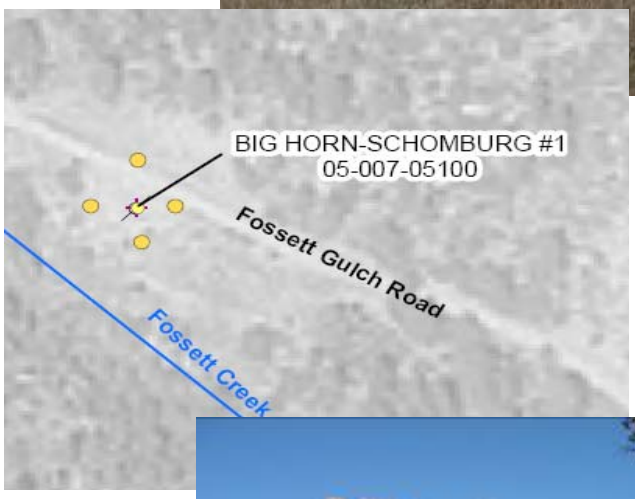
2007 FRUITLAND OUTCROP MONITORING REPORT

ARCHULETA COUNTY, COLORADO



MARCH 2008

Prepared for:

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Dallas, Texas

and

PETROX RESOURCES, INC.
Meeker, Colorado

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EXECUTIVE SUMMARY

At the request of Elm Ridge Resources, Inc. (Elm Ridge) and Petrox Resources, Inc. (Petrox), the majority lease holders in the eastern half of the northern rim of the San Juan Basin (SJB) in Archuleta County, Colorado, LT Environmental, Inc. (LTE) conducted this outcrop monitoring program to address potential methane impacts along the Fruitland Formation (Kf) outcrop in Archuleta County. This outcrop monitoring program meets the Conditions of Approval for the Pargin Mountain 10U #3 production well permit.

The project area includes approximately 18 miles of Kf outcrop starting from the La Plata County – Archuleta County boundary and extending southeast along the outcrop to the Southern Ute Indian Tribe (SUIT) Reservation Boundary near the confluence of the Piedra River and Stollsteimer Creek.

The purposes of the program are to identify the presence of methane seepage along the Kf outcrop and if observed, to monitor changes in seepage conditions over time and space. A similar program has been underway along the Kf outcrop in La Plata County since 1997. The overriding goal of the monitoring program is to ensure the safety of the public.

LTE conducted the initial reconnaissance of the Kf outcrop in Archuleta County in September 2004. This report presents the results of the fourth monitoring event conducted within the project area. It is important to understand that the methodology used to conduct soil gas surveys during the 2007 monitoring event is different than the methodology used during previous monitoring events. During 2007, LTE utilized more accurate equipment capable of detecting the presence of methane at very low levels. Traditional survey techniques used prior to 2007 were not capable of detecting methane at the low levels observed during 2007. Therefore, the presence of methane observed during the 2007 monitoring event at locations where methane had not been previously detected, does not represent an increase in methane seep conditions.

Results

The results of the monitoring event indicate that methane seepage along the Kf outcrop in Archuleta County is very low. Methane was detected at low flux rates within the six drainages mapped by LTE and at the Big Horn-Schomburg #1 abandoned well site. The maximum flux rate observed over the entire project area was 0.30 moles per square meter per day (moles/m^2·day) or 0.34 cubic feet per square meter per day (ft^3/m^2·day). This flux value is very low relative to the maximum flux rate observed in La Plata County (1,175 moles/m^2·day or 1,316 ft^3/m^2·day) during 2007. Based on LTE's field observations, methane seep conditions along the Kf outcrop in Archuleta County do not appear to have changed.

LTE observed several surface water methane seeps along a section of Squaw Creek near the Vance driveway during 2006 and again in 2007. A gas sample was collected from this area in 2006 and results indicated that the gas was near-surface microbial swamp gas of biogenic origin. Therefore, no gas sample was collected from this area in 2007.

LTE observed several surface water methane seeps along a section of Stollsteimer Creek. The stream in this area contains relatively stagnant water with a muddy, organic-rich stream bed. An

underground gas pipeline, owned by Xcel Energy, was observed running underneath this section of Stollsteimer Creek. Results of a gas sample collected from this area of Stollsteimer Creek indicate that the gas is thermogenic gas. Based on field observations and isotopic data, the possible sources of the gas are the underground gas pipeline and/or coal bed methane associated with the Kf outcrop.

Data collected during the natural spring survey indicate the presence of dissolved methane in four of the 10 natural springs sampled. Three of the four natural springs containing detectable concentrations of dissolved methane are located on the Kf outcrop. The highest concentration of methane (0.65 milligrams per Liter [mg/L]) was found in the water sample collected from SE John Grub Spring. This spring is located on the Kf outcrop and is not used as a residential water supply.

In general, the water flow rates of natural springs observed in 2007 were lower than flow rates observed in 2006. Lower flow rates were most likely observed in 2007 because field activities were conducted in the fall while 2006 field activities were conducted in the spring.

Recommendations

LTE recommends continuing the scheduled outcrop monitoring using infrared (IR) imagery acquisition and field verification of suspect areas on a three year interval. The next IR imagery acquisition and field verification activities are scheduled for Spring 2008 and Fall 2008, respectively. The IR imagery acquisition will be performed in conjunction with the La Plata County IR imagery acquisition.

LTE recommends continued monitoring of the Big Horn-Schomburg #1 well site to assess the potential for methane seeps over time. Annual monitoring of the well is required under the Conditions of Approval for the Pargin Mountain 10U #3 permit.

LTE recommends annual water quality surveying of the natural springs located on the Kf outcrop in Archuleta County. Annual surveying of the natural springs will help evaluate potential changes, especially changes in water flow and dissolved methane concentrations, to surface water conditions over time.

LTE recommends annual inspections of the surface water drainages where the drainages cross the Kf outcrop to assess the potential for methane seeps over time. Annual inspections of the surface water drainages are required under the Conditions of Approval for the Pargin Mountain 10U #3 permit.

LTE recommends annual evaluation of data collected by the Bureau of Land Management (BLM) from the four permanent gas monitoring probe lines located in Archuleta County.

LTE recommends that Xcel Energy, the owner of the underground gas pipeline located in the vicinity of Stollsteimer Creek, be notified of the gas seepage above their pipeline. LTE recommends investigation of the integrity of the gas pipeline. LTE also recommends that a gas sample be collected from the surface water methane seep in Stollsteimer Creek that does not appear to be associated with the buried pipeline. The sample should be analyzed for isotopes and

gas composition to determine if all surface water methane seeps within Stollsteimer Creek are from the same gas source.

LTE recommends that the BLM and LTE visit the locations of permanent monitoring probes where methane has been detected in the past and use all available gas measurement techniques to collect methane gas measurements from permanent monitoring probes and directly from the soil. Comparing data collected using the different techniques will help in understanding how the data from the various techniques compare.

QUICK-REFERENCE SUMMARY

LTE has prepared a quick-reference summary of this monitoring event organized by geographic location. The quick-reference summary is provided in the table presented below:

Site Location	Summary Notes
Beaver Creek	No visible methane seeps noted in surface water. Methane flux values observed in this area were low. Four natural springs noted in the vicinity of Beaver Creek (see Ramona Leonard Spring, Ramona Spring, Corrigan Spring, and Wood Spring below). Additionally, a water sample of Beaver Creek was collected in this area.
Yellow Jacket Pass/ Squaw Creek	Surface water methane seeps observed within a portion of Squaw Creek (Vance Property). Same location as seeps observed in 2006. Sample of gas collected in 2006 indicated the origin of the gas is biogenic (near-surface microbial swamp gas). Methane flux values observed in this area were low. One natural spring noted in Squaw Creek drainage, three natural springs noted north of Squaw Creek and Hwy 160 (see Thick Spring, Seep Spring, Townsend Spring, and Walt Spring #1 below).
Little Squaw Creek	No methane seeps observed in surface water. Methane flux values observed in this area were low.
Pole Gulch	No methane seeps observed in surface water. Methane flux values observed in this area were low. Two natural springs located in drainage. One natural spring noted SE of Pole Gulch (see Big Hole Spring, Willow Spring, and Section 14 Spring [Reich] below).
Peterson Gulch	No methane seeps observed in surface water. Methane flux values observed in this area were low. Two natural springs located in meadow, both with detectable methane (see NW John Grub and SE John Grub below).
Candelaria Ranch	No access during 2007
Piedra River	No access during 2007.

QUICK-REFERENCE SUMMARY (continued)

Site Location	Summary Notes
Stollsteimer Creek	Surface water methane seeps observed within a portion of Stollsteimer Creek. An underground gas pipeline observed running beneath the creek in this area may be the source. Results of a gas sample collected from the creek indicate that the gas is thermogenic gas. Methane flux values observed in this area were low.
Cabezon Canyon	One natural spring noted, appears to be water supply for residence. Unable to collect sample (see Miser Spring and Pipeline below).
Big Horn-Schomburg #1	Production well drilled and plugged and abandoned in 1961. Methane flux values recorded in this area using the flux meter in 2007 were very low. Permanent monitoring probe installed in 2005, no methane detected in the permanent probe during 2005, 2006, or 2007 monitoring events.

NATURAL SPRINGS QUICK-REFERENCE SUMMARY

Spring ID	Location	Summary Notes
Ramona Leonard Spring (Mona)	NESW, Sec 13, T35N, R6W	No methane detected in 2006 or 2007.
Ramona Spring	NESW, Sec 13, T35N, R6W	Unable to locate / possibly dry.
Wood Spring	SWSE, Sec 13, T35N, R6W	Unable to locate / possibly dry.
Corrigan Spring	SWSE, Sec 13, T35N, R6W	Spring was dry in 2007. No methane detected in 2006.
Watson Well Spring	SENW, Sec 19, T35N, R5W	No access during 2007. Methane detected in 2006 at a concentration of 0.016 mg/L, below the COGCC threshold value of 2 mg/L.
Grassy Spring	NESW Sec 19, T35N, R5W	No methane detected in 2007. Spring is not located on Kf outcrop.

NATURAL SPRINGS QUICK-REFERENCE SUMMARY (continued)

Spring ID	Location	Summary Notes
Crain Spring	SWSW, Sec 20, T35N, R5W	No access in 2007. Methane detected in 2006 at 0.0067 mg/L, below COGCC threshold value of 2 mg/L.
Seep Spring	NESW, Sec 04, T34N, R5W	Unable to locate/possibly dry.
Walt Spring #1	SESW, Sec 04, T34N, R5W	Spring was dry in 2007. No methane detected in 2006.
Townsend Spring	SESW, Sec 04, T34N, R5W	Spring was dry in 2006 and 2007.
Thick Spring	SESE, Sec 05, T34N, R5W	No methane detected in 2006 or 2007.
Vance Spring #1	NESW, Sec 08, T34N, R5W	No methane detected during 2007. Methane detected in 2006 at a concentration of 0.0022 mg/L, below COGCC threshold of 2.0 mg/L. Spring is not located on Kf outcrop.
Vance Meadow Spring	SWNE, Sec 08, T34N, R5W	Methane detected in 2007 at a concentration of 0.06 mg/L, below COGCC threshold of 2.0 mg/L. Spring is not located on Kf outcrop.
Big Hole Spring	NWNW, Sec 14, T34N, R5W	Spring was dry in 2007. Methane detected in 2006 at a concentration of 0.001 mg/L, below COGCC threshold value of 2 mg/L. Spring is located in Pole Gulch.
Willow Spring	NWNW, Sec 14, T34N, R5W	No methane detected in 2006 or 2007. Spring is located in Pole Gulch.
Section 14 Spring (Reich)	SWNE, Sec 14, T34N, R5W	Methane detected in 2005 and 2007 only, at concentrations of 0.0006 mg/L and 0.020 mg/L, respectively. Both below COGCC threshold of 2.0 mg/L.
Waypoint 0003	NWSE, Sec 13, T34N, R5W	Unable to locate / possibly dry.

NATURAL SPRINGS QUICK-REFERENCE SUMMARY (continued)

Spring ID	Location	Summary Notes
NW John Grub Spring	NWNE, Sec 11U, T34N, R5W	Methane detected in 2007 at a concentration of 0.3 mg/L, below COGCC threshold of 2.0 mg/L. Methane detected in 2005 and 2006 at concentrations of 0.015 mg/L and 0.0016 mg/L, respectively. Spring is located in Peterson Gulch.
SE John Grub Spring	SENE, Sec 11U, T34N, R5W	Methane detected in 2006 and 2007 only, at concentrations of 0.0025 mg/L and 0.65 mg/L, respectively. Both below COGCC threshold of 2.0 mg/L. Spring is located in Peterson Gulch.
Section 10U Spring	SWSE, Sec 10U, T34N, R5W	No access in 2007. Methane detected in 2006 at concentration of 0.0062 mg/L, below COGCC threshold of 2.0 mg/L. Methane not detected during 2005 natural spring sampling. Spring is not located on Kf outcrop.
Spring 1212	SWSW, Sec 14U, T34N, R5W	No access in 2007. No methane detected in 2006. Methane detected during 2005 at concentration of 0.0005 mg/L. Spring is water supply to Candelaria homestead property, not currently in use.
Spring 3424	SESE, Sec 13U, T34N, R5W	No access in 2007. Methane detected in 2005 and 2006 at concentrations of 0.0017 mg/L and 0.023 mg/L, respectively. Both below COGCC threshold of 2.0 mg/L. Spring is water supply to Candelaria residences.
Candelaria A Spring	NWNE, Sec 24U, T34N, R5W	No access in 2007. Spring was dry in 2006.
Candelaria B Spring	SWNE, Sec 24U, T34N, R5W	No access in 2007. Spring was dry in 2006.
Vaughn Spring	SESE, Sec 25, T34N, R5W	No access during 2007. Methane detected in 2006 at a concentration of 0.0037 mg/L, below COGCC threshold value of 2 mg/L.
Miser Spring and Pipeline	NESW, Sec 28, T34N, R4W	Unable to sample in 2006 and 2007. Spring is located in Cabezon Canyon and is a “hand-dug” water supply well for residence. Well infrastructure prohibited sampling during field activities.

Other Quick-Reference Information

Initial reconnaissance performed in September 2004, no methane detected using traditional subsurface sampling techniques.

Infrared aerial imagery collected June 8, 2005.

First field verification activities of infrared (IR) imagery performed September 14 through 22, 2005, no methane detected using traditional sampling techniques.

Dissolved methane detected at relatively low concentrations in four natural springs in Archuleta County during 2005 field activities.

Methane detected at relatively low concentration (20 ppm) in Pole Gulch during 2006 field activities.

Inspection of Candelaria property conducted in 2005 and 2006, no methane detected with exception of relatively low methane concentration in inactive water well behind Susie Candelaria Residence.

Relatively low concentrations of methane observed in surface water within Squaw Creek during 2006 surface water inspections. Analytical results of gas sample collected from Squaw Creek indicate that the gas is near-surface microbial gas (biogenic). Next surface water inspection scheduled for Fall 2008.

Methane detected in 10 of 17 water samples collected from natural springs in 2006. Concentrations detected were below COGCC threshold value of 2 mg/L.

Methane detected in four of 10 water samples collected from natural springs in 2007. Concentrations detected were below COGCC threshold value of 2 mg/L. Three of the four springs where methane was detected are located on the Kf outcrop.

Low concentrations of methane observed in surface water within Stollsteimer Creek during 2007 surface water inspections. An underground gas pipeline observed running underneath this section of Stollsteimer Creek may be the source. Analytical results of gas sample collected from this area indicate that the gas is thermogenic gas. Next surface water inspection scheduled for Fall 2008.

Inspection of Big Horn Schomburg #1 abandoned well site in 2005, 2006, and 2007. Using more sensitive sampling technique, methane detected at low levels around well site during 2007. The maximum methane flux value recorded in this area was 0.24 moles/m^2·day and traditional gas survey techniques used prior to 2007 were not capable of detecting methane at this low level.

Infrared imagery capture and follow-up field verification in Spring 2008 and Fall 2008, respectively.

SECTION 1.0

INTRODUCTION

This Fruitland Formation Outcrop Monitoring Report has been prepared at the request of Elm Ridge Resources, Inc. (Elm Ridge) and Petrox Resources, Inc. (Petrox). Elm Ridge and Petrox are the majority lease holders in the eastern half of the northern rim of the San Juan Basin (SJB) in Archuleta County, Colorado. This monitoring program meets the Conditions of Approval for the Pargin Mountain 10U #3 production well permit.

It is important to understand that the sampling methodology used during the 2007 monitoring event was different than the methodology used during previous monitoring events. During 2007, LTE utilized state of the art equipment capable of accurately detecting the presence of methane at very low levels. Traditional survey techniques used prior to 2007 were not capable of detecting methane at the low levels observed during 2007. Therefore, the presence of methane discussed in this report does not indicate an increase in methane seepage along the Kf outcrop in Archuleta County.

1.1 PROJECT AREA DESCRIPTION

The project area includes approximately 18 miles of Kf outcrop starting on the west end at the La Plata County – Archuleta County boundary near Beaver Creek and extending southeast along the Kf outcrop to the Southern Ute Indian Tribe (SUIT) Reservation Boundary near the confluence of the Piedra River and Stollsteimer Creek. Figure 1A illustrates the project area. A detailed project area map is included as Figure 1B.

1.2 BACKGROUND INFORMATION

In June 2004, the United States Forest Service (USFS) and the Bureau of Land Management (BLM) issued a Draft Environmental Impact Statement (DEIS) pertaining to the oil and gas industry's request to conduct coal bed methane (CBM) development on Federal lands within the northern rim of the SJB. One of the potential impacts identified in the DEIS is methane seepage at the outcrop of the Fruitland Formation (Kf), a phenomenon already observed in the western half of the northern rim in La Plata County (*Fruitland Outcrop Monitoring Report, January 2007*). The DEIS recommends surveys of the Kf outcrop to monitor the potential for methane seepage and document changes over time and space.

As stated in the DEIS, methane seeps have been observed and reported in the SJB, particularly from the outcrop of the coal beds in the Kf since the late 1800s. Over the past 10 years, drought conditions have prevailed in the SJB, which have influenced methane seepage. While there are conflicting data regarding the changes in gas seepage over time and the cause of the seepage, seep activity can be monitored through detailed mapping, subsurface and surface methane measurements, natural spring sampling, and reconnaissance across the outcrop looking for areas of stressed and dead vegetation.

Since 1997, LT Environmental, Inc. (LTE) has conducted methane seep monitoring on the Kf outcrop in La Plata County, Colorado. The monitoring program in Archuleta County has been modeled after work already completed in the western half of the northern rim of the SJB.

In September 2004, LTE conducted an initial reconnaissance of the Kf in Archuleta County. The scope of the initial reconnaissance event included an aerial reconnaissance of the entire outcrop followed by field inspection of suspect areas. "Suspect areas" are areas of stressed and dead vegetation on the Kf outcrop and areas where surface water bodies, namely rivers, transect the Kf outcrop (i.e. the Piedra River south of US Highway 160). Using traditional sampling techniques, no methane seep activity was noted during the initial reconnaissance. Areas of observed dead and stressed vegetation appeared to be the result of the drought conditions and/or pine beetle infestation.

In September 2005, LTE conducted a second reconnaissance of the Kf outcrop in Archuleta County. The scope of the second reconnaissance included aerial imagery acquisition using an infrared (IR) camera. LTE used the IR images to identify "suspect areas" on the Kf outcrop. LTE visited each identified suspect area and collected shallow subsurface gas concentration measurements and inspected the vegetation to identify potential causes of mortality. LTE also performed a survey of natural springs located on the outcrop in order to provide a baseline of surface water conditions on the outcrop. Results of the 2005 monitoring event indicated that methane was not detected in the shallow subsurface soil in Archuleta County. Relatively low concentrations of dissolved methane were detected in several of the natural springs sampled in the project area during the 2005 monitoring event.

In 2006, LTE conducted a third reconnaissance of the Kf outcrop in Archuleta County. This reconnaissance included surface water inspections of seven drainages along the Kf outcrop, sampling natural springs identified by LTE and the BLM during past surveys, collecting subsurface gas measurements from four permanent gas monitoring probe lines, and conducting soil gas surveys on the Candelaria Ranch and the Big Horn Schomburg #1 abandoned well site. Results of the 2006 monitoring event were similar to the results of the 2005 monitoring event. Methane was not detected in the shallow subsurface soil in Archuleta County with the exception of a low concentration (20 parts per million [ppm]) recorded at one sample point in Pole Gulch. Low concentrations of dissolved methane were detected in several of the natural springs sampled during the 2006 monitoring event.

1.3 SCOPE OF WORK

The scope of work used in the monitoring program included the following: obtaining access to various private properties, conducting surface water inspections and soil gas surveys along six drainages transecting the Kf outcrop, conducting a soil gas survey at the Big Horn Schomburg #1 abandoned well site, and sampling natural springs identified by LTE and the BLM during past surveys.

The methodologies used in implementing the aforementioned scope of work are described in detail in Section 2.0.

1.4 PROPERTY ACCESS

Prior to the September 2005 field activities, LTE acquired land ownership information from the Archuleta County Assessor's Office. LTE used a Geographic Information System (GIS) to cross-reference the parcel data and the Kf outcrop to select those parcels located on the Kf outcrop. LTE attempted to contact the private landowners along the Kf outcrop in Archuleta County. Much of the land covering the Kf outcrop is public forest land, therefore, it was not necessary to obtain permission to access those parcels. LTE was denied access to the Candelaria Ranch in 2007. Therefore, no surface water inspections, soil gas survey, or natural spring sampling was conducted on the Candelaria Ranch during the 2007 monitoring event. Prior to this, LTE had access to the Candelaria Ranch in 2005 and 2006.

The parcels of land to which LTE was not granted access are presented in Table 1 and shown on Figure 2.

1.5 OBJECTIVES

The objective of this monitoring event was to document any observed changes in methane seep activity within the previously studied portions of the project area. The long term monitoring program will provide additional data to demonstrate the effects, if any, from methane seepage. The overriding goal of the monitoring program is to ensure the safety of the public.

The scope of work was developed to provide the most efficient and accurate means by which to characterize the general condition of seep activity, if any, along the entire project area and to inspect those areas with the greatest potential for seep activity based on characteristics identified in methane seeps along the Kf outcrop in La Plata County.

The objective of the surface water inspections is to assess surface water conditions on the Kf outcrop, particularly geographic location of methane seeps, if present, in surface water bodies. Another objective of the surface water inspections is to observe changes in surface water conditions over time.

The objectives of the soil gas surveys were to determine the presence or absence of methane seepage along the Kf outcrop and to quantify the amount of gas, if any, seeping at the ground surface. Another objective of the soil gas surveys was to utilize more accurate equipment (portable flux meter) to evaluate seepage conditions.

The objectives of the natural spring survey are to assess surface water conditions on the Kf outcrop, particularly geographic location and elevation, discharge rates, and water quality and to observe changes in these conditions over time. These data may prove useful in addressing potential future landowner issues regarding surface water quality and quantity. The data may also be useful in various aspects of the Kf reservoir engineering models.

1.6 ORGANIZATION OF REPORT

This report is organized into four sections including this introduction, which presents the objective of the study and discusses background information related to the project. The field methods used to complete the scope of work are described in Section 2.0. Section 3.0 presents the results of the monitoring event. The conclusions and recommendations are summarized in Section 4.0. Figures, tables, and appendices follow the text in separate sections. Pertinent photographs have been included in the text.

SECTION 2.0

FIELD METHODS

This section describes the approach and procedures used to conduct the surface water inspections, soil gas surveys, and the natural spring survey.

2.1 SIX DRAINAGES ALONG KF OUTCROP

LTE conducted surface water inspections and soil gas surveys of the following areas where the surface drainage transects the Kf outcrop:

- Beaver Creek;
- Squaw Creek;
- Yellow Jacket Pass/Little Squaw Creek;
- Pole Gulch;
- Peterson Gulch; and
- Stollsteimer Creek.

2.1.1 Surface Water Inspections

LTE walked the drainages on foot and used a Mine Safety Appliances (MSA) GasPort® field meter to measure the concentration of methane, hydrogen sulfide, carbon monoxide, and oxygen directly above the surface water body per the requirements of the Conditions of Approval for the Pargin Mountain 10U #3 Application for Permit to Drill (APD). Each surface water methane concentration and measurement location was recorded using Global Positioning System (GPS). Where methane was detected directly above surface water, LTE collected soil gas measurements on the adjacent stream banks using a West Systems, LLC (West Systems) portable flux meter. LTE also collected a gas sample from the seep identified at Stollsteimer Creek on November 14, 2007 and submitted the sample to Isotech Laboratories, Inc. (Isotech) of Champaign, Illinois for analyses of isotopes and gas composition.

2.1.2 Soil Gas Surveys

The soil gas surveys included the collection of gas flux measurements, using a portable flux meter, at various locations along the stream banks and surrounding areas in the vicinity of the six drainages. The flux of methane, hydrogen sulfide, and carbon dioxide were recorded during each gas flux measurement. The location of each gas flux measurement was mapped using GPS.

2.2 BIG HORN SCHOMBURG #1 SOIL GAS SURVEY

LTE conducted a soil gas survey in the vicinity of the Big Horn Schomburg #1 abandoned well. This well has been abandoned since 1961. LTE installed a permanent gas monitoring probe in the vicinity of the abandoned well in September 2005. Soil gas surveys were conducted at the abandoned well site in September 2005 and May 2006. The most recent survey included the collection of five gas flux measurements using a portable flux meter, one subsurface gas measurement from a temporary soil probe, and one subsurface gas measurement from the permanent gas monitoring probe. The flux of methane, hydrogen sulfide, and carbon dioxide were recorded during each gas flux measurement. The concentrations of methane, hydrogen sulfide, carbon monoxide, and oxygen were measured in the temporary soil probe and in the permanent gas monitoring probe. The location of each gas flux measurement and subsurface gas measurement was mapped using the GPS.

2.3 FEATURES OBSERVED

Features mapped during the 2007 soil gas surveys and surface water inspections include gas flux and subsurface gas measurements, an abandoned production well, visible methane seeps from surface water, a permanent gas monitoring probe, and an underground gas pipeline. The mapping of stressed/dead vegetation areas was not included as part of the scope of work for this monitoring event. The mapping results are presented in figures, which are contained in a separate section following the text. The gas flux and subsurface gas measurement location symbols are graduated based on concentration or flux measured.

2.4 USE OF GPS

LTE used a Trimble GeoXT® GPS with a real-time correction processor to map each feature. Specifications of the unit are included in Appendix A. The methane measurements and other relevant field notes were stored as attributes in the GPS unit with the associated GPS mapped positions. The GPS data were later downloaded and grouped according to the type of feature, as points, lines, or polygons.

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

2.5 GAS MEASUREMENT COLLECTION

LTE collected gas flux and subsurface gas measurements during the soil gas surveys. The following section describes the methodology implemented to collect both types of gas measurements.

2.5.1 Gas Flux Measurements

Gas flux measurements were collected using a West Systems portable gas flux meter. The flux meter is capable of measuring flux of methane, hydrogen sulfide, and carbon dioxide at the ground surface. The flux meter records the concentration increase over time for a given area

which is proportional to flux. The flux is calculated and reported as a mass flux (flow rate per area) in units of moles per square meter per day (moles/m^2·day). Volumetric flux can be calculated based on the molecular weight and density of the gas and is described further in Section 3.1.2.

At each grid node, an accumulation chamber was placed on the ground in order to capture gas seeping from the ground surface. To ensure a proper seal between the ground surface and the accumulation chamber, LTE chose relatively flat surfaces where possible and placed soil around the base of the accumulation chamber in order to prevent gas from circumventing the accumulation chamber. LTE attempted to minimize ground disturbance during the measurement process to ensure measurements of natural seep conditions.

A pump was used to circulate gas into the accumulation chamber, through methane, hydrogen sulfide and carbon dioxide sensors in a portable case, and then back through the accumulation chamber. An internal fan was used to continuously mix the gas in the accumulation chamber during the process. The system allows for the accumulation of gas in the chamber because gas is allowed to enter the system from the surface soil throughout the measurement process, but no gas is allowed to escape the system. Because gas is exhausted into the accumulation chamber at the same rate as it is drawn through the pump, a vacuum is not created during the measurement process. This enables measurement of natural seep conditions.

During the measurement process, concentrations of the aforementioned gasses were recorded at one-second intervals and directly downloaded via Bluetooth® connection on an Acer® 300 portable digital assistant (PDA). Other measurements recorded by the flux meter include barometric pressure, temperature, date, and time.

LTE used the West Systems Flux Manager® software on the PDA to record the gas measurement data. The software plots the curve of gas concentration versus time for each measurement collected. LTE selected the best fit line for the curve generated. The slope of the best fit line is proportional to the flux at the measurement point.

2.5.2 Subsurface Gas Measurements – Traditional Survey Techniques

In 2007, LTE collected subsurface gas measurements next to each natural spring visited and next to the Big Horn Schomburg #1 abandoned well casing. This method of gas measurement collection is the traditional method used to conduct outcrop monitoring in Archuleta County prior to 2007. Subsurface gas measurements were collected by using a hand-driven slide hammer to drive a ½-inch diameter steel rod into the ground surface to depths ranging from 1 foot below ground surface (bgs) to 3 feet bgs. The rod was removed from the ground and ¼-inch diameter polyethylene tubing was inserted into the borehole. The tubing was perforated at the bottom 6 inches to allow soil gas to enter the tubing at depth.

Once the temporary tubing was in place and the borehole was sealed with native material, LTE attached a Mine Safety Appliances (MSA) Gasport® multi-gas field meter to the tubing. An internal pump extracted gas from the tubing into the gas sensors. The MSA Gasport® measured the concentration of methane, carbon monoxide, hydrogen sulfide, and oxygen in the soil gas. LTE recorded the maximum concentration of methane, carbon monoxide, and hydrogen sulfide;

and the minimum concentration of oxygen at each location. The field meter was calibrated to methane hydrogen sulfide, and carbon monoxide each morning and again at midday to ensure the equipment was working properly.

The MSA GasPort® is capable of detecting methane in concentrations from 0.0 ppm to 100 percent (%) methane. Specifications for the unit are included in Appendix A.

2.5.3 Gas Measurement Method Comparison

It is important to understand that the presence of methane flux discussed in this monitoring report does not represent an increase in methane seepage in Archuleta County. The West Systems portable gas flux meter used during the 2007 monitoring event is a more accurate instrument relative to the instruments used during past surveys. The instrument allows for the accumulation of methane gas within the chamber over a relatively long sample duration while the traditional techniques record an instantaneous reading. This accumulation allows for the detection of methane at very low levels using the flux meter.

For better perspective on flux values, it is useful to compare the maximum methane flow rate observed with the flux meter during 2007 to the minimum methane concentration ever recorded by LTE using traditional techniques in Archuleta County. The maximum methane flow rate observed during 2007 using the flux meter was 1.23 ppm per second and was recorded in Pole Gulch. The lowest detectable methane concentration ever recorded by LTE using traditional techniques prior to 2007 was 20 ppm and was also recorded in Pole Gulch. Traditional techniques would not have been able to detect methane seepage at the maximum rate observed in 2007 (1.23 ppm per second) because the gas would not be able to accumulate over time using traditional techniques and the sample time would not be long enough.

A comparison of techniques at the same sample point located next to the Big Horn Schomburg #1 abandoned well casing also indicates that traditional methods are not capable of measuring methane at the low levels observed using the flux meter in 2007. The subsurface gas measurement collected using traditional techniques indicated no methane was present. LTE collected a flux measurement using the flux meter at the same location and time as the subsurface gas measurement and the flux value was 0.03 moles/m^2·day. The presence of methane gas in this area does not represent an increase in methane seep conditions, but rather the difference between measurement methods.

The low methane flux values observed in Archuleta County during 2007 are discussed in further detail in Section 3.1.2.

2.6 NATURAL SPRING SURVEY

Since 2005, LTE has conducted a survey of natural springs located in the vicinity of the Kf outcrop in Archuleta County. During the 2007 field-verification activities, LTE was able to field-verify and collect samples from 10 natural springs. LTE was not granted access to eight natural springs, therefore no inspection or sampling was conducted. Additionally, several natural springs were dry during 2007. The natural spring locations are presented on Figure 3.

At each of the natural springs visited by LTE during 2007, LTE located the position and elevation with the GPS, and collected water quality measurements of pH, total dissolved solids (TDS), conductivity, oxidation-reduction potential (ORP), and temperature. Water samples from each active spring identified were also collected and submitted to an analytical laboratory. The samples were delivered to Four Corners Geoscience of Durango, Colorado for analysis of dissolved methane in water using method RSK-175.

Spring flow rate estimates were measured by capturing surface water into a graduated container. The time to fill the container was measured using a stop-watch. The flow rate was reported in gallons per minute and recorded in the GPS. A subsurface soil gas measurement was also collected in the vicinity of each natural spring encountered.

2.7 LIMITATIONS

Readings collected with the GPS unit can be located within 1-meter radius of accuracy. However, the type of terrain that exists along the Kf outcrop can present difficulties for the GPS unit. North-facing slopes and heavily wooded areas are difficult to obtain accurate positioning by the GPS, therefore, the GPS accuracy decreases. Satellite signals are frequently bounced among the trees or lost completely. When satellite signals are limited, positioning accuracy decreases.

Flux measurements were limited by soil conditions. One of the most important factors in the collection of gas measurements using the flux meter is the integrity of the seal between the accumulation chamber and the ground surface. In areas with heterogeneous surfaces, the seal was sometimes difficult to achieve. This scenario was especially evident in areas with rocks on the ground surface. To collect flux measurements representative of natural seep conditions, ground disturbance must be minimized. Therefore, surface gas measurements were sometimes limited by soil conditions.

During subsurface gas measurement collection, advancement of boreholes in consolidated materials along the outcrop was limited. LTE used the slide hammer to probe to a maximum depth of 36 inches bgs. In some cases, probing depths of 24 inches bgs to 36 inches bgs were laborious to achieve. If refusal occurred, measurements were taken at the depth bored. All probe holes were advanced to a depth ranging from 12 inches to 36 inches bgs depending on the type of surface cover present.

The sampling of natural springs in Archuleta County was limited due to regional drought conditions over the last 10 years. When dry springs were encountered, LTE recorded the location of the spring and noted the absence of water.

The data collected using field meters were limited by the operating range, resolution, and accuracy of the instruments.

Finally, LTE was restricted by property owners from accessing several areas within the project area. These parcels of land are presented in Table 1 and shown on Figure 2.

SECTION 3.0

MONITORING RESULTS

This section describes the results of the field activities conducted within the project area during the period from October 3, 2007 through October 14, 2007.

3.1 SIX DRAINAGES ALONG KF OUTCROP

3.1.1 Surface Water Inspections

LTE conducted surface water drainage inspections of six streams transecting the Kf outcrop in Archuleta County. Methane was detected above the surface water in two (Squaw Creek and Stollsteimer Creek) of the six streams inspected. Methane was not detected above the surface water in Beaver Creek, Little Squaw Creek, Pole Gulch, or Peterson Gulch. LTE observed a relatively slow seep in a section of Squaw Creek located on both sides of a culvert running beneath the Vance property driveway. The location of this seep is consistent with the location of a visible methane seep observed by LTE in 2006. In general, the stream in this area contains relatively stagnant water with a muddy, organic-rich stream bed. A funnel was placed over the seep area and methane concentrations of 1,500 ppm (3% of the lower explosive limit [LEL]) and 2,000 ppm (4% LEL) were reported. A stick was used to probe the stream bed in this area and a funnel was place over the surface water to collect escaping gas from the disturbed portion of the stream bed. Methane was detected using this method at concentrations of 6,000 ppm (12% LEL) and 12,000 ppm (24% LEL).

Area of methane seepage in Squaw Creek.

A gas sample collected in this area during the 2006 monitoring event indicated that the gas is near-surface microbial gas (swamp gas) of biogenic origin. Therefore, no gas sample was collected in this area during 2007.

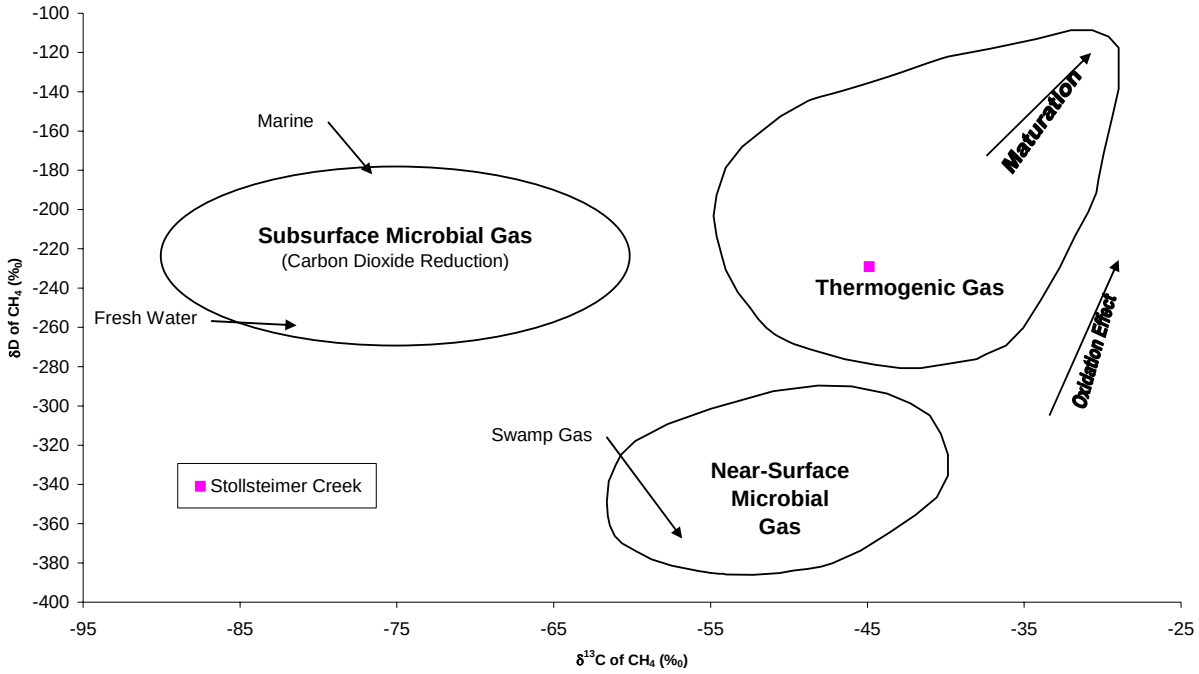
LTE collected gas flux measurements along the stream banks next to the visible methane seep in Squaw Creek. The maximum methane flux recorded within the Squaw Creek mapping area was 0.07 moles/m^2·day, which is very low.

LTE observed several surface water methane seeps along a section of Stollsteimer Creek. The stream in this area also contains relatively stagnant water with a muddy, organic-rich stream bed. An underground natural gas pipeline, owned by Xcel Energy, was observed running underneath this section of Stollsteimer Creek. Methane seepage in Stollsteimer Creek was observed approximately 50 feet south and 215 feet north of the gas pipeline. A funnel was placed over the seeps in this area and methane concentrations ranging from 3,500 ppm (7% LEL) to 28,000 ppm (56% LEL) were reported.

Area of methane seepage and underground gas pipeline in Stollsteimer Creek.

LTE collected a gas sample of the methane seep observed in Stollsteimer Creek. Analytical results indicate that the gas is thermogenic gas. Table 2 presents the results of the gas composition and isotopic analyses. The laboratory analytical data are included in Appendix B. The figure on the following page was used to determine the origin of the gas.

ISOTOPIC ANALYSIS
STOLLSTEIMER CREEK



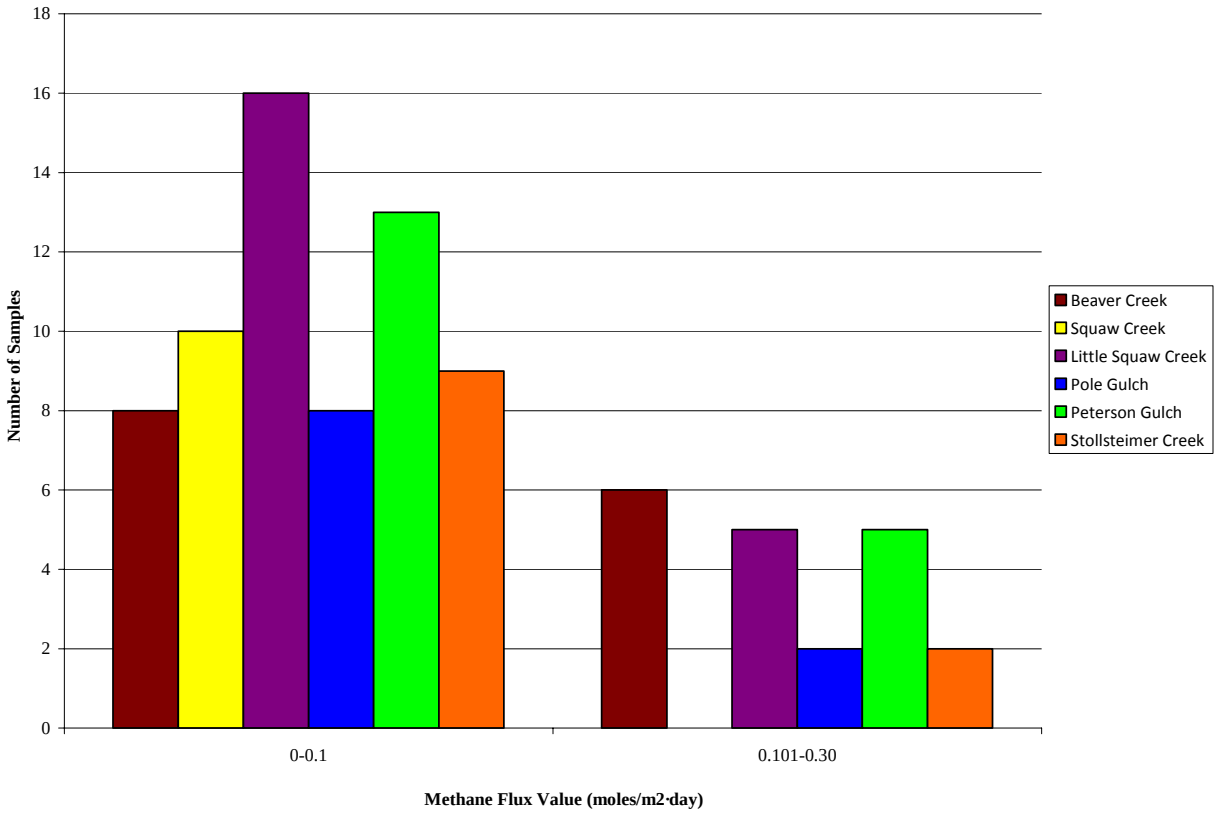
LTE collected gas flux measurements along the stream banks next to surface water methane seeps in Stollsteimer Creek. The maximum methane flux recorded within the Stollsteimer Creek mapping area was 0.15 moles/m^2·day, which is very low.

The source of methane gas in Stollsteimer Creek is unclear at this time. Based on field observations and isotopic data, it appears possible that the underground gas pipeline and/or coal bed methane from the Kf outcrop could be the source of methane in Stollsteimer Creek.

3.1.2 Soil Gas Surveys

Using the flux meter, LTE conducted soil gas surveys of the six aforementioned drainages during the 2007 monitoring event. A total of 84 gas flux measurements were collected over the project area. Results indicate that low methane flux was recorded at 59 of the 84 sample locations. Measurable methane flux values ranged from 2.18 x 10^{-3} moles/m^2·day to 0.30 moles/m^2·day and the average methane flux value was 8.54 x 10^{-2} moles/m^2·day. Table 3 presents the gas flux measurement results. The soil gas survey results for the six drainages visited are presented on Figure 4 through Figure 9. The chart on the following page illustrates the distribution of methane flux values within the six drainages.

FREQUENCY OF METHANE FLUX VALUES WITHIN THE SIX DRAINAGES



The following table summarizes the methane flux values within the six drainages.

METHANE FLUX VALUES WITHIN THE SIX DRAINAGES

Mapping Area ID	Number of Sample Points w/ Methane	Total Number of Sample Points	Measurable Methane (moles/m^2·day)		
			Min	Max	Avg
Beaver Creek	9	14	0.05	0.20	0.13
Squaw Creek	3	10	0.02	0.07	0.05
Little Squaw Creek	20	21	0.002	0.23	0.08
Pole Gulch	7	10	0.02	0.30	0.09
Peterson Gulch	14	18	0.009	0.23	0.08
Stollsteimer Creek	6	11	0.02	0.15	0.07
TOTAL	**59**	**84**	**0.002**	**0.30**	**0.085**

Results of the soil gas surveys indicate that methane is present at the ground surface along the Kf outcrop in Archuleta County. However, it is important to understand that the methane flux values recorded during the soil gas surveys are low. For a better perspective of the methane flux rates, LTE converted the mass flux into volumetric flux. The unit conversion is based on the molecular weight and density of methane at approximately 7,000 feet above mean sea level. The calculation is as follows:

$$\frac{\text{mol } CH_4}{m^2 \cdot \text{day}} \times \frac{16.04276 \text{ g } CH_4}{\text{mol } CH_4} \times \frac{0.0698 \text{ ft}^3 CH_4}{\text{g } CH_4} = \frac{\text{ft}^3 CH_4}{m^2 \cdot \text{day}}$$

The maximum methane flux rate recorded in Archuleta County during the soil gas survey was 0.30 moles/m^2·day or 0.34 cubic feet per square meter per day (ft^3/m^2·day).

According to the manufacturer, the lower limit of the flux meter's operating range is 0.1 moles/m^2·day. The manufacturer states that measurement of flux below the operating range is possible, but will include an increased margin of error. Data indicate that 64 of the 84 sample points reported methane flux values below the operating range of the flux meter. Therefore, the methane flux values recorded during 2007 are considered low.

For comparison purposes, the maximum methane flux value recorded in La Plata County during 2007 was 1,175 moles/m^2·day or 1,316 ft^3/m^2·day. Therefore, methane seepage observed along the Kf outcrop in Archuleta County is considered very low. Based on LTE's field observations, methane seep conditions do not appear to have changed from previous surveys.

3.2 BIG HORN SCHOMBURG #1 SOIL GAS SURVEY

LTE conducted a soil gas survey at the Big Horn Schomburg #1 abandoned production well located in the southeast quarter, southeast quarter, Section 14U, T34N, R5W. The well was drilled and abandoned in 1961 and drilling information indicates that the Kf is close to or outcrops at this location. Geologic maps from the DEIS indicate that the well is located in the transition zone between the Kf and the Kirtland Formation (Kk). LTE conducted an initial soil gas survey and installed a permanent gas monitoring probe in the vicinity of the abandoned well in September 2005. The second survey of the abandoned well was conducted in May 2006.

Schomburg #1 abandoned well marker and permanent gas monitoring probe.

LTE conducted the most recent survey on October 11, 2007. LTE collected five gas flux measurements, one subsurface gas measurement from a temporary monitoring probe, and one subsurface gas measurement from a permanent monitoring probe. Methane was not detected in the temporary monitoring probe or the permanent monitoring probe. Methane was detected using the flux meter and the maximum flux was 0.24 moles/m^2·day, which is considered very low. The gas flux measurement results are presented on Table 3. Figure 10 presents the results of the Big Horn Schomburg #1 soil gas survey.

Traditional survey techniques used prior to 2007 were not capable of detecting methane flux at the levels observed around the Big Horn Schomburg #1 abandoned well site during the 2007 monitoring event. As previously discussed in Section 2.5.3, the subsurface gas measurement collected using traditional techniques next to the abandoned well casing for the Big Horn Schomburg #1 indicated no methane was present. LTE collected a flux measurement using the flux meter at the same location and time as the subsurface gas measurement and the flux value was 0.03 moles/m^2·day. Although the flux meter detected the presence of methane in 2007, the methane flux values observed were very low and do not indicate an increase in methane seepage.

3.3 NATURAL SPRING SURVEY

During LTE's previous literature and interview research, a total of 25 potential natural springs were identified on the Kf outcrop in Archuleta County. All 25 natural springs identified through research were located in physically accessible areas. LTE was able to collect samples from 10 of the natural springs in 2007. LTE was unable to locate four of the natural springs (Wood Spring, Seep Spring, Waypoint 0003 Spring, and Ramona Spring). A total of four springs (Townsend Spring, Walt Spring #1, Big Hole Spring, and Corrigan Spring) were field-verified by LTE, however, the springs were dry during the 2007 field activities. The natural spring identified as the Miser Spring and Pipeline was field-verified by LTE in 2006 and appears to be a “hand-dug” well used as a water supply for the residence located nearby. The spring is inaccessible due to infrastructure around the spring.

Eight springs were not sampled due to access restrictions. LTE was denied access to the Candelaria Property in 2007. This prevented sampling of five natural springs (Section 10U Spring, Spring 1212, Spring 3424, Candelaria A Spring, and Candelaria B Spring). LTE was not granted access to the Vaughn or Watson properties during 2007. LTE left notes for the landowners requesting access to conduct the 2007 natural spring survey. LTE did not receive responses to these access requests and therefore was unable to sample the Vaughn Spring, Watson Well Spring, or Crain Spring, located on these properties. The locations of all natural springs are presented on Figure 3. Detailed maps showing the spring locations are presented on Figure 11A through Figure 11G.

An additional spring sample identified as Beaver Creek was collected below the confluence of the Corrigan Spring drainage and Beaver Creek. However, this sample should not be considered a sample of Corrigan Spring and is described as a new sample point added to the survey this year. An additional spring sample identified as Grassy Spring was collected southwest of the Watson properties. This spring is not located on the Kf outcrop.

As previously mentioned, a total of 10 natural spring samples were collected by LTE during 2007. Dissolved methane was detected above the laboratory detection limit in four of the 10 natural spring samples. Dissolved methane concentrations were detected in Section 14 Spring [Reich] (0.020 mg/L), Vance Meadow Spring (0.06 mg/L), NW John Grub Spring (0.30 mg/L), and SE John Grub Spring (0.65 mg/L). All of the springs where dissolved methane was detected are located on the Kf outcrop with the exception of the Vance Meadow Spring.

The Colorado Oil and Gas Conservation Commission (COGCC) currently uses 2 mg/L as the threshold limit for methane in water systems. The COGCC holds that water systems containing dissolved methane concentrations above 2 mg/L have an increased risk of desorption from the water and create potentially explosive conditions in confined spaces. Water samples collected from all natural springs to date indicate dissolved methane concentrations were below 2 mg/L.

Field measurements of temperature, pH, conductivity, ORP, TDS, and flow as well as the reported methane concentration from the springs identified in Archuleta County are summarized in Table 4. The laboratory analytical report is included as Appendix B. Photographs of the natural springs sampled in 2007 are included as Appendix C.

When comparing historical dissolved methane concentrations in the four natural springs where methane was detected in 2007, analytical results indicate that dissolved methane concentrations were higher in all four water samples during 2007 than during the previous year. Methane was detected in the Section 14 Spring during 2005 at a concentration of 0.0006 mg/L. In 2007, methane was detected in the Section 12 Spring at a concentration of 0.020 mg/L. Methane was detected in the sample collected from the Vance Meadow Spring at a concentration of 0.011 mg/L in 2006 and at a concentration of 0.06 mg/L in 2007. Dissolved methane concentrations in the NW John Grub Spring (0.30 mg/L) and the SE John Grub Spring (0.65 mg/L) were higher in 2007 than they were in 2005 and 2006, with an increase of two orders of magnitude over 2006 results. The methane concentration in the SE John Grub Spring was the highest concentration observed in Archuleta County during 2007.

When comparing historical flow rates for the natural springs that were sampled in 2006 and 2007, results indicate that flow rates decreased or remained consistent. Decreased flow rates were expected because the 2006 survey was conducted during the spring (May/June) while the 2007 survey was conducted during late summer/fall (October). For those springs that were sampled in both 2005 and 2007, flow rates were comparable, which was expected because both surveys were conducted in the late summer/fall months.

SECTION 4.0

CONCLUSIONS AND RECOMMENDATIONS

4.1 SIX DRAINAGES ALONG KF OUTCROP

4.1.1 Surface Water Inspections

Methane was detected above an observed seep above the surface water in two (Squaw Creek and Stollsteimer Creek) of the six streams inspected. LTE observed a relatively slow seep in a section of Squaw Creek that is consistent with the location of a visible methane seep observed by LTE in 2006. A gas sample collected in this area during the 2006 monitoring event indicated that the gas is near-surface microbial gas (swamp gas) of biogenic origin. Therefore, no gas sample was collected in this area during 2007. Methane flux recorded in this area was low.

LTE observed several visible methane seeps along a section of Stollsteimer Creek. The stream in this area also contains relatively stagnant water with a muddy, organic-rich stream bed. An underground gas pipeline, owned by Xcel Energy, was observed running underneath this section of Stollsteimer Creek. A funnel was placed over the seeps in this area and methane concentrations ranging from 3,500 ppm to 28,000 ppm were recorded. Results of a gas sample collected from Stollsteimer Creek indicate that the gas is thermogenic gas.

The source of the methane gas in Stollsteimer Creek is unclear at this time. Based on field observations and isotopic data, it appears possible that either the underground gas pipeline and/or coal bed methane from the Kf outcrop could be the source of methane gas in Stollsteimer Creek.

4.1.2 Soil Gas Surveys

Results of the soil gas surveys indicate that methane is present at the ground surface along the Kf outcrop in Archuleta County. However, it is important to understand that the methane flux values recorded during the soil gas surveys are very low. The maximum methane flux rate recorded during the 2007 monitoring event was 0.30 moles/m^2·day or 0.34 ft^3/m^2·day. For comparison purposes, the maximum methane flux value recorded in La Plata County during 2007 was 1,175 moles/m^2·day or 1,316 ft^3/m^2·day.

Based on a comparison of traditional survey techniques and new survey techniques using the flux meter at the Big Horn Schomburg #1, it appears that traditional survey techniques used prior to 2007 were not capable of detecting methane flux at the levels observed during the 2007 monitoring event. A comparison of the maximum methane flow rate observe in 2007 using the flux meter and the minimum methane concentration recorded by LTE using traditional techniques also indicates that previous methods are not capable of detecting methane at the low levels observed in 2007. Therefore, results of the 2007 soil gas surveys suggest that methane seep conditions along the Kf outcrop in Archuleta County are very low and have not changed.

4.2 BIG HORN SCHOMBURG #1

Methane has not been detected in the shallow subsurface soil in the vicinity of the Schomburg #1 well site during the 2005, 2006, or 2007 field activities. Methane gas was reported at the ground surface using the more sensitive portable flux meter during 2007. Therefore, it does not appear that the abandoned well is acting as a conduit for the seepage of methane gas at this time.

4.3 NATURAL SPRING SURVEY

Data collected during the natural spring survey indicate the presence of dissolved methane in four of the 10 natural springs sampled. A total of three of the four natural springs containing detectable concentrations of dissolved methane are located on the Kf outcrop and one is located off of the Kf outcrop. The highest concentration of methane was found in the water sample collected from SE John Grub Spring (0.65 mg/L). This spring is located on the Kf outcrop and is not used as a residential water supply. Dissolved methane was detected at a similar concentration (0.30 mg/L) in the water sample collected from NW John Grub Spring, also located on the Kf outcrop. Although one and two order of magnitude increases in dissolved methane concentrations were seen in several wells between the 2006 and 2007 natural spring surveys, the concentrations observed in 2007 remain lower than the COGCC threshold limit of 2 mg/L.

When comparing historical flow rates for the natural springs that were sampled in 2006 and 2007, results indicate that flow rates decreased or remained consistent. Decreased flow rates were expected because the 2006 survey was conducted during the spring (May/June) while the 2007 survey was conducted during late summer/fall (October). For those springs that were sampled in both 2005 and 2007, flow rates were comparable, which was expected because both surveys were conducted in the late summer/fall months.

4.4 RECOMMENDATIONS

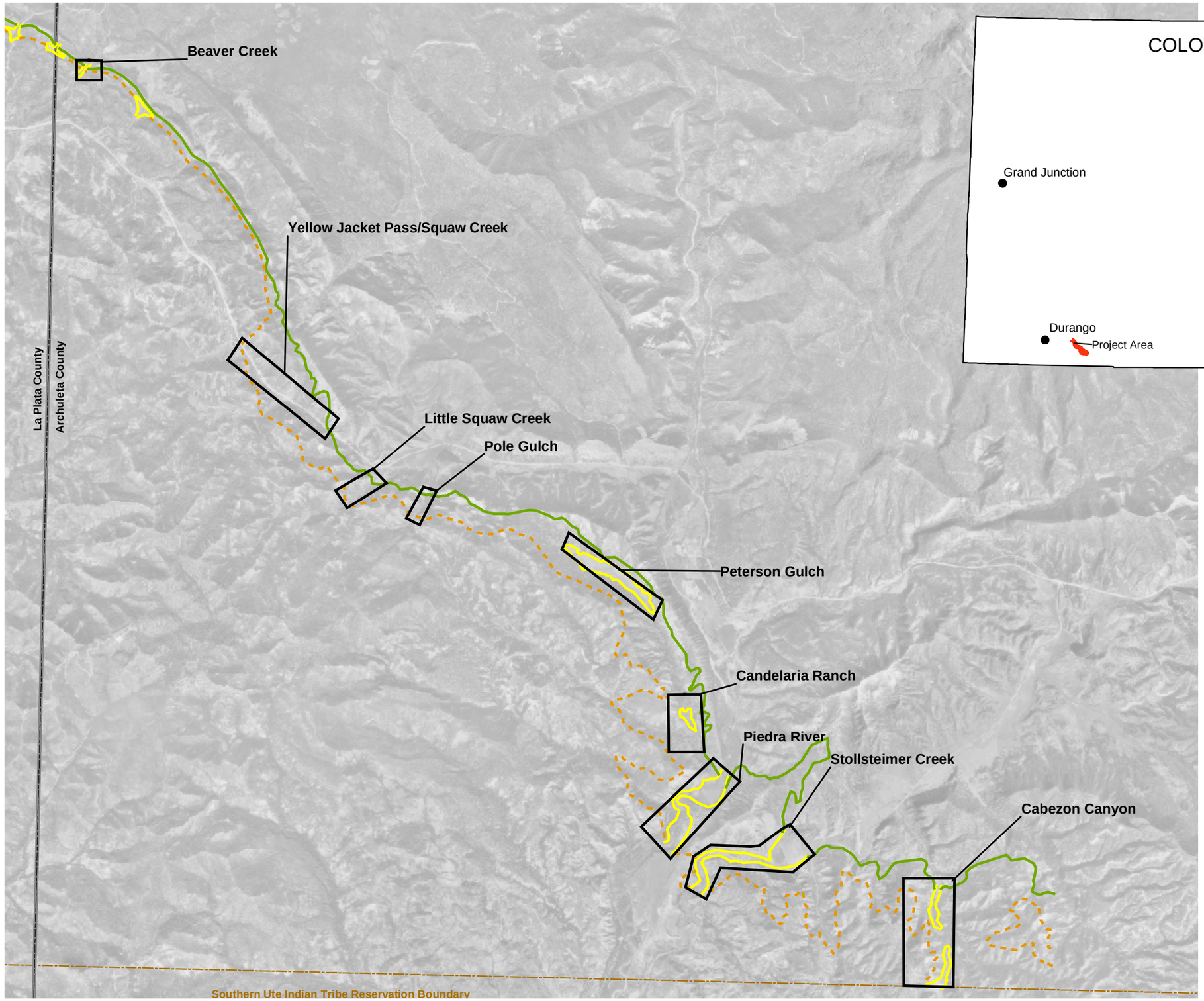
LTE recommends the continued annual monitoring of the Big Horn Schomburg #1 abandoned wells site, the surface water bodies transecting the Kf in Archuleta County, and the natural springs, per the requirement of the Conditions of Approval for the Pargin Mountain 10U #3 APD.

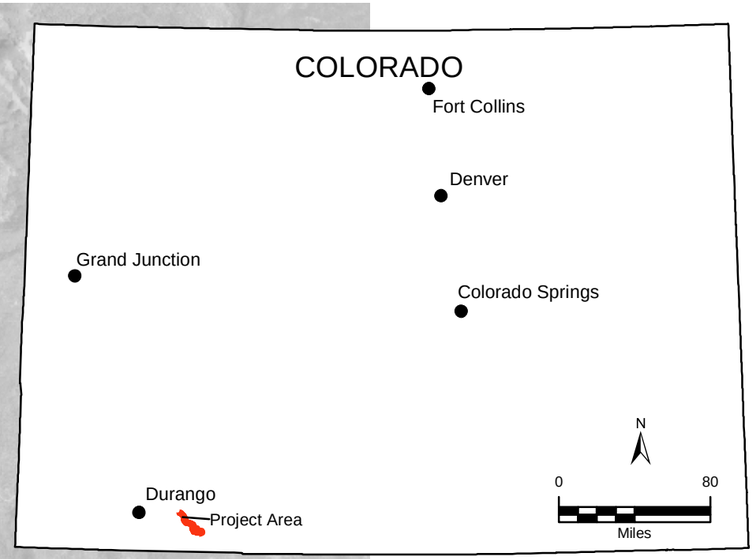
LTE recommends that Xcel Energy, the owner of the underground gas pipeline located in the vicinity of Stollsteimer Creek, be notified of the gas seepage above their pipeline. LTE recommends having Xcel Energy investigate the integrity of the gas pipeline. LTE also recommends that a gas sample be collected from the surface water methane seep in Stollsteimer Creek that does not appear to be associated with the buried pipeline. The gas sample should be analyzed for isotopes and gas composition to determine whether the surface water methane seeps in the creek are from the same source.

LTE recommends the collection of future and historic permanent monitoring probe data gathered by the BLM in order to evaluate potential methane seepage along the Kf outcrop in Archuleta County. LTE also recommends that the BLM and LTE visit the locations of permanent monitoring probes where methane has been detected in the past. At these locations, LTE recommends the collection of gas measurements using traditional soil gas survey techniques, the

West Systems flux meter, and techniques used by the BLM when monitoring the permanent probes. Comparing the results of different gas measurement techniques used by LTE and the BLM will help in understanding the comparison of the different sample techniques.

FIGURES





Legend

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Area of Interest
- Southern Ute Indian Tribe Reservation Boundary
- County Boundary

0 12,000 Feet

N

FIGURE 1A
PROJECT AREA MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES

Beaver Creek

Beaver Creek

Yellow Jacket Pass/Squaw Creek

Top of
Yellow Jacket Pass

Squaw Creek

La Plata County

Archuleta County

Little Squaw Creek

Pole Gulch

HWY 160

Little Squaw Creek

Peterson Gulch

To Pagosa Springs, CO

Candelaria Ranch

Piedra River

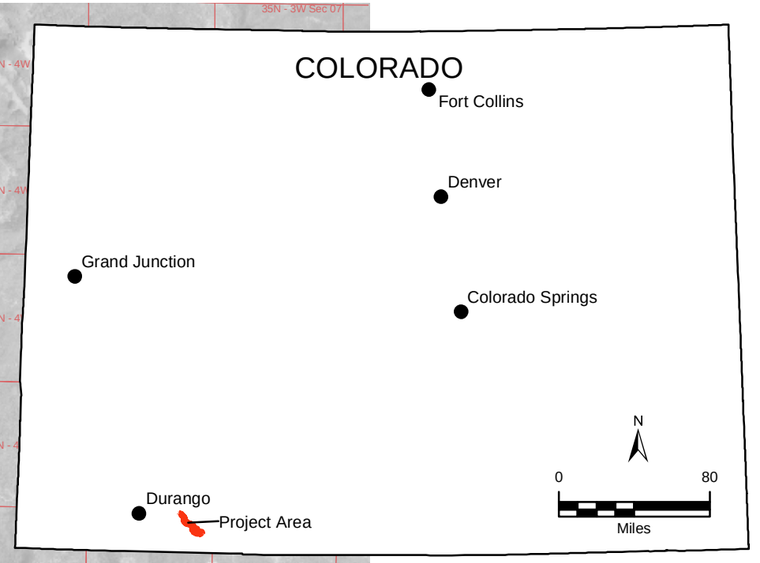
Piedra River

Stollsteimer Creek

Stollsteimer Creek

Cabezon Canyon

Southern Ute Indian Tribe Reservation Boundary



Legend

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Rivers
- Roads
- Area of Interest
- Township Range Section
- Southern Ute Indian Tribe Reservation Boundary
- County Boundary

0 12,400
Feet

N

FIGURE 1B
PROJECT AREA MAP - DETAIL
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES

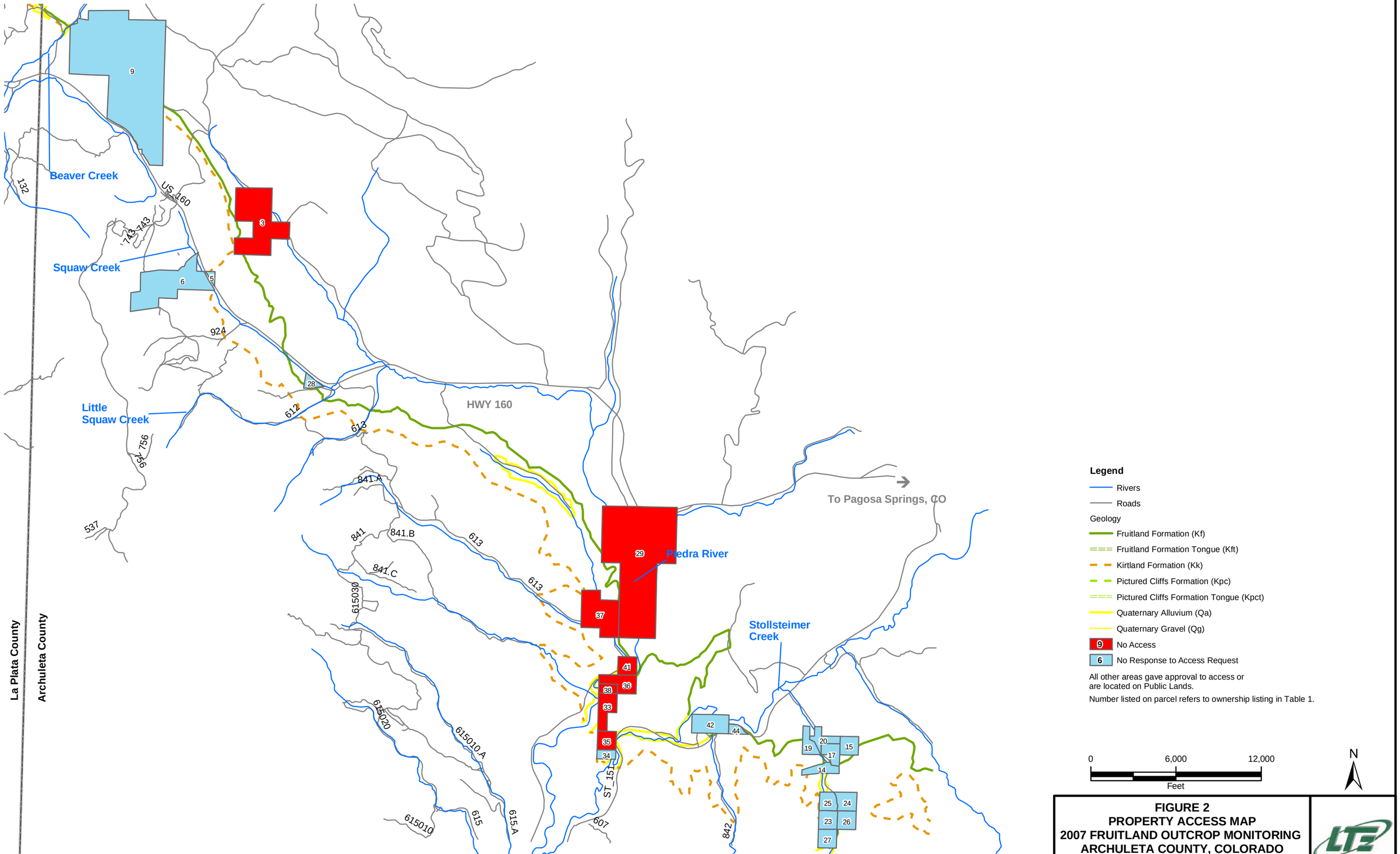
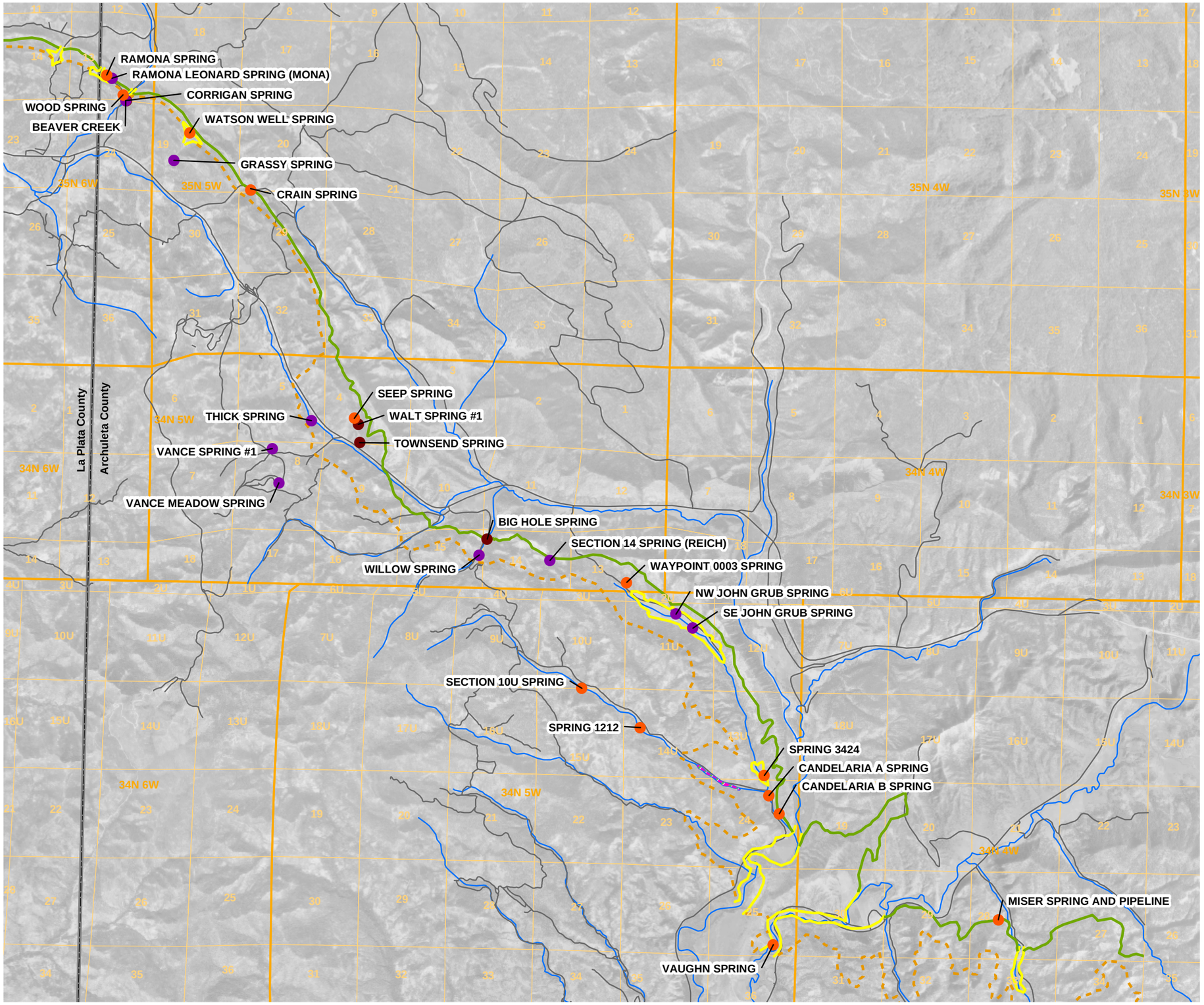


FIGURE 2
PROPERTY ACCESS MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

NATURAL SPRING LOCATION

- SAMPLED
- NOT SAMPLED
- DRY
- Wetland Area, No Channel Flow

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Roads
- Rivers
- County Boundary
- Southern Ute Indian Tribe Reservation Boundary
- Township and Ranges Lines
- Section

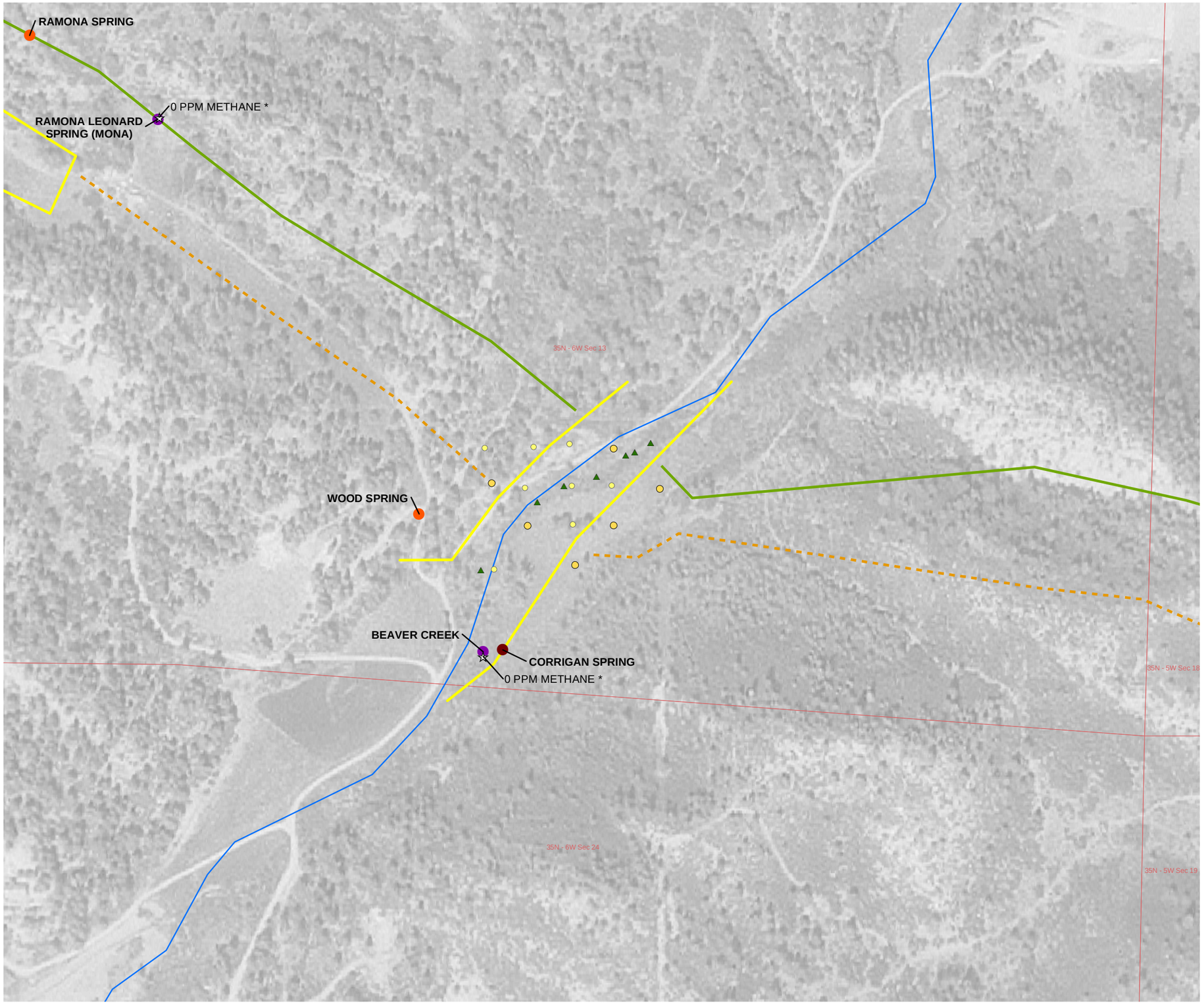
0 6,000 12,000

Feet

N

FIGURE 3
NATURAL SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Rivers

Geology

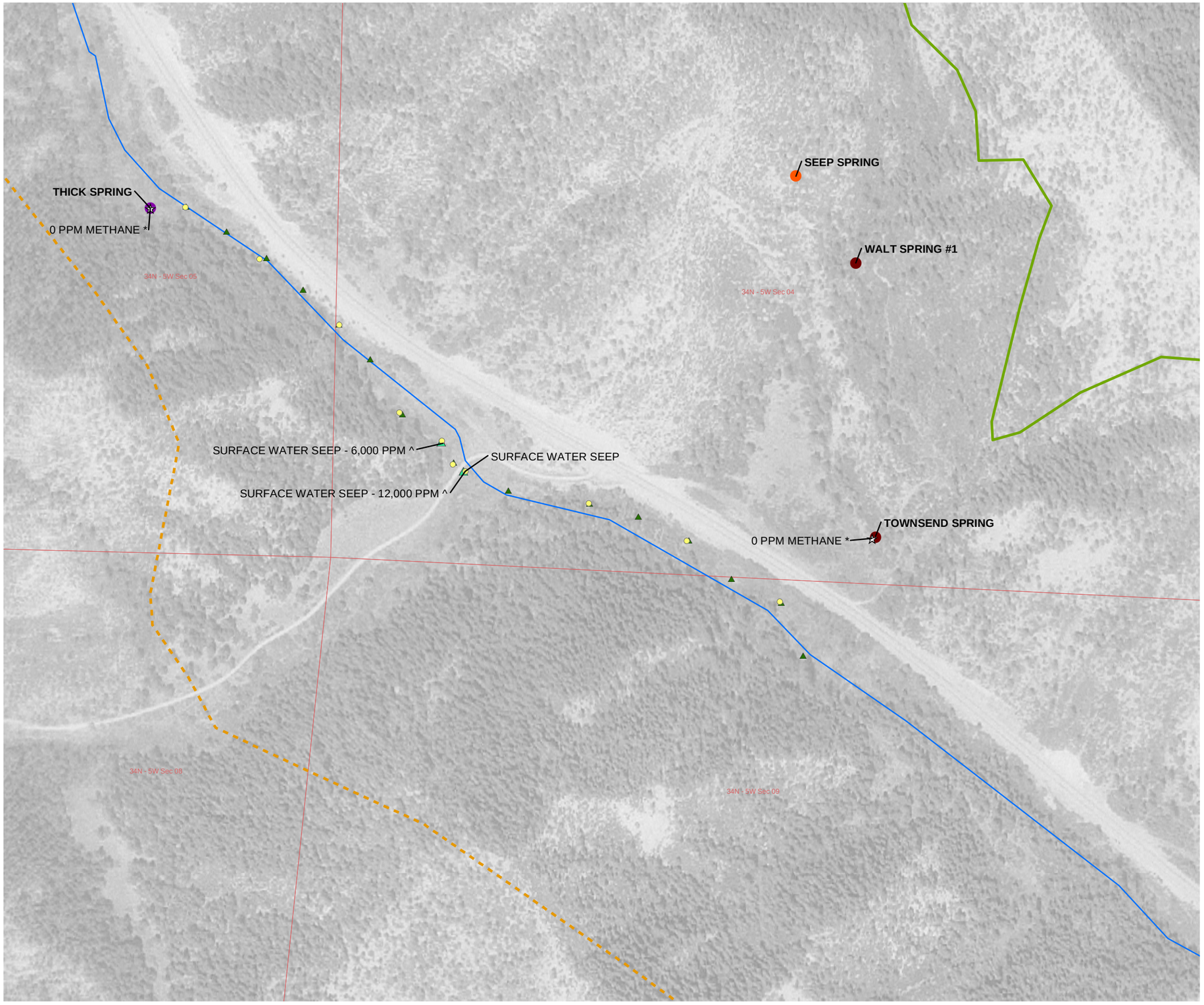
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 250 500
Feet

N

FIGURE 4
BEAVER CREEK
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

^ Gas concentration measured after disturbance of stream bed.

- Rivers

Geology

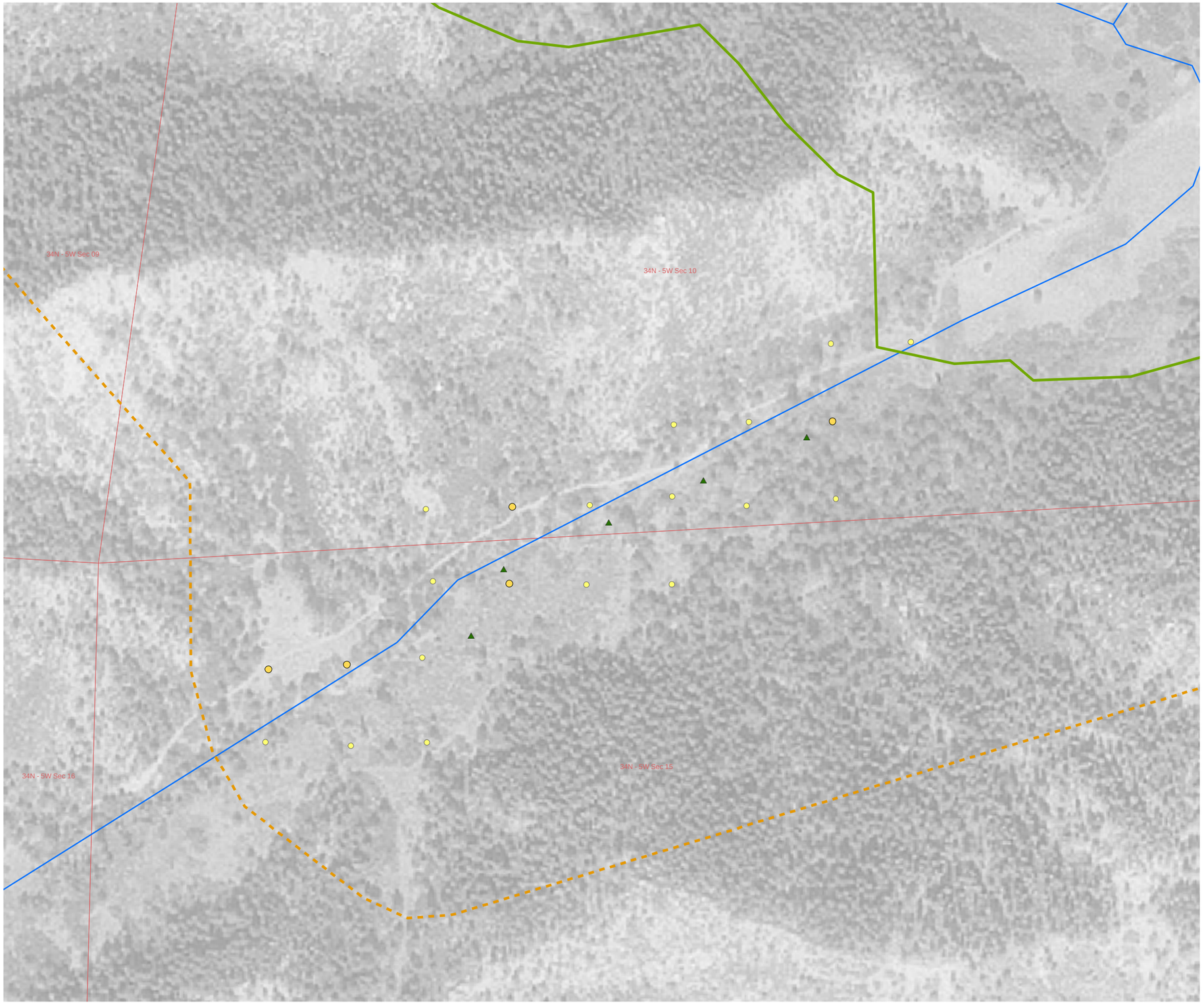
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 400 800
Feet

N

FIGURE 5
SQUAW CREEK
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

mol/m^2 day - moles per square meter per day
ppm - parts per million

- Rivers

Geology

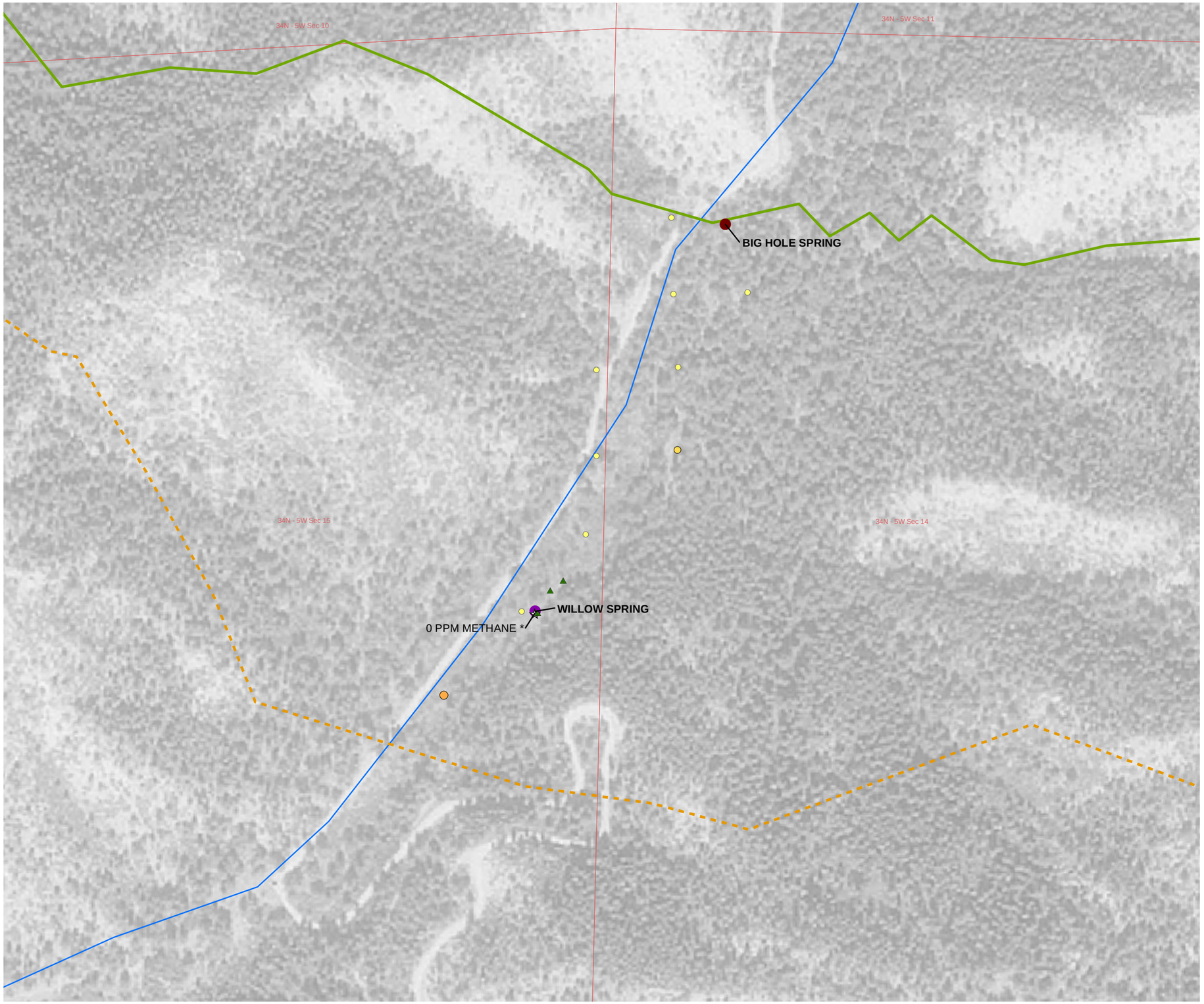
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 250 500
Feet

N

FIGURE 6
LITTLE SQUAW CREEK
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Rivers

Geology

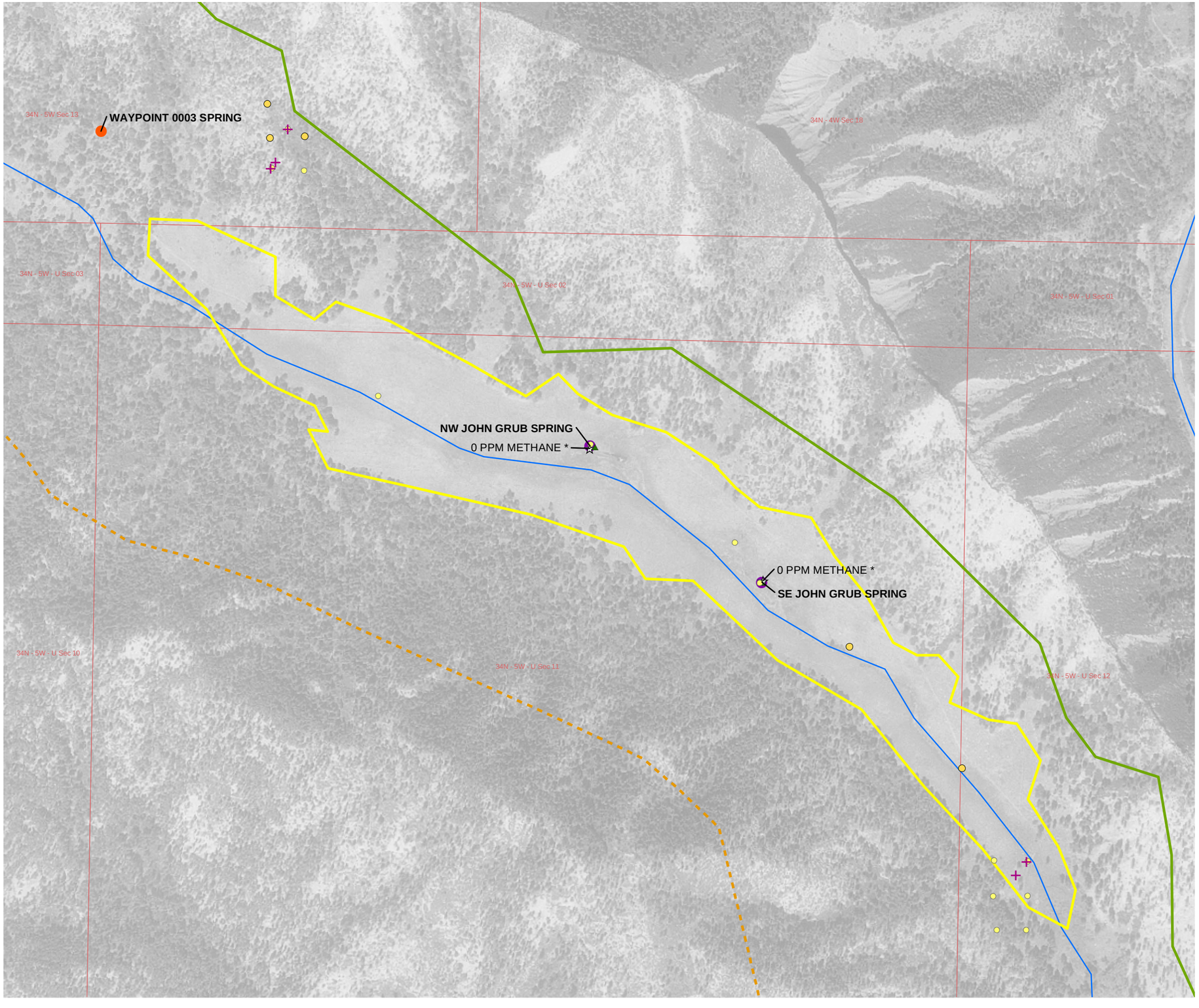
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 250 500
Feet

N

FIGURE 7
POLE GULCH
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- Permanent Gas Monitoring Probe
- Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

Methane concentration collected from all permanent gas monitoring probes equal 0 ppm.

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Rivers

Geology

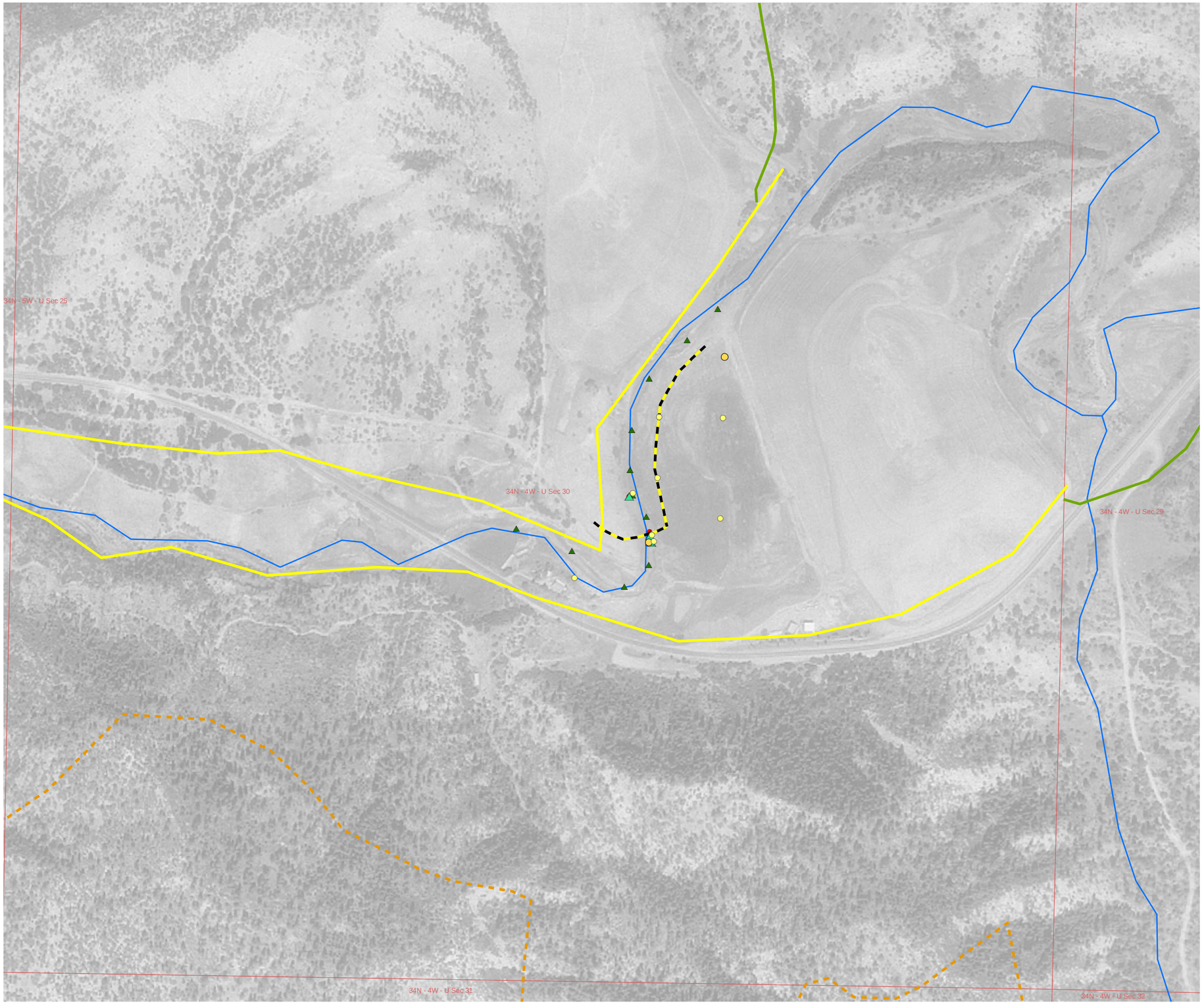
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 600 1,200
Feet

N

FIGURE 8
PETERSON GULCH
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- Surface Water Seep
- Gas Pipeline - Xcel Energy

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Surface Water Methane Measurements

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

Surface water methane measurements collected by holding funnel directly above surface water.

mol/m^2 day - moles per square meter per day
ppm - parts per million

- Rivers

Geology

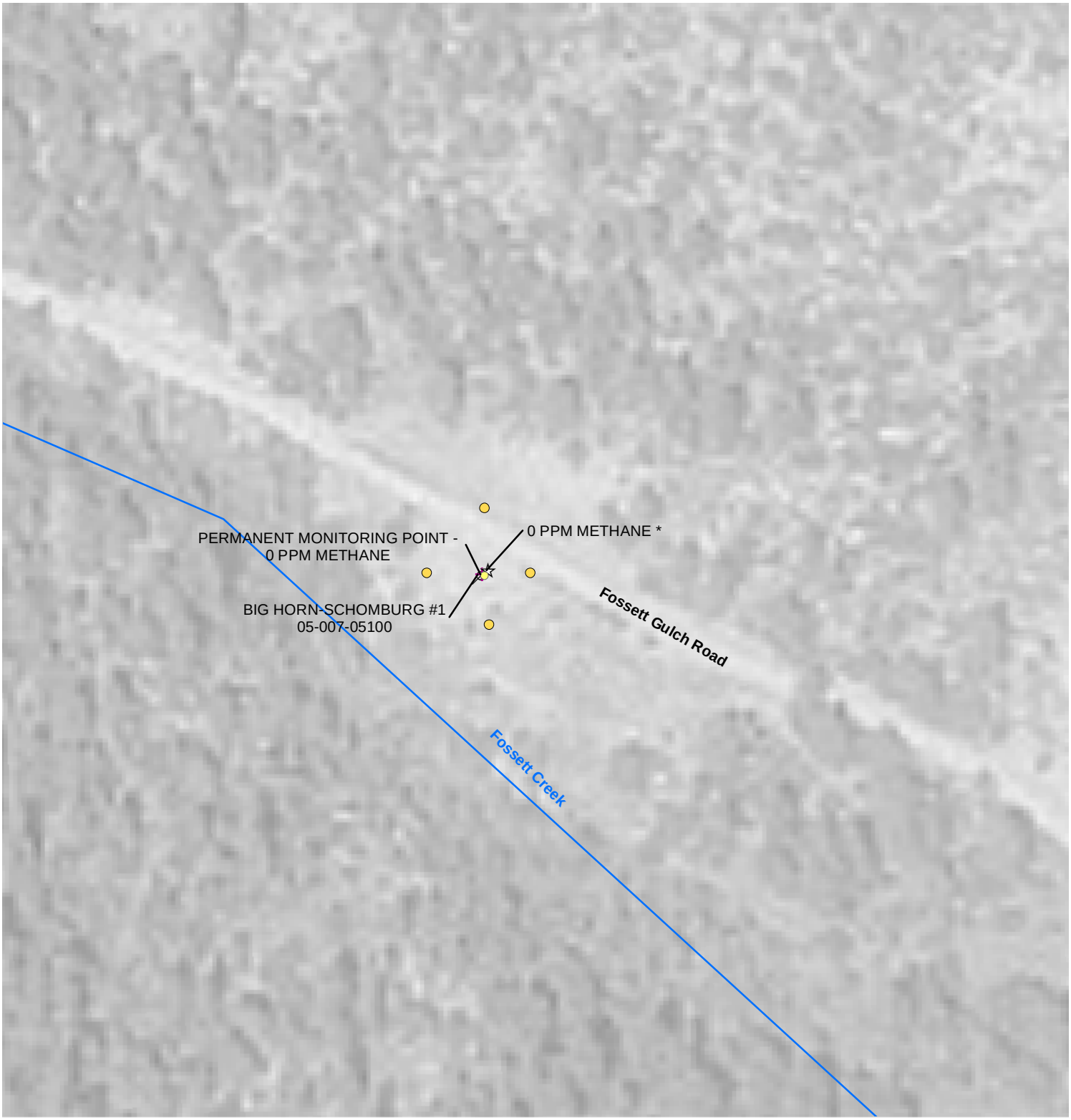
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 500 1,000
Feet

N

FIGURE 9
STOLLSTEIMER CREEK
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- Subsurface Methane Measurement
- Permanent Monitoring Probe
- Abandoned Oil and Gas Well

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)

mol/m^2 day - moles per square meter per day
ppm - parts per million

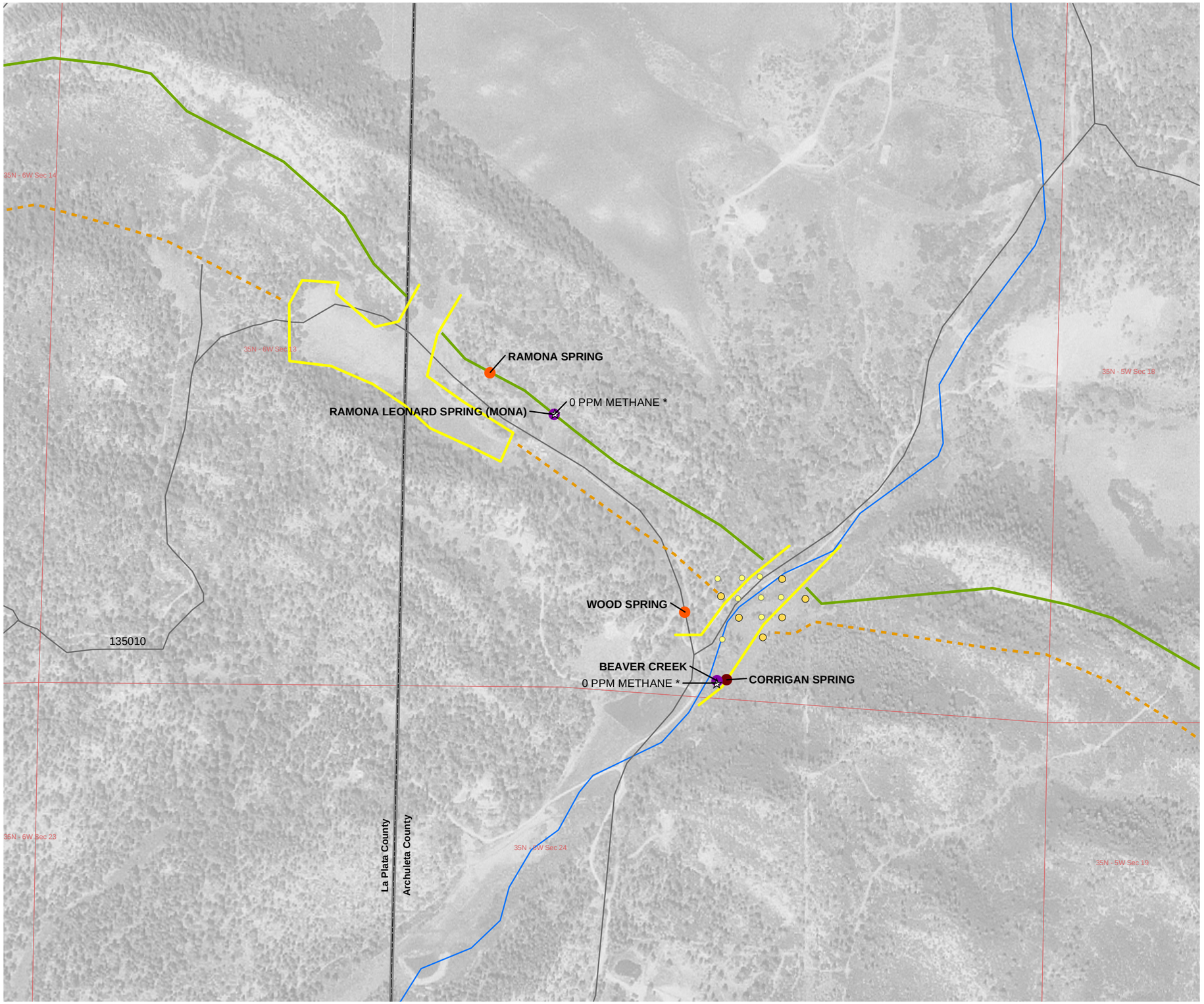
* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

0 100 200
Feet

N

FIGURE 10
BIG HORN-SCHOMBURG #1 (API 05-007-05100)
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Roads
- Rivers

Geology

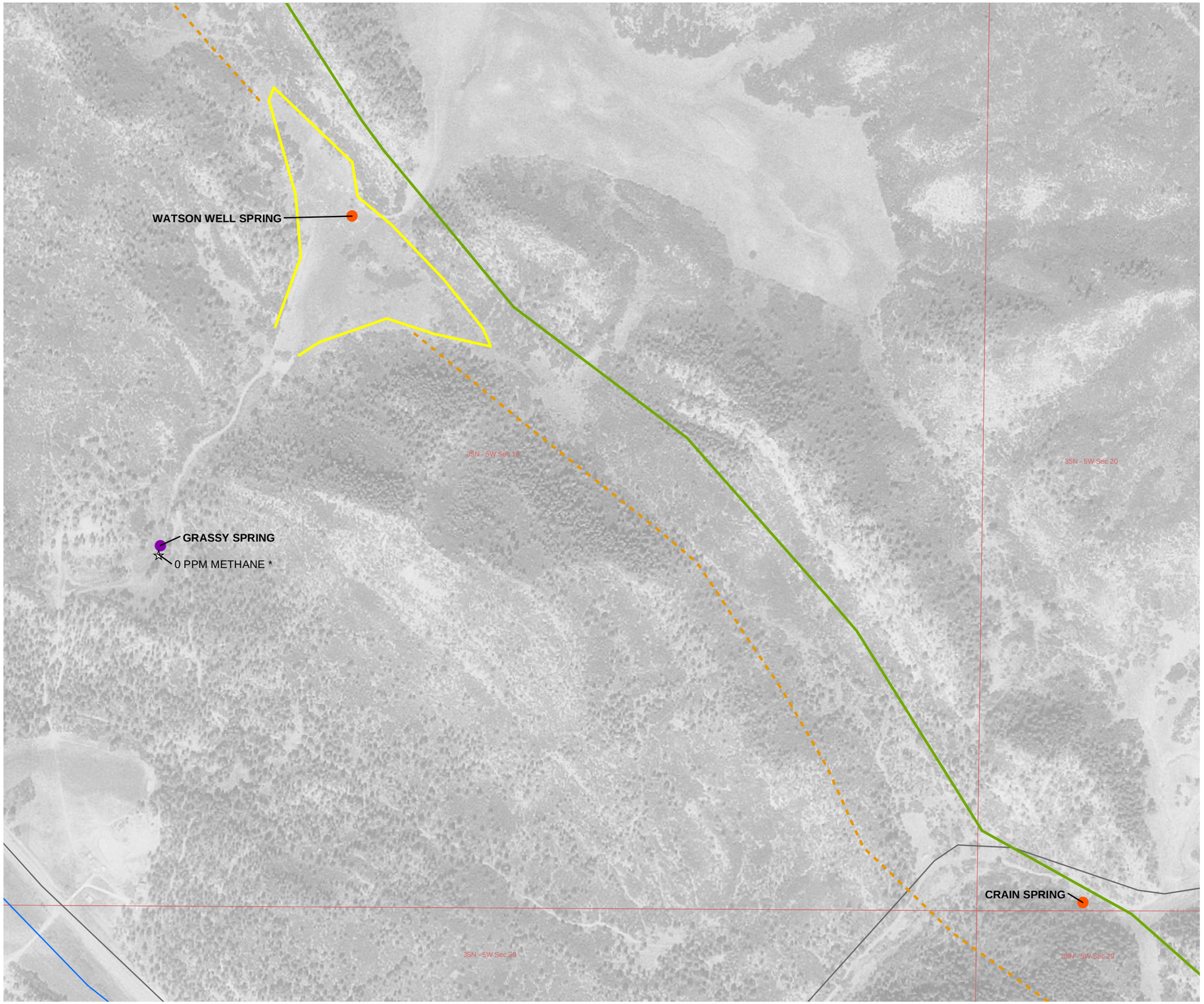
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- County Boundary
- Township Range Section

0 500 1,000
Feet

N

FIGURE 11A
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Roads
- Rivers

Geology

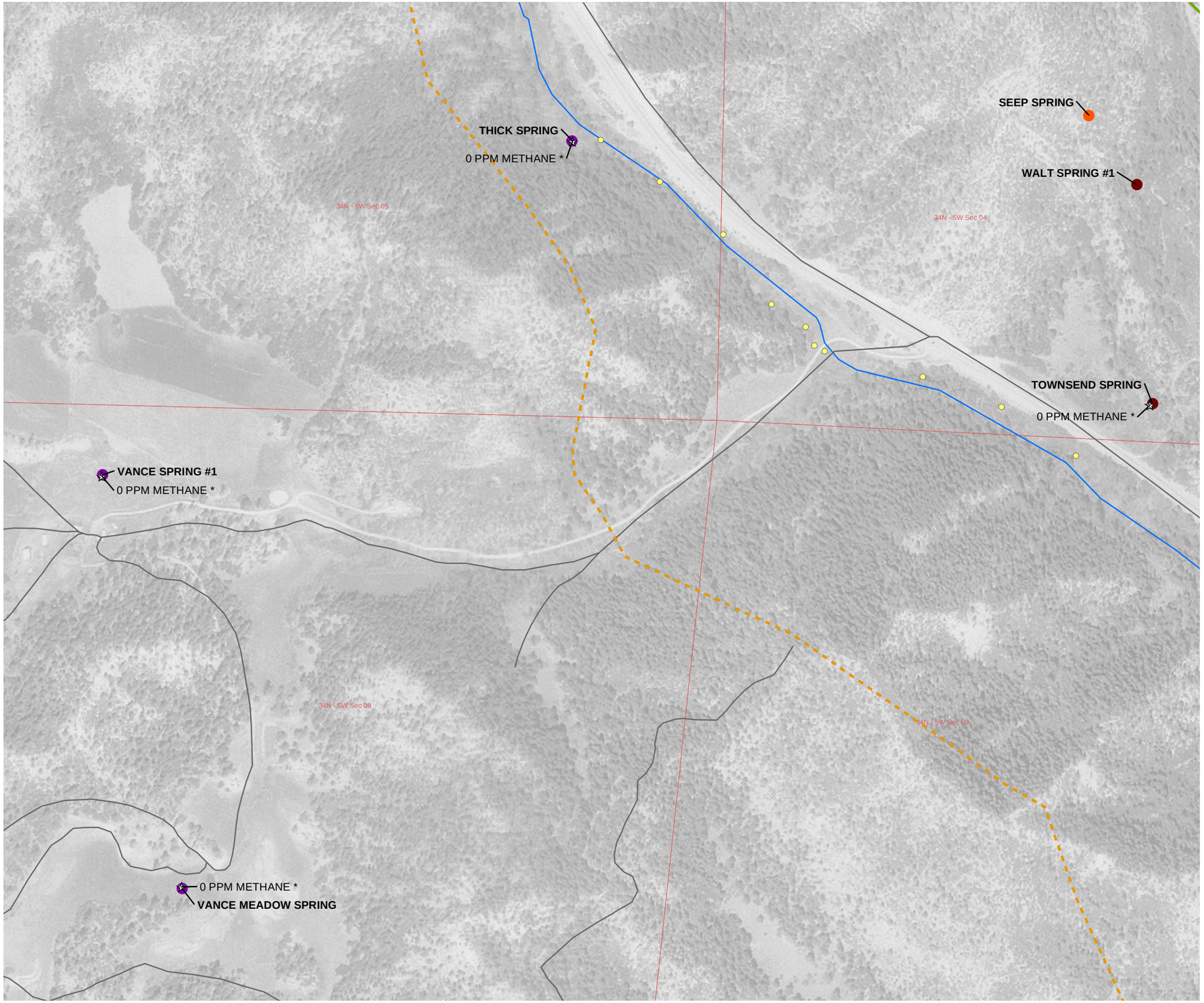
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 500 1,000
Feet

N

FIGURE 11B
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Roads
- Rivers

Geology

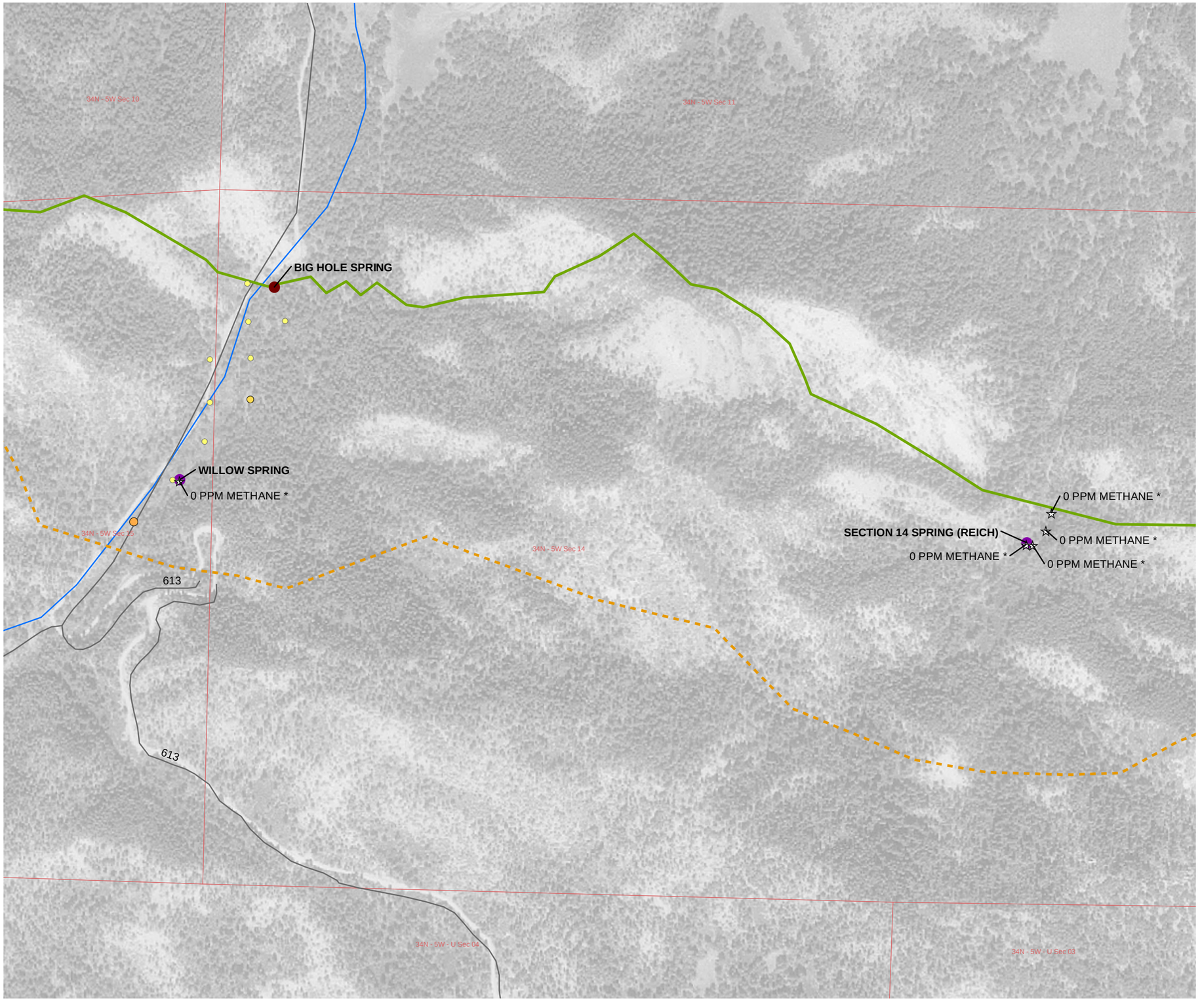
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 500 1,000
Feet

N

FIGURE 11C
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

- ☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Roads
- Rivers

Geology

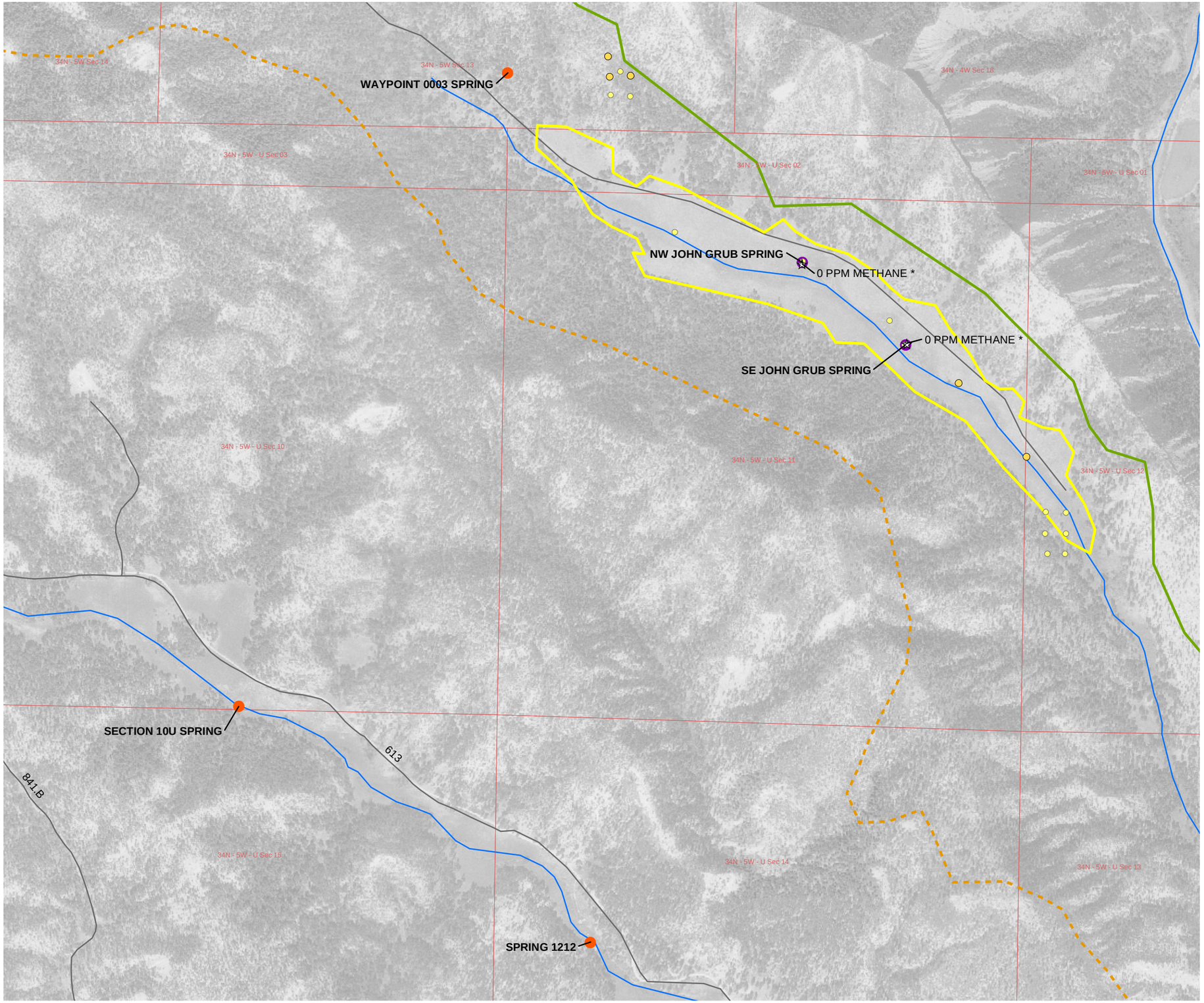
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 500 1,000
Feet

N

FIGURE 11D
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

☆ Subsurface Methane Measurement

Natural Spring Location

- Sampled
- Not Sampled
- Dry

Methane Flux Measurements (mol/m^2 day)

- 0.000 - 0.100
- 0.101 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01- 5.00
- 5.01 - 10.00
- 10.01 - 30.00

mol/m^2 day - moles per square meter per day
ppm - parts per million

* Subsurface methane measurements collected from temporary soil probes advanced with slide hammer.

- Roads
- Rivers

Geology

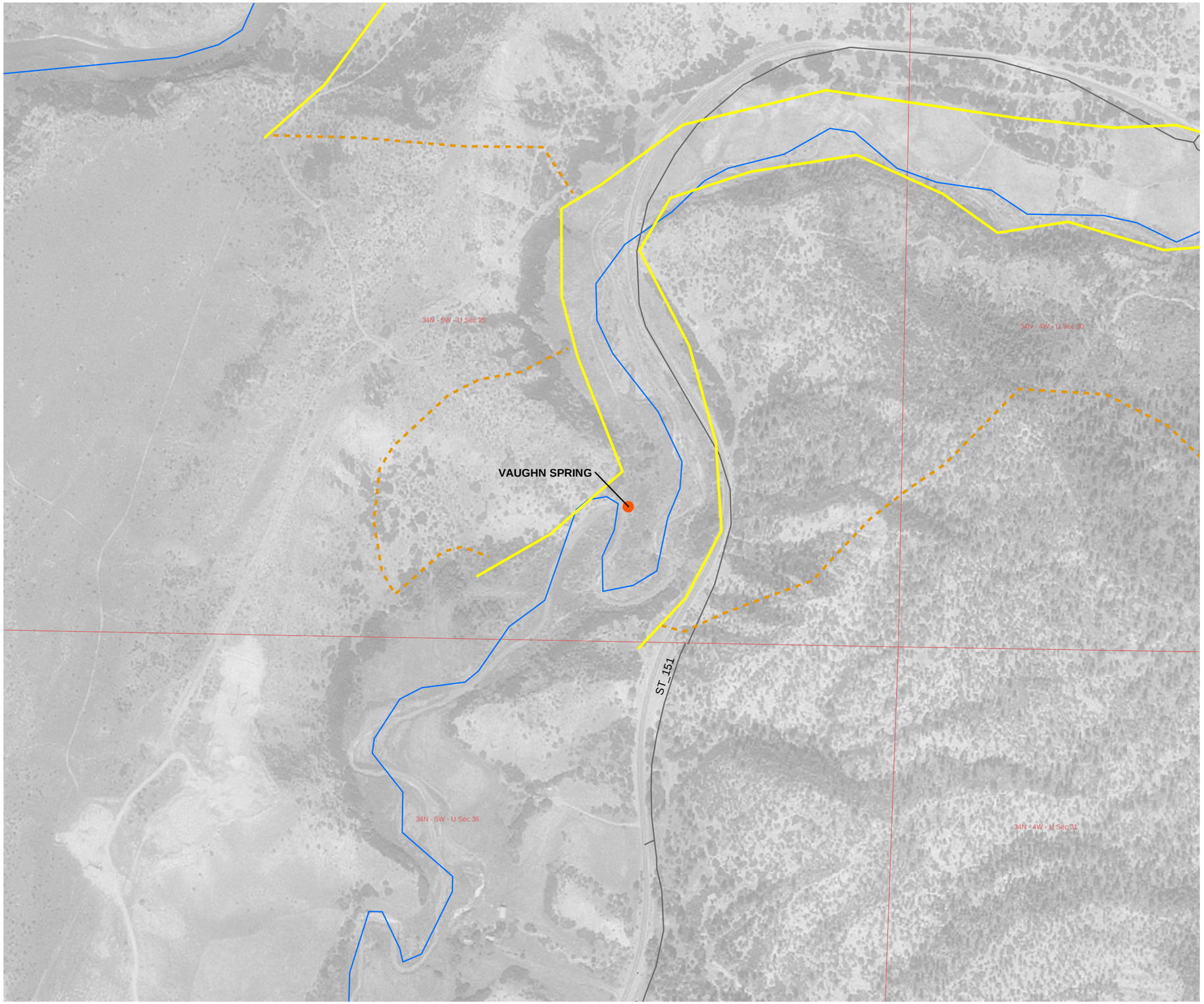
- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 1,000 2,000
Feet

N

FIGURE 11E
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

Natural Spring Location

- Sampled
- Not Sampled
- Dry
- Roads
- Rivers

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

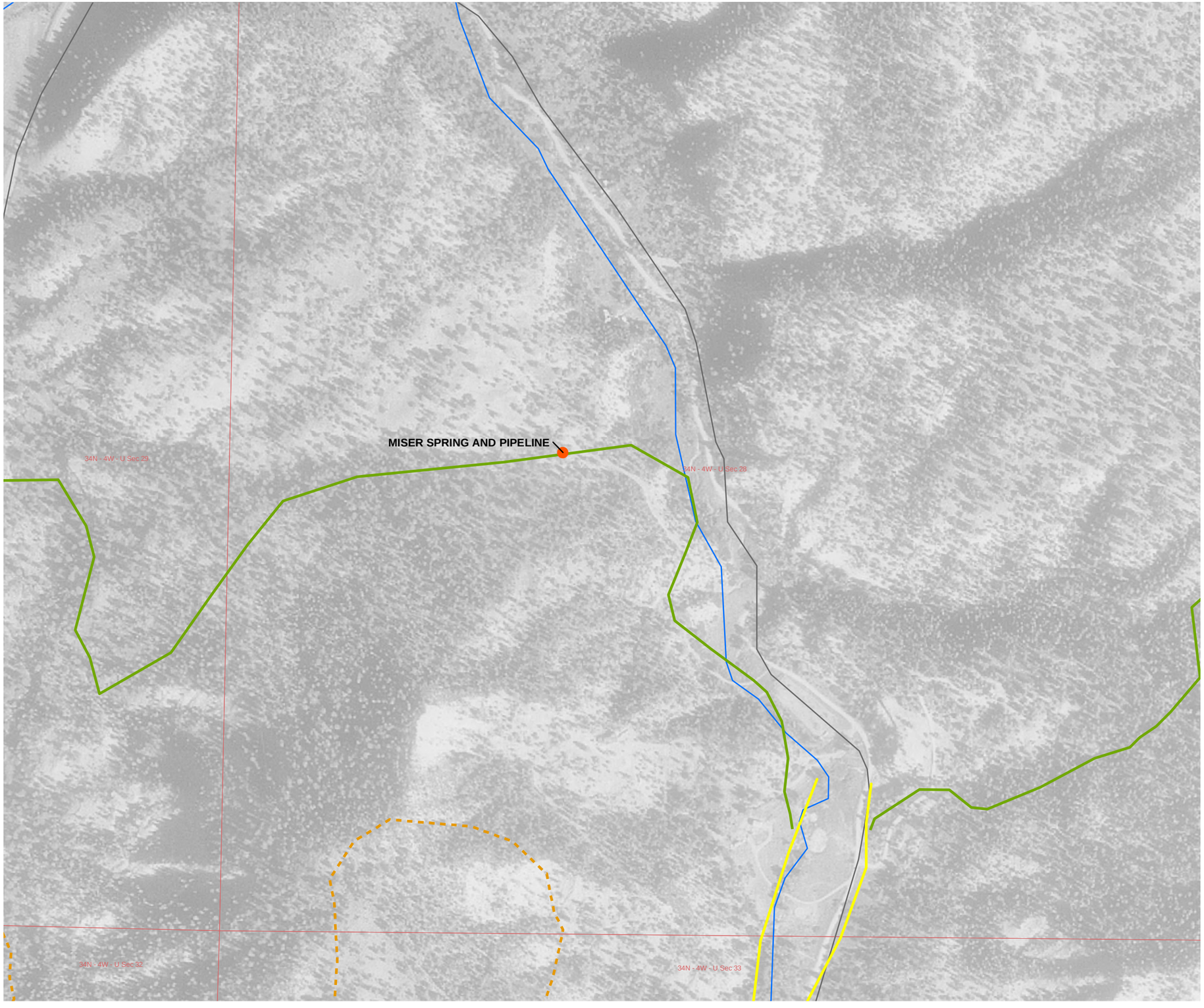
0 500 1,000

Feet

N

FIGURE 11F
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES



Legend

Natural Spring Location

- Sampled
- Not Sampled
- Dry
- Roads
- Rivers

Geