3188759.777	9/3/2012	0	0.004976	0.250476	A	797.2	41.5	03-09-2012 11:09:04	0	0.021	1.057000041	0.236968517
SeepL1033_35	SeepL1033_35_03092012_111257.txt	SeepL1033	1167716.908	3188753.237	9/3/2012	0	0.002846	0.021107	A	797.6	41.4	03-09-2012 11:12:57	0	0.012	0.089000002	0.237162799
SeepL1033_36	SeepL1033_36_03092012_111625.txt	SeepL1033	1167658.503	3188767.764	9/3/2012	0	0.001423	0.047187	A	797.2	41.3	03-09-2012 11:16:25	0	0.006	0.199000001	0.237119243
SeepL1033_37	SeepL1033_37_03092012_111853.txt	SeepL1033	1167660.277	3188812.947	9/3/2012	0	0.004268	0.013279	A	797.2	41.3	03-09-2012 11:18:53	0	0.017999999	0.056000002	0.237119243
SeepL1033_38	SeepL1033_38_03092012_112116.txt	SeepL1033	1167719.855	3188802.729	9/3/2012	0	0.002607	0.013986	A	797.2	41.4	03-09-2012 11:21:16	0	0.011	0.059	0.237043858
SeepL1033_39	SeepL1033_39_03092012_113847.txt	SeepL1033	1167766.792	3188385.975	9/3/2012	0.678914	0.00071	0	A	797.1	41.9	03-09-2012 11:38:47	2.868999958	0.003	0	0.23663798
SeepL1033_40	SeepL1033_40_03092012_114958.txt	SeepL1033	1167709.312	3188364.679	9/3/2012	0	0.000708	0.097205	A	797.0	42.8	03-09-2012 11:49:58	0	0.003	0.412	0.235934287
seepL1050_01	seepL1050_01_03092012_122852.txt	seepL1050	1172703.74	3179718.314	9/3/2012	0	0	0.057333	A	792.2	39.6	03-09-2012 12:28:52	0	-0.001	0.241999999	0.236912861
seepL1050_02	seepL1050_02_03092012_123200.txt	seepL1050	1172702.216	3179670.863	9/3/2012	0	0.003548	0.207664	A	792.4	40.2	03-09-2012 12:32:00	0	0.015	0.878000021	0.236518919
seepL1050_03	seepL1050_03_03092012_123523.txt	seepL1050	1172709.829	3179619.475	9/3/2012	0	0.002125	0.023371	A	792.4	40.8	03-09-2012 12:35:23	0	0.009	0.098999999	0.236066893
seepL1050_04	seepL1050_04_03092012_123824.txt	seepL1050	1172653.413	3179612.771	9/3/2012	0	0.001884	0.121752	A	792.0	41.4	03-09-2012 12:38:24	0	0.008	0.51700002	0.235497668
seepL1050_05	seepL1050_05_03092012_124202.txt	seepL1050	1172656.111	3179641.675	9/3/2012	1.644563	0.001646	0.369169	A	791.8	41.8	03-09-2012 12:42:02	6.993999958	0.007	1.570000052	0.235139176
seepL1050_06	seepL1050_06_03092012_124541.txt	seepL1050	1172657.355	3179670.156	9/3/2012	0.893844	0.00188	0.309697	A	792.0	42.1	03-09-2012 12:45:41	3.803999901	0.008	1.317999959	0.234974757
seepL1050_07	seepL1050_07_03092012_124944.txt	seepL1050	1172651.6	3179710.291	9/3/2012	0	0.002114	0.208134	A	792.3	42.3	03-09-2012 12:49:44	0	0.009	0.885999978	0.23491472
seepL1050_08	seepL1050_08_03092012_125457.txt	seepL1050	1172612.301	3179611.532	9/3/2012	0	0.006339	0.078187	A	792.4	42.5	03-09-2012 12:54:57	0	0.027000001	0.333000004	0.234795511
seepL1050_09	seepL1050_09_03092012_125748.txt	seepL1050	1172560.004	3179599.992	9/3/2012	0	0.00164	0	A	791.0	42.6	03-09-2012 12:57:48	0	0.007	-0.057	0.23430644
seepL1050_10	seepL1050_10_03092012_130041.txt	seepL1050	1172509.71	3179662.488	9/3/2012	0	0.002575	0	A	790.9	42.8	03-09-2012 13:00:41	0	0.011	-0.075999998	0.23412852
seepL1050_11	seepL1050_11_03092012_130310.txt	seepL1050	1172515.554	3179709.315	9/3/2012	0	0.001638	0	A	790.9	42.9	03-09-2012 13:03:10	0	0.007	-0.071999997	0.234054446
seepL1050_12	seepL1050_12_03092012_130543.txt	seepL1050	1172511.551	3179753.101	9/3/2012	0	0.003276	0.029014	A	790.9	43.0	03-09-2012 13:05:43	0	0.014	0.123999998	0.233980417
seepL1050_13	seepL1050_13_03092012_130904.txt	seepL1050	1172495.97	3179811.767	9/3/2012	0	0.001169	0.093545	A	791.0	43.2	03-09-2012 13:09:04	0	0.005	0.400000006	0.233862057
seepL1050_14	seepL1050_14_03092012_131130.txt	seepL1050	1172560.495	3179763.395	9/3/2012	0	0.001637	0.017534	A	791.0	43.3	03-09-2012 13:11:30	0	0.007	0.075000003	0.233788148
seepL1050_15	seepL1050_15_03092012_131618.txt	seepL1050	1172562.249	3179710.083	9/3/2012	0	0.001404	0.052652	A	791.0	43.0	03-09-2012 13:16:18	0	0.006	0.224999994	0.234009996
seepL1050_16	seepL1050_16_03092012_131921.txt	seepL1050	1172566.502	3179672.678	9/3/2012	0	0.002106	0.106709	A	791.0	43.0	03-09-2012 13:19:21	0	0.009	0.456	0.234009996
seepL1050_17	seepL1050_17_03092012_132221.txt	seepL1050	1172612.648	3179658.128	9/3/2012	0	0.003042	0.144384	A	791.0	43.0	03-09-2012 13:22:21	0	0.013	0.616999984	0.234009996
seepL1050_18	seepL1050_18_03092012_132646.txt	seepL1050	1172606.993	3179707.044	9/3/2012	0	0.001404	0.028538	A	791.2	43.2	03-09-2012 13:26:46	0	0.006	0.122000001	0.233921185
seepL1050_19	seepL1050_19_03092012_133345.txt	seepL1050	1172602.618	3179761.028	9/3/2012	0	0.001638	0.063643	A	791.4	43.2	03-09-2012 13:33:45	0	0.007	0.272000015	0.233980313
seepL1050_20	seepL1050_20_03092012_133727.txt	seepL1050	1172608.202	3179851.347	9/3/2012	0	0.003744	0.260703	A	791.8	43.3	03-09-2012 13:37:27	0	0.016000001	1.113999963	0.234024599
seepL1050_21	seepL1050_21_03092012_134033.txt	seepL1050	1172525.496	3179933.79	9/3/2012	0	0.00117	0.000702	A	792.3	43.4	03-09-2012 13:40:33	0	0.005	0.003	0.234098405
seepL1050_22	seepL1050_22_03092012_134359.txt	seepL1050	1172539.834	3180052.495	9/3/2012	0	0.002107	0.09927	A	792.4	43.4	03-09-2012 13:43:59	0	0.009	0.423999995	0.234127954
SeepL109_01	SeepL109_01_05092012_104621.txt	SeepL109	1173011.211	3161393.678	9/5/2012	0	0	0.014386	A	783.0	22.1	05-09-2012 10:46:21	0	-0.003	0.057999998	0.248040706
SeepL109_02	SeepL109_02_05092012_105256.txt	SeepL109	1172984.6	3161361.09	9/5/2012	0	0.000494	0.050095	A	782.7	23.5	05-09-2012 10:52:56	-0.059	0.002	0.202999994	0.246775523
SeepL109_03	SeepL109_03_05092012_105811.txt	SeepL109	1172974.577	3161326.213	9/5/2012	0	0	0	A	782.1	24.8	05-09-2012 10:58:11	0	0	-0.986999989	0.245510459
SeepL109_04	SeepL109_04_05092012_110119.txt	SeepL109	1172943.66	3161304.356	9/5/2012	0	0.000734	0.008318	A	781.4	25.6	05-09-2012 11:01:19	-0.015	0.003	0.034000002	0.244633883
SeepL109_05	SeepL109_05_05092012_110711.txt	SeepL109	1173093.414	3161340.454	9/5/2012	0	0.001947	0.018739	A	781.0	27.0	05-09-2012 11:07:11	0	0.008	0.077	0.243368179
SeepL109_06	SeepL109_06_05092012_111141.txt	SeepL109	1173181.434	3161349.633	9/5/2012	0	0.001456	0.026209	A	781.1	27.9	05-09-2012 11:11:41	-0.021	0.006	0.108000003	0.242671698
SeepL109_07	SeepL109_07_05092012_111651.txt	SeepL109	1173250.156	3161412.46	9/5/2012	0	0.000483	0.02802	A	781.1	29.3	05-09-2012 11:16:51	-0.033	0.002	0.115999997	0.241548404
SeepL109_08	SeepL109_08_05092012_112041.txt	SeepL109	1173311.941	3161432.155	9/5/2012	0	0.000722	0	A	781.1	30.3	05-09-2012 11:20:41	-0.150000006	0.003	-4.856999874	0.240752384
SeepL109_09	SeepL109_09_05092012_112327.txt	SeepL109	1173350.495	3161473.202	9/5/2012	0	0.0024	0.027605	A	781.1	31.2	05-09-2012 11:23:27	-0.033	0.01	0.115000002	0.240040451
SeepL109_10	SeepL109_10_05092012_112741.txt	SeepL109	1173349.31	3161511.324	9/5/2012	0	0.003829	0.125162	A	781.3	32.2	05-09-2012 11:27:41	0	0.016000001	0.523000002	0.239315599
SeepL109_11	SeepL109_11_05092012_113104.txt	SeepL109	1173332.193	3161551.955	9/5/2012	0	0.001671	0.063734	A	781.6	33.1	05-09-2012 11:31:04	-0.181999996	0.007	0.26699999	0.238703921
SeepL109_12	SeepL109_12_05092012_113442.txt	SeepL109	1173182.724	3161544.9	9/5/2012	0	0.000476	0.040738	A	782.1	33.9	05-09-2012 11:34:42	0	0.002	0.171000004	0.238234296
SeepL109_13	SeepL109_13_05092012_113801.txt	SeepL109	1172989.564	3161432.828	9/5/2012	0	0.00214	0.0837	A	782.4	34.6	05-09-2012 11:38:01	0	0.009	0.351999998	0.237783596
SeepL109_14	SeepL109_14_05092012_114606.txt	SeepL109	1172982.341	3161536.625	9/5/2012	0	0.000474	0.065847	A	782.4	35.8	05-09-2012 11:46:06	0	0.002	0.277999997	0.236860022
SeepL109_15	SeepL109_15_05092012_115102.txt	SeepL109	1172990.148	3161593.964	9/5/2012	0	0.002361	0.02668	A	782.7	36.9	05-09-2012 11:51:02	0	0.01	0.112999998	0.236110181
SeepL109_16	SeepL109_16_05092012_115351.txt	SeepL109	1172940.696	3161527.73	9/5/2012	0	0.00165	0.043363	A	782.5	37.4	05-09-2012 11:53:51	-0.223000005	0.007	0.184	0.235669792
SeepL109_17	SeepL109_17_05092012_115735.txt	SeepL109	1172873.993	3161539.267	9/5/2012	0	0.001411	0.043495	A	782.4	38.1	05-09-2012 11:57:35	0	0.006	0.185000002	0.235109732
SeepL109_18	SeepL109_18_05092012_120139.txt	SeepL109	1172840.116	3161632.084	9/5/2012	0	0.002579	0.026263	A	782.1	38.8	05-09-2012 12:01:39	0	0.011	0.112000003	0.234492198
SeepL109_19	SeepL109_19_05092012_120450.txt	SeepL109	1172841.034	3161471.537	9/5/2012	0	0.001872	0.040008	A	781.6	39.3	05-09-2012 12:04:50	0	0.008	0.171000004	0.233967289
SeepL109_20	SeepL109_20_05092012_120747.txt	SeepL109	1172755.55	3161450.342	9/5/2012	0	0.001871	0.021984	A	782.3	39.7	05-09-2012 12:07:47	0	0.008	0.093999997	0.23387742
SeepL109_21	SeepL109_21_05092012_121314.txt	SeepL109	1172772.95	3161387.514	9/5/2012	0	0.003731	0.200519	A	781.9	40.5	05-09-2012 12:13:14	0	0.016000001	0.860000014	0.233161598
SeepL109_22	SeepL109_22_05092012_121623.txt	SeepL109	1172793.753	3161335.638	9/5/2012	0	0.004888	0	A	781.6	40.9	05-09-2012 12:16:23	0	0.021	-0.061000001	0.232775286
Spring01_01	Spring01_01_04092012_103555.txt	Spring01	1161069.805	3148127.679	9/4/2012	0	0	0.072403	A	761.9	23.1	04-09-2012 10:35:55	0	-0.003	0.300999999	0.24054189

APPENDIX C

VOLUMETRIC FLUX CALCULATIONS

Grid Volume Computations

Mon Oct 22 12:56:04 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\Seep13_CH4_notail.grd
Grid Size:	47 rows x 50 columns
X Minimum:	3164000
X Maximum:	3164591.78
X Spacing:	12.077142857139
Y Minimum:	1174155.593
Y Maximum:	1174704.3
Y Spacing:	11.928413043477
Z Minimum:	0
Z Maximum:	0.60518447007965

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	117.72082565424
Simpson's Rule:	119.85131246118
Simpson's 3/8 Rule:	117.54730778478

Cut & Fill Volumes

Positive Volume [Cut]:	117.72082565424
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	117.72082565424

Areas

Planar Areas

Positive Planar Area [Cut]:	218612.79267428
Negative Planar Area [Fill]:	0

Blanked Planar Area:	106101.03578557
Total Planar Area:	324713.82845985

Surface Areas

Positive Surface Area [Cut]:	218612.80111161
Negative Surface Area [Fill]:	0

Grid Volume Computations

Mon Oct 22 12:58:39 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\Seep19_CH4_notail.grd
Grid Size:	25 rows x 40 columns
X Minimum:	3158625.134
X Maximum:	3159097.025
X Spacing:	12.099769230765
Y Minimum:	1146277.192
Y Maximum:	1146567.479
Y Spacing:	12.095291666667
Z Minimum:	0
Z Maximum:	0.23389239167478

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	6.0175554647415
Simpson's Rule:	4.0877963161427
Simpson's 3/8 Rule:	4.2792460807676

Cut & Fill Volumes

Positive Volume [Cut]:	6.0175554647415
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	6.0175554647415

Areas

Planar Areas

Positive Planar Area [Cut]:	89200.470027761
Negative Planar Area [Fill]:	0

Blanked Planar Area:	47783.352689194
Total Planar Area:	136983.82271696

Surface Areas

Positive Surface Area [Cut]:	89200.471302433
Negative Surface Area [Fill]:	0

Grid Volume Computations

Mon Oct 15 16:00:20 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\Seep32L1049_CH4_notail.grd
Grid Size:	69 rows x 100 columns
X Minimum:	3175723.436
X Maximum:	3178374.203
X Spacing:	26.775424242424
Y Minimum:	1173671.194
Y Maximum:	1175561.635
Y Spacing:	27.800602941178
Z Minimum:	0
Z Maximum:	98.979190025178

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	643197.5770524
Simpson's Rule:	643160.89868972
Simpson's 3/8 Rule:	642785.82211204

Cut & Fill Volumes

Positive Volume [Cut]:	643197.5770524
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	643197.5770524

Areas

Planar Areas

Positive Planar Area [Cut]:	3628445.886014
Negative Planar Area [Fill]:	0

Blanked Planar Area:	1382672.7322333
Total Planar Area:	5011118.6182473

Surface Areas

Positive Surface Area [Cut]:	3628734.8062142
Negative Surface Area [Fill]:	0

Grid Volume Computations

Wed Oct 10 16:35:20 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\Seep5_CH4_notail.grd
Grid Size:	58 rows x 63 columns
X Minimum:	3175781.311
X Maximum:	3176711.806
X Spacing:	15.007983870962
Y Minimum:	1172237.474
Y Maximum:	1173092.232
Y Spacing:	14.995754385967
Z Minimum:	0
Z Maximum:	2.7935589494627

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	1702.6022988178
Simpson's Rule:	1706.3063739988
Simpson's 3/8 Rule:	1695.9410802595

Cut & Fill Volumes

Positive Volume [Cut]:	1702.6022988178
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	1702.6022988178

Areas

Planar Areas

Positive Planar Area [Cut]:	600674.57064659
Negative Planar Area [Fill]:	0

Blanked Planar Area:	194673.47456324
Total Planar Area:	795348.04520983

Surface Areas

Positive Surface Area [Cut]:	600674.74084316
Negative Surface Area [Fill]:	0

Grid Volume Computations

Wed Oct 10 16:38:32 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\SeepL1021_CH4_notail.grd
Grid Size:	50 rows x 100 columns
X Minimum:	3178304.646
X Maximum:	3178933.765
X Spacing:	6.3547373737368
Y Minimum:	1173752.267
Y Maximum:	1174113.413
Y Spacing:	7.3703265306112
Z Minimum:	0
Z Maximum:	13.816077402898

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	5974.8567975743
Simpson's Rule:	5968.0868190052
Simpson's 3/8 Rule:	5970.5458285503

Cut & Fill Volumes

Positive Volume [Cut]:	5974.8567975743
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	5974.8567975743

Areas

Planar Areas

Positive Planar Area [Cut]:	218094.11317384
Negative Planar Area [Fill]:	0

Blanked Planar Area:	9109.6972001099
Total Planar Area:	227203.81037395

Surface Areas

Positive Surface Area [Cut]:	218096.5409019
Negative Surface Area [Fill]:	0

Grid Volume Computations

Wed Oct 10 16:39:21 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\SeepL1030_CH4_notail.grd
Grid Size:	38 rows x 38 columns
X Minimum:	3164596.204
X Maximum:	3164858.373
X Spacing:	7.0856486486548
Y Minimum:	1146151.989
Y Maximum:	1146412.3
Y Spacing:	7.0354324324321
Z Minimum:	0
Z Maximum:	31.965679998134

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	11209.709988149
Simpson's Rule:	11218.802665051
Simpson's 3/8 Rule:	11219.454057085

Cut & Fill Volumes

Positive Volume [Cut]:	11209.709988149
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	11209.709988149

Areas

Planar Areas

Positive Planar Area [Cut]:	68245.474559056
Negative Planar Area [Fill]:	0

Blanked Planar Area:	0
Total Planar Area:	68245.474559056

Surface Areas

Positive Surface Area [Cut]:	68258.378547067
Negative Surface Area [Fill]:	0

Grid Volume Computations

Wed Oct 10 16:40:11 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\SeepL1033_CH4_notail.grd
Grid Size:	100 rows x 79 columns
X Minimum:	3188313.281
X Maximum:	3188972.952
X Spacing:	8.4573205128217
Y Minimum:	1167208.095
Y Maximum:	1168015.606
Y Spacing:	8.1566767676762
Z Minimum:	0
Z Maximum:	0.5679850843466

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	132.95678585587
Simpson's Rule:	130.57378827228
Simpson's 3/8 Rule:	133.19773552394

Cut & Fill Volumes

Positive Volume [Cut]:	132.95678585587
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	132.95678585587

Areas

Planar Areas

Positive Planar Area [Cut]:	423593.97844133
Negative Planar Area [Fill]:	0

Blanked Planar Area:	109097.6104397
Total Planar Area:	532691.58888103

Surface Areas

Positive Surface Area [Cut]:	423593.99531066
Negative Surface Area [Fill]:	0

Grid Volume Computations

Wed Oct 10 16:40:48 2012

Upper Surface

Grid File Name:	P:\XTO Energy\608\2012 Survey\Surfer\SeepL1050_CH4_notail.grd
Grid Size:	42 rows x 66 columns
X Minimum:	3179499.992
X Maximum:	3180152.495
X Spacing:	10.038507692308
Y Minimum:	1172395.97
Y Maximum:	1172809.829
Y Spacing:	10.094121951218
Z Minimum:	0
Z Maximum:	1.5156242669262

Lower Surface

Level Surface defined by Z = 0

Volumes

Z Scale Factor:	0.0929

Total Volumes by:

Trapezoidal Rule:	347.54439610304
Simpson's Rule:	347.10308049759
Simpson's 3/8 Rule:	347.25508237933

Cut & Fill Volumes

Positive Volume [Cut]:	347.54439610304
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	347.54439610304

Areas

Planar Areas

Positive Planar Area [Cut]:	232400.17347956
Negative Planar Area [Fill]:	0

Blanked Planar Area:	37644.065597409
Total Planar Area:	270044.23907697

Surface Areas

Positive Surface Area [Cut]:	232400.20756322
Negative Surface Area [Fill]:	0

APPENDIX D

GAS COMPOSITION AND ISOTOPIC ANALYTCAL REPORT

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262976 Job #: 19173
Sample Name: Seep 32/L-1049 Co. Lab#:
Company: LT Environmental
Date Sampled: 9/01/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	0.0011			
Hydrogen	nd			
Argon	0.650			
Oxygen	13.69			
Nitrogen	53.57			
Carbon Dioxide	0.81			
Methane	31.28	-53.77	-249.4	
Ethane	0.0023			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 317
Specific gravity, calculated: 0.864

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262977 Job #: 19173
Sample Name: Seep L-1021 Co. Lab#:
Company: LT Environmental
Date Sampled: 9/02/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	nd			
Hydrogen	0.0015			
Argon	0.154			
Oxygen	1.79			
Nitrogen	12.57			
Carbon Dioxide	1.01			
Methane	84.47	-57.54	-251.1	
Ethane	0.0069			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 856
Specific gravity, calculated: 0.627

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262978 Job #: 19173
Sample Name: Seep L-1030 Co. Lab#:
Company: LT Environmental
Date Sampled: 8/29/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	0.0013			
Hydrogen	nd			
Argon	0.371			
Oxygen	0.28			
Nitrogen	29.66			
Carbon Dioxide	4.00			
Methane	65.68	-50.87	-230.8	
Ethane	0.0104			
Ethylene	nd			
Propane	0.0002			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 666
Specific gravity, calculated: 0.720

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262979 Job #: 19173
Sample Name: Seep L-1033 Co. Lab#:
Company: LT Environmental
Date Sampled: 9/03/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	0.0011			
Hydrogen	nd			
Argon	0.938			
Oxygen	21.14			
Nitrogen	77.86			
Carbon Dioxide	0.065			
Methane	0.0003			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0
Specific gravity, calculated: 1.001

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262980 Job #: 19173
Sample Name: Seep L-1050 Co. Lab#:
Company: LT Environmental
Date Sampled: 9/03/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	nd			
Hydrogen	nd			
Argon	0.937			
Oxygen	18.60			
Nitrogen	77.11			
Carbon Dioxide	1.11			
Methane	2.24	-46.53	-209.4	
Ethane	0.0001			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 23
Specific gravity, calculated: 0.994

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

ISOTECH
ISOTECH LABORATORIES INC

ANALYSIS REPORT

Lab #: 262981 Job #: 19173
Sample Name: Seep 5 Co. Lab#:
Company: LT Environmental
Date Sampled: 9/02/2012
Container: Cali-5-Bond Bag
Field/Site Name: Rule 608 Compliance
Location: Las Animas County
Formation/Depth:
Sampling Point:
Date Received: 9/10/2012 Date Reported: 10/01/2012

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	nd			
Hydrogen	nd			
Argon	0.927			
Oxygen	19.05			
Nitrogen	76.22			
Carbon Dioxide	1.22			
Methane	2.58	-45.14	-216.3	
Ethane	0.0002			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 26
Specific gravity, calculated: 0.993

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

APPENDIX E

NATURAL SPRING ANALYTICAL RESULTS

Mountain States ACCUTEST LABORATORIES

09/17/12

Technical Report for

LT Environmental

Colo Rule 608 Compliance Raton Basin CO

Accutest Job Number: D38340

Sampling Date: 09/04/12

Report to:

LT Environmental
4600 W 60th Ave
Arvada, CO 80003
dmoir@ltenv.com

ATTN: Dan Moir

Total number of pages in report: **68**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

Sections: 1 2 3 4 5 6 7 8

Table of Contents

Sample Summary

LT Environmental

Job No: D38340

Colo Rule 608 Compliance Raton Basin CO

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D38340-1	09/04/12	13:15	BH	09/05/12	AQ	Ground Water	CHAVEZ 01
D38340-1A	09/04/12	13:15	BH	09/05/12	AQ	Ground Water	CHAVEZ 01
D38340-1B	09/04/12	13:15	BH	09/05/12	AQ	Ground Water	CHAVEZ 01
D38340-1F	09/04/12	13:15	BH	09/05/12	AQ	Groundwater Filtered	CHAVEZ 01
D38340-2	09/04/12	14:31	BH	09/05/12	AQ	Ground Water	CHAVEZ 02
D38340-2A	09/04/12	14:31	BH	09/05/12	AQ	Ground Water	CHAVEZ 02
D38340-2B	09/04/12	14:31	BH	09/05/12	AQ	Ground Water	CHAVEZ 02
D38340-2F	09/04/12	14:31	BH	09/05/12	AQ	Groundwater Filtered	CHAVEZ 02
D38340-3	09/04/12	14:42	BH	09/05/12	AQ	Ground Water	CHAVEZ 03
D38340-3A	09/04/12	14:42	BH	09/05/12	AQ	Ground Water	CHAVEZ 03
D38340-3B	09/04/12	14:42	BH	09/05/12	AQ	Ground Water	CHAVEZ 03
D38340-3F	09/04/12	14:42	BH	09/05/12	AQ	Groundwater Filtered	CHAVEZ 03

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	LT Environmental	**Job No**	D38340
Site:	Colo Rule 608 Compliance Raton Basin CO	**Report Date**	9/14/2012 12:37:24 PM

On 09/05/2012, 3 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.8 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D38340 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GC By Method RSK175 MOD

Matrix AQ **Batch ID:** GFB282

- All samples were analyzed within the recommended method holding time.
- Sample(s) D38340-2MS, D38340-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix AQ **Batch ID:** MP8323

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38229-1AMS, D38229-1AMSD, D38229-1ASDL were used as the QC samples for the metals analysis.

Matrix AQ **Batch ID:** MP8325

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38339-1MS, D38339-1MSD, D38339-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Potassium, Magnesium are outside control limits for sample MP8325-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8325-SD1 for Magnesium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix AQ **Batch ID:** MP8345

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38340-1FMS, D38340-1FMSD, D38340-1FSDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Selenium, Manganese are outside control limits for sample MP8345-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8345-SD1 for Manganese: Serial dilution indicates possible matrix interference.

Wet Chemistry By Method EPA 300/SW846 9056

Matrix AQ **Batch ID:** GP8101

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38340-2MS, D38340-2MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.

Wet Chemistry By Method HACH IRB-BART

Matrix AQ **Batch ID:** MB95

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SLYM-BART

Matrix AQ **Batch ID:** MB96

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SRB-BART

Matrix AQ **Batch ID:** MB97

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM18 4500NO3E

Matrix AQ **Batch ID:** R14293

- The data for SM18 4500NO3E meets quality control requirements.
- D38340-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

Matrix AQ **Batch ID:** R14294

- The data for SM18 4500NO3E meets quality control requirements.
- D38340-2 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

Matrix AQ **Batch ID:** R14295

- The data for SM18 4500NO3E meets quality control requirements.
- D38340-3 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

Wet Chemistry By Method SM18/20 2540C

Matrix AQ **Batch ID:** GN16697

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38340-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM20 2320B

Matrix	AQ	Batch ID:	GN16647

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38372-1DUP, D38372-1MS, D38372-1MSD were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

Matrix	AQ	Batch ID:	GN16648

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix	AQ	Batch ID:	GN16649

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM20 2510B

Matrix	AQ	Batch ID:	GP8111

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38340-1DUP were used as the QC samples for the Specific Conductivity analysis.

Wet Chemistry By Method SM20 4500H B+

Matrix	AQ	Batch ID:	GN16625

- The following samples were run outside of holding time for method SM20 4500H B+: D38340-1, D38340-2, D38340-3

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	AQ	Batch ID:	MP8323

- All samples for Sodium Adsorption Ratio: Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+(Mg meq/L)/2]

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D38340
Account: LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO
Collected: 09/04/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D38340-1	**CHAVEZ 01**					
Methane		0.0012	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3		157	5.0		mg/l	SM20 2320B
Alkalinity, Total as CaCO3		157	5.0		mg/l	SM20 2320B
Chloride		3.4	0.50		mg/l	EPA 300/SW846 9056
Fluoride		0.27	0.10		mg/l	EPA 300/SW846 9056
Nitrogen, Nitrate		0.011	0.010		mg/l	EPA 300/SW846 9056
Solids, Total Dissolved		194	10		mg/l	SM18/20 2540C
Specific Conductivity		323	1.0		umhos/cm	SM20 2510B
Sulfate		19.3	0.50		mg/l	EPA 300/SW846 9056
pH		7.28			su	SM20 4500H B+
D38340-1A	**CHAVEZ 01**					
Calcium		44.5	2.0		mg/l	SW846 6010C
Magnesium		8.12	1.0		mg/l	SW846 6010C
Sodium		20.4	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [a]		0.738			ratio	USDA HANDBOOK 60
D38340-1B	**CHAVEZ 01**					
Iron Reducing Bacteria		74500	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		350000	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		359000	200		CFU/ml	HACH SRB-BART
D38340-1F	**CHAVEZ 01**					
Calcium		41100	400		ug/l	SW846 6010C
Magnesium		7370	200		ug/l	SW846 6010C
Sodium		19400	400		ug/l	SW846 6010C
D38340-2	**CHAVEZ 02**					
Alkalinity, Bicarbonate as CaCO3		163	5.0		mg/l	SM20 2320B
Alkalinity, Total as CaCO3		163	5.0		mg/l	SM20 2320B
Chloride		4.0	0.50		mg/l	EPA 300/SW846 9056
Fluoride		0.30	0.10		mg/l	EPA 300/SW846 9056
Nitrogen, Nitrate		0.088	0.010		mg/l	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [b]		0.088	0.014		mg/l	SM18 4500NO3E
Solids, Total Dissolved		206	10		mg/l	SM18/20 2540C
Specific Conductivity		330	1.0		umhos/cm	SM20 2510B
Sulfate		20.3	0.50		mg/l	EPA 300/SW846 9056
pH		7.17			su	SM20 4500H B+

Summary of Hits

Job Number: D38340
Account: LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO
Collected: 09/04/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D38340-2A	**CHAVEZ 02**					
Calcium		49.3	2.0		mg/l	SW846 6010C
Magnesium		9.56	1.0		mg/l	SW846 6010C
Sodium		18.2	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [a]		0.621			ratio	USDA HANDBOOK 60
D38340-2B	**CHAVEZ 02**					
Iron Reducing Bacteria		74500	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		350000	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		359000	200		CFU/ml	HACH SRB-BART
D38340-2F	**CHAVEZ 02**					
Calcium		46200	400		ug/l	SW846 6010C
Magnesium		8790	200		ug/l	SW846 6010C
Potassium		1430	1000		ug/l	SW846 6010C
Sodium		17600	400		ug/l	SW846 6010C
D38340-3	**CHAVEZ 03**					
Methane		0.0119	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3		495	5.0		mg/l	SM20 2320B
Alkalinity, Total as CaCO3		495	5.0		mg/l	SM20 2320B
Bromide		2.0	0.10		mg/l	EPA 300/SW846 9056
Chloride		254	5.0		mg/l	EPA 300/SW846 9056
Fluoride		0.35	0.20		mg/l	EPA 300/SW846 9056
Nitrogen, Nitrate		0.083	0.020		mg/l	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [b]		0.11	0.040		mg/l	SM18 4500NO3E
Nitrogen, Nitrite		0.024	0.020		mg/l	EPA 300/SW846 9056
Solids, Total Dissolved		990	10		mg/l	SM18/20 2540C
Specific Conductivity		160	1.0		umhos/cm	SM20 2510B
Sulfate		63.7	2.5		mg/l	EPA 300/SW846 9056
pH		7.44			su	SM20 4500H B+
D38340-3A	**CHAVEZ 03**					
Calcium		117	2.0		mg/l	SW846 6010C
Magnesium		43.2	1.0		mg/l	SW846 6010C
Sodium		208	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [a]		4.17			ratio	USDA HANDBOOK 60

Summary of Hits

Job Number: D38340
Account: LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO
Collected: 09/04/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D38340-3B	**CHAVEZ 03**					
Iron Reducing Bacteria		74500	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		66500	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		359000	200		CFU/ml	HACH SRB-BART
D38340-3F	**CHAVEZ 03**					
Calcium		92100	400		ug/l	SW846 6010C
Iron		235	70		ug/l	SW846 6010C
Magnesium		41400	200		ug/l	SW846 6010C
Manganese		0.13	0.0050		mg/l	SW846 6020A
Potassium		6250	1000		ug/l	SW846 6010C
Sodium		222000	400		ug/l	SW846 6010C

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]
(b) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

Mountain States ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CHAVEZ 01		
Lab Sample ID:	D38340-1	**Date Sampled:**	09/04/12
Matrix:	AQ - Ground Water	**Date Received:**	09/05/12
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	Colo Rule 608 Compliance Raton Basin CO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FB06887.D	1	09/06/12	AV	n/a	n/a	GFB282
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.0012	0.00080	0.00040	mg/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CHAVEZ 01
Lab Sample ID: D38340-1
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	157	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Total as CaCO3	157	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Bromide	< 0.050	0.050	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
Chloride	3.4	0.50	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
Fluoride	0.27	0.10	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
Nitrogen, Nitrate	0.011	0.010	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	< 0.014	0.014	mg/l	1	09/05/12 13:06	GH	SM18 4500NO3E
Nitrogen, Nitrite	< 0.0040	0.0040	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
Solids, Total Dissolved	194	10	mg/l	1	09/11/12	CT	SM18/20 2540C
Specific Conductivity	323	1.0	umhos/cm	1	09/06/12	JK	SM20 2510B
Sulfate	19.3	0.50	mg/l	1	09/05/12 13:06	GH	EPA 300/SW846 9056
pH	7.28		su	1	09/06/12 08:30	CT	SM20 4500H B+

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 01
Lab Sample ID: D38340-1A
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	44.5	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	8.12	1.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	20.4	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]

(1) Instrument QC Batch: MA2780
(2) Prep QC Batch: MP8323

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CHAVEZ 01		
Lab Sample ID:	D38340-1A	**Date Sampled:**	09/04/12
Matrix:	AQ - Ground Water	**Date Received:**	09/05/12
		Percent Solids:	n/a
Project:	Colo Rule 608 Compliance Raton Basin CO		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	0.738		ratio	1	09/06/12 15:17	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 01
Lab Sample ID: D38340-1B
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron Reducing Bacteria	74500	25	CFU/ml	1	09/06/12	MM	HACH IRB-BART
Slime Forming Bacteria	350000	500	CFU/ml	1	09/06/12	MM	HACH SLYM-BART
Sulfate Reducing Bacteria	359000	200	CFU/ml	1	09/06/12	MM	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 01
Lab Sample ID: D38340-1F
Matrix: AQ - Groundwater Filtered
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	41100	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Iron	< 70	70	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Magnesium	7370	200	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Manganese	< 0.0050	0.0050	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Potassium	< 1000	1000	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Selenium	< 0.0020	0.0020	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Sodium	19400	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA2782
(2) Instrument QC Batch: MA2790
(3) Prep QC Batch: MP8325
(4) Prep QC Batch: MP8345

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 02
Lab Sample ID: D38340-2
Matrix: AQ - Ground Water
Method: RSK175 MOD
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FB06888.D	1	09/06/12	AV	n/a	n/a	GFB282
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.00030	0.00080	0.00040	mg/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CHAVEZ 02
Lab Sample ID: D38340-2
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	163	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Total as CaCO3	163	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Bromide	< 0.050	0.050	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
Chloride	4.0	0.50	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
Fluoride	0.30	0.10	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
Nitrogen, Nitrate	0.088	0.010	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	0.088	0.014	mg/l	1	09/05/12 13:17	GH	SM18 4500NO3E
Nitrogen, Nitrite	< 0.0040	0.0040	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
Solids, Total Dissolved	206	10	mg/l	1	09/11/12	CT	SM18/20 2540C
Specific Conductivity	330	1.0	umhos/cm	1	09/06/12	JK	SM20 2510B
Sulfate	20.3	0.50	mg/l	1	09/05/12 13:17	GH	EPA 300/SW846 9056
pH	7.17		su	1	09/06/12 08:30	CT	SM20 4500H B+

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 02
Lab Sample ID: D38340-2A
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	49.3	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	9.56	1.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	18.2	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]

(1) Instrument QC Batch: MA2780
(2) Prep QC Batch: MP8323

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CHAVEZ 02		
Lab Sample ID:	D38340-2A	**Date Sampled:**	09/04/12
Matrix:	AQ - Ground Water	**Date Received:**	09/05/12
		Percent Solids:	n/a
Project:	Colo Rule 608 Compliance Raton Basin CO		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	0.621		ratio	1	09/06/12 15:22	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 02
Lab Sample ID: D38340-2B
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron Reducing Bacteria	74500	25	CFU/ml	1	09/06/12	MM	HACH IRB-BART
Slime Forming Bacteria	350000	500	CFU/ml	1	09/06/12	MM	HACH SLYM-BART
Sulfate Reducing Bacteria	359000	200	CFU/ml	1	09/06/12	MM	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 02
Lab Sample ID: D38340-2F
Matrix: AQ - Groundwater Filtered
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	46200	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Iron	< 70	70	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Magnesium	8790	200	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Manganese	< 0.0050	0.0050	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Potassium	1430	1000	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Selenium	< 0.0020	0.0020	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Sodium	17600	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA2782
(2) Instrument QC Batch: MA2790
(3) Prep QC Batch: MP8325
(4) Prep QC Batch: MP8345

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 03
Lab Sample ID: D38340-3
Matrix: AQ - Ground Water
Method: RSK175 MOD
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FB06889.D	1	09/06/12	AV	n/a	n/a	GFB282
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.0119	0.00080	0.00040	mg/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CHAVEZ 03
Lab Sample ID: D38340-3
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	495	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Alkalinity, Total as CaCO3	495	5.0	mg/l	1	09/07/12	JD	SM20 2320B
Bromide	2.0	0.10	mg/l	2	09/05/12 13:28	GH	EPA 300/SW846 9056
Chloride	254	5.0	mg/l	10	09/05/12 16:15	GH	EPA 300/SW846 9056
Fluoride	0.35	0.20	mg/l	2	09/05/12 13:28	GH	EPA 300/SW846 9056
Nitrogen, Nitrate	0.083	0.020	mg/l	2	09/05/12 13:28	GH	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	0.11	0.040	mg/l	1	09/05/12 16:04	GH	SM18 4500NO3E
Nitrogen, Nitrite	0.024	0.020	mg/l	5	09/05/12 16:04	GH	EPA 300/SW846 9056
Solids, Total Dissolved	990	10	mg/l	1	09/11/12	CT	SM18/20 2540C
Specific Conductivity	160	1.0	umhos/cm	1	09/06/12	JK	SM20 2510B
Sulfate	63.7	2.5	mg/l	5	09/05/12 16:04	GH	EPA 300/SW846 9056
pH	7.44		su	1	09/06/12 08:30	CT	SM20 4500H B+

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 03
Lab Sample ID: D38340-3A
Matrix: AQ - Ground Water
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	117	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	43.2	1.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	208	2.0	mg/l	1	09/06/12	09/06/12	JB	SW846 6010C [1]	SW846 3010A/M [2]

(1) Instrument QC Batch: MA2780
(2) Prep QC Batch: MP8323

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CHAVEZ 03		
Lab Sample ID:	D38340-3A	**Date Sampled:**	09/04/12
Matrix:	AQ - Ground Water	**Date Received:**	09/05/12
		Percent Solids:	n/a
Project:	Colo Rule 608 Compliance Raton Basin CO		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	4.17		ratio	1	09/06/12 15:28	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CHAVEZ 03		
Lab Sample ID:	D38340-3B	**Date Sampled:**	09/04/12
Matrix:	AQ - Ground Water	**Date Received:**	09/05/12
		Percent Solids:	n/a
Project:	Colo Rule 608 Compliance Raton Basin CO		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron Reducing Bacteria	74500	25	CFU/ml	1	09/06/12	MM	HACH IRB-BART
Slime Forming Bacteria	66500	500	CFU/ml	1	09/06/12	MM	HACH SLYM-BART
Sulfate Reducing Bacteria	359000	200	CFU/ml	1	09/06/12	MM	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID: CHAVEZ 03
Lab Sample ID: D38340-3F
Matrix: AQ - Groundwater Filtered
Project: Colo Rule 608 Compliance Raton Basin CO

Date Sampled: 09/04/12
Date Received: 09/05/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	92100	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Iron	235	70	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Magnesium	41400	200	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Manganese	0.13	0.0050	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Potassium	6250	1000	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]
Selenium	< 0.0020	0.0020	mg/l	5	09/10/12	09/11/12	JB	SW846 6020A [2]	SW846 3010A [4]
Sodium	222000	400	ug/l	1	09/07/12	09/07/12	JB	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA2782
(2) Instrument QC Batch: MA2790
(3) Prep QC Batch: MP8325
(4) Prep QC Batch: MP8345

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST LABORATORIES
Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking # 8758 9754 3251 | Bottle Order Control # | Accutest Quote # | Accutest Job # D38340

Client / Reporting Information

Company Name: LT Environmental
Street Address: 4600 West 60th Ave
City State Zip: Arvada CO 80003
Project Contact: Dan Moir E-mail: Moir@ltenv.com
Phone # 303 433-9788 Fax #
Sampler(s) Name(s): Brooke Hemo Phone #

Project Information

Project Name: Raton Basin Rule 608 Compliance
Street:
City: Las Animas County
Project #
Client PO#
Project Manager

Billing Information (If different from Report to)

Company Name
Street Address
City State Zip
Attention: PO#

Requested Analysis (see TEST CODE sheet)

See Attached

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	MeOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	LAB USE ONLY
	~~Seep~~ DH																
	~~Spring 01~~ BH		9/4/12		BH	GW											
	Chavez 01		9/4/12	13:15	BH	GW	10										01
	Chavez 02		9/4/12	14:31	BH	GW	10										02
	Chavez 03		9/4/12	14:42	BH	GW	10										03

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] Commercial "B" +Narrative
- [ ] FULLT1 (Level 3+4)
- [ ] State Forms
- [ ] EDD Format
- [ ] PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		9/4/12 16:00	1	2	9/5/12 10:35	2
3			3	4		4
5			5			

Custody Seal # UPS — Intact / Not Intact — Preserved where applicable — On Ice — Cooler Temp. 4.3°

D38340: Chain of Custody
Page 1 of 4

CHAIN OF CUSTODY

ACCUTEST

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #:	D38340X
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information

Name: Accutest Mountain States (AMS)
Address: 4036 Youngfield St.
City: Wheat Ridge, State: CO Zip: 80033
Send Report to: Andrew Fluegel
Any questions contact: Shea Greiner
Phone/Fax #: (303) 425-6021; (303)425-6854

Subcontract Laboratory Information

Name: Industrial Lab
Address: 4046 Youngfield St.
City: Wheat Ridge State: CO Zip: 80033
Contact: Sample Management
Phone: (303) 287-9691

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time		Matrix	# of bottles	Preservation HCL	NaOH	HNO3	H2SO4	None	Total Coliform MPN					Comments
D38340X -1	9/4/12	1:15 PM		AQ	1						X					
-2		2:31 PM		AQ	1						X					
-3		2:42 PM		AQ	1						X					

Turnaround Information

[X] 10 Business Day Standard — Approved By:
[ ] Other _____ (Days)

10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.

Data Deliverable Information

[ ] Commercial "A"
[ ] Commercial "B"
[ ] Commercial "BN"
[ ] Reduced Tier 1
[ ] Full Tier 1
[ ] PDF
[ ] Compact Disk Deliverable
[ ] Electronic Delivery:
[ ] State Forms
[ ] Other (Specify)

Comments / Remarks

Please use Colorado regulations and RLs.

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date & Time:	Received By:	Date & Time:
1	[signature]	9/5/12	[signature] 9/5/12	1
2			2	2
3			3	3

For Subcontract Laborartory Use Only

Seal #: Headspace: Yes [ ] No [ ] NA [ ]
Preserved where applicable: [ ]
Temperature °C _____ On Ice [ ]

5.1 5

D38340: Chain of Custody
Page 2 of 4

industrial LABORATORIES

Industrial Laboratories is your independent, third-party analytical testing laboratory

To: Accutest Mountain States (AMS)
4036 Youngfield St.

Wheat Ridge CO 80033

Attn: Andrew Fluegel

TEST REPORT
ACCUTEST - M
Date Received: 9/5/2012
Date Reported: 9/10/2012
PO Number: D38340X

Note: Sample test procedures conform to EPA 40CFR136 requirements.

Lab No.	Sample Description	Test Method	Result	Units	MDL	Analysis Date/By
120905009-01A	D38340X-1, 9/4/12, 1:15pm	* Total Coliforms MPN SM 9221 B	900 fecal; 1600 total	MPN/100mL		RJ 9/5/2012
120905009-02A	D38340X-2, 9/4/12, 2:31pm	* Total Coliforms MPN SM 9221 B	90 fecal; 900 total	MPN/100mL		RJ 9/5/2012
120905009-03A	D38340X-3, 9/4/12, 2:42pm	* Total Coliforms MPN SM 9221 B	220 fecal; >1600 total	MPN/100mL		RJ 9/5/2012

Department Manager

* = Scope Analysis
\# = Subcontracted Analysis
MDL = Method Detection Limit
ND = Not Detected at the Method Detection Limit
Page: 1 of 1

D38340: Chain of Custody
Page 3 of 4

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D38340 **Client:** LT ENVIRONMENTAL **Immediate Client Services Action Required:** No

Date / Time Received: 9/5/2012 10:35:00 AM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: RATON BUSIN RULE 608 COMPLIANCE **Airbill #'s:** UPS

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	Infared gun		
3. Cooler media:	Ice (bag)		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	
2. Trip Blank listed on COC:	☐		☐	
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume rec'd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
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4036 Youngfield Street
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Wheat Ridge, CO
www/accutest.com

D38340: Chain of Custody
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Mountain States ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D38340
Account: LTENCODE LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC3086-MB	FB06885.D	1	09/06/12	AV	n/a	n/a	GFB282

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D38340-1, D38340-2, D38340-3

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	

Blank Spike Summary

Job Number: D38340
Account: LTENCODE LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC3086-BSP	FB06886.D	10	09/06/12	AV	n/a	n/a	GFB282

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D38340-1, D38340-2, D38340-3

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.509	0.552	109	70-149

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D38340
Account: LTENCODE LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D38340-2MS	FB06890.D	10	09/06/12	AV	n/a	n/a	GFB282
D38340-2MSD	FB06891.D	10	09/06/12	AV	n/a	n/a	GFB282
D38340-2	FB06888.D	1	09/06/12	AV	n/a	n/a	GFB282

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D38340-1, D38340-2, D38340-3

CAS No.	Compound	D38340-2 mg/l	Q	Spike mg/l	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-82-8	Methane	0.00030		0.509	0.530	104	0.503	99	5	70-149/30

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	100	130		
Antimony	150	18	18		
Arsenic	130	27	42		
Barium	50	4	9		
Beryllium	50	6.5	16		
Boron	250	22	22		
Cadmium	50	3	3		
Calcium	2000	42	80	11.0	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	9.5	100		
Lead	250	12	15		
Lithium	10	14			
Magnesium	1000	110	110	-3.5	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	730	750		
Selenium	250	31	55		
Silicon	250	33			
Silver	150	2.5	4.9		
Sodium	2000	110	490	-150	<2000
Strontium	25	1	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	23	23		
Vanadium	50	1.5	2.4		
Zinc	150	4	12		

Associated samples MP8323: D38340-1A, D38340-2A, D38340-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/06/12

Metal	D38229-1A Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	49200	179000	125000	103.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	13100	142000	125000	103.1	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	55200	192000	125000	109.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8323: D38340-1A, D38340-2A, D38340-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/06/12

Metal	D38229-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	49200	182000	125000	106.2	1.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	13100	143000	125000	103.9	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	55200	193000	125000	110.2	0.5	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8323: D38340-1A, D38340-2A, D38340-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	133000	125000	106.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	128000	125000	102.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	137000	125000	109.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8323: D38340-1A, D38340-2A, D38340-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/06/12

Metal	D38229-1A Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	9830	10100	2.6	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	2610	2660	2.0	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	11000	11300	2.8	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8323: D38340-1A, D38340-2A, D38340-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8323
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/07/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	21	25		
Antimony	30	3.6	3.6		
Arsenic	25	5.4	8.4		
Barium	10	.8	1.8		
Beryllium	10	1.3	3.1		
Boron	50	4.3	4.4		
Cadmium	10	.6	.59		
Calcium	400	8.4	16	8.3	<400
Chromium	10	.3	.56		
Cobalt	5.0	.4	.42		
Copper	10	1.2	3		
Iron	70	1.9	20	-0.10	<70
Lead	50	2.4	2.9		
Lithium	2.0	2.8			
Magnesium	200	22	22	-3.6	<200
Manganese	5.0	1.2	1.2		
Molybdenum	10	2.1	2.1		
Nickel	30	.5	.57		
Phosphorus	100	14	59		
Potassium	1000	150	150	-110	<1000
Selenium	50	6.1	11		
Silicon	50	6.5			
Silver	30	.5	.98		
Sodium	400	21	98	-4.2	<400
Strontium	5.0	.2	1.5		
Thallium	10	2.9	8.6		
Tin	50	12			
Titanium	10	.1			
Uranium	50	4.6	4.6		
Vanadium	10	.3	.48		
Zinc	30	.8	2.4		

Associated samples MP8325: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 09/07/12

Metal	D38339-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium					
Boron	anr				
Cadmium	anr				
Calcium	76800	100000	25000	105.6	75-125
Chromium	anr				
Cobalt					
Copper	anr				
Iron	228	5360	5000	102.9	75-125
Lead	anr				
Lithium					
Magnesium	19800	45200	25000	101.6	75-125
Manganese					
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium	4810	33100	25000	113.6	75-125
Selenium	anr				
Silicon					
Silver	anr				
Sodium	81300	111000	25000	118.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP8325: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 09/07/12

Metal	D38339-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium						
Boron	anr					
Cadmium	anr					
Calcium	76800	101000	25000	109.6	1.0	20
Chromium	anr					
Cobalt						
Copper	anr					
Iron	228	5390	5000	103.5	0.6	20
Lead	anr					
Lithium						
Magnesium	19800	45100	25000	101.2	0.2	20
Manganese						
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium	4810	33200	25000	114.0	0.3	20
Selenium	anr					
Silicon						
Silver	anr					
Sodium	81300	111000	25000	118.8	0.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP8325: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/07/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium				
Boron	anr			
Cadmium	anr			
Calcium	26600	25000	106.4	80-120
Chromium	anr			
Cobalt				
Copper	anr			
Iron	5150	5000	103.0	80-120
Lead	anr			
Lithium				
Magnesium	25300	25000	101.2	80-120
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	27100	25000	108.4	80-120
Selenium	anr			
Silicon				
Silver	anr			
Sodium	27800	25000	111.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP8325: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/07/12

Metal	D38339-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium				
Boron	anr			
Cadmium	anr			
Calcium	76800	79200	7.6	0-10
Chromium	anr			
Cobalt				
Copper	anr			
Iron	222	220	2.4	0-10
Lead	anr			
Lithium				
Magnesium	22000	22100	11.6*(a)	0-10
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	4810	3010	35.9 (b)	0-10
Selenium	anr			
Silicon				
Silver	anr			
Sodium	80200	88500	8.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP8325: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8325
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.
(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8345 Methods: SW846 6020A
Matrix Type: AQUEOUS Units: mg/l

Prep Date: 09/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	0.25	.0022	.0025		
Antimony	0.0020	.000018	.00005		
Arsenic	0.0010	.00006	.00024		
Barium	0.010	.000065	.00085		
Beryllium	0.0010	.00016	.0005		
Boron	0.20	.012	.012		
Cadmium	0.00050	.00014	.00035		
Calcium	2.0	.079	.24		
Chromium	0.010	.00033	.0014		
Cobalt	0.0010	.000012	.00005		
Copper	0.010	.00017	.0007		
Iron	0.20	.008	.018		
Lead	0.0025	.000011	.00005		
Magnesium	0.50	.0044	.0045		
Manganese	0.0050	.000043	.00025	-0.00014	<0.0050
Molybdenum	0.0050	.00018	.0002		
Nickel	0.010	.000049	.0002		
Phosphorus	0.30	.014	.021		
Potassium	1.0	.098	.1		
Selenium	0.0020	.00029	.00065	0.00017	<0.0020
Silver	0.00050	.000009	.00005		
Sodium	2.5	.015	.015		
Strontium	0.10	.00036	.00035		
Thallium	0.0010	.0000095	.0001		
Tin	0.050	.00023	.006		
Titanium	0.010	.00044	.0008		
Uranium	0.0010	.0000085	.00005		
Vanadium	0.0050	.0012	.0039		
Zinc	0.050	.00033	.0005		

Associated samples MP8345: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8345
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: mg/l

Prep Date: 09/10/12

Metal	D38340-1F Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese	0.0023	0.51	0.50	101.5	75-125
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	0.00035	1.1	1.0	110.0	75-125
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8345: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8345 Methods: SW846 6020A
Matrix Type: AQUEOUS Units: mg/l

Prep Date: 09/10/12

Metal	D38340-1F Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese	0.0023	0.50	0.50	99.5	2.0	20
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	0.00035	1.2	1.0	120.0	8.7	20
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8345: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8345
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: mg/l

Prep Date: 09/10/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese	0.50	0.50	100.0	80-120
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	1.2	1.0	120.0	80-120
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8345: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

QC Batch ID: MP8345 Methods: SW846 6020A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 09/10/12

Metal	D38340-1F Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese	2.29	0.00	100.0*(a	0-10
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	0.348	0.00	100.0(b)	0-10
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8345: D38340-1F, D38340-2F, D38340-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.
(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Mountain States ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN16648	5.0	2.0	mg/l	100	95.9	95.9	90-110%
Alkalinity, Carbonate	GN16649	5.0	0.0	mg/l	100	95.9	95.9	80-120%
Alkalinity, Total as CaCO3	GN16647	5.0	2.0	mg/l	100	95.9	95.9	90-110%
Bromide	GP8101/GN16615	0.050	0.0	mg/l	20	20.1	100.5	90-110%
Chloride	GP8101/GN16615	0.50	0.0	mg/l	20	19.7	98.5	90-110%
Fluoride	GP8101/GN16615	0.10	0.0	mg/l	10	9.14	91.4	90-110%
Iron Reducing Bacteria	MB95	25	<25	CFU/ml				
Nitrogen, Nitrate	GP8101/GN16615	0.010	0.0	mg/l	4.52	4.37	96.7	90-110%
Nitrogen, Nitrite	GP8101/GN16615	0.0040	0.0	mg/l	6.09	6.37	104.6	90-110%
Slime Forming Bacteria	MB96	500	<500	CFU/ml				
Solids, Total Dissolved	GN16697	10	0.0	mg/l	400	386	96.5	90-110%
Specific Conductivity	GP8111/GN16624	1.0	<1.0	umhos/cm	99.4	100	100.8	90-110%
Sulfate	GP8101/GN16615	0.50	0.0	mg/l	30	29.3	97.7	90-110%
Sulfate Reducing Bacteria	MB97	200	<200	CFU/ml				
pH	GN16625			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch MB95: D38340-1B, D38340-2B, D38340-3B
Batch MB96: D38340-1B, D38340-2B, D38340-3B
Batch MB97: D38340-1B, D38340-2B, D38340-3B
Batch GP8101: D38340-1, D38340-2, D38340-3
Batch GP8111: D38340-1, D38340-2, D38340-3
Batch GN16625: D38340-1, D38340-2, D38340-3
Batch GN16647: D38340-1, D38340-2, D38340-3
Batch GN16648: D38340-1, D38340-2, D38340-3
Batch GN16649: D38340-1, D38340-2, D38340-3
Batch GN16697: D38340-1, D38340-2, D38340-3
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN16647	D38372-1	mg/l	163	162	0.9	0-20%
Solids, Total Dissolved	GN16697	D38340-2	mg/l	206	194	6.0	0-25%
Specific Conductivity	GP8111/GN16624	D38340-1	umhos/cm	323	322	0.3	0-20%

Associated Samples:
Batch GP8111: D38340-1, D38340-2, D38340-3
Batch GN16647: D38340-1, D38340-2, D38340-3
Batch GN16697: D38340-1, D38340-2, D38340-3
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN16647	D38372-1	mg/l	163	100	255	91.5	80-120%
Bromide	GP8101/GN16615	D38340-2	mg/l	0.033	2.5	2.5	98.7	80-120%
Chloride	GP8101/GN16615	D38340-2	mg/l	4.0	10	14.2	102.0	80-120%
Fluoride	GP8101/GN16615	D38340-2	mg/l	0.30	2.5	2.6	92.0	80-120%
Nitrogen, Nitrate	GP8101/GN16615	D38340-2	mg/l	0.088	0.565	0.64	97.7	80-120%
Nitrogen, Nitrite	GP8101/GN16615	D38340-2	mg/l	0.0	0.305	0.31	101.8	80-120%
Sulfate	GP8101/GN16615	D38340-2	mg/l	20.3	10	30.1	98.0	80-120%

Associated Samples:
Batch GP8101: D38340-1, D38340-2, D38340-3
Batch GN16647: D38340-1, D38340-2, D38340-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38340
Account: LTENCODE - LT Environmental
Project: Colo Rule 608 Compliance Raton Basin CO

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN16647	D38372-1	mg/l	163	100	258	1.0	20%
Bromide	GP8101/GN16615	D38340-2	mg/l	0.033	2.5	2.6	3.9	20%
Chloride	GP8101/GN16615	D38340-2	mg/l	4.0	10	14.2	0.0	20%
Fluoride	GP8101/GN16615	D38340-2	mg/l	0.30	2.5	2.6	0.0	20%
Nitrogen, Nitrate	GP8101/GN16615	D38340-2	mg/l	0.088	0.565	0.64	0.0	20%
Nitrogen, Nitrite	GP8101/GN16615	D38340-2	mg/l	0.0	0.305	0.31	0.0	20%
Sulfate	GP8101/GN16615	D38340-2	mg/l	20.3	10	30.0	0.3	20%

Associated Samples:
Batch GP8101: D38340-1, D38340-2, D38340-3
Batch GN16647: D38340-1, D38340-2, D38340-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits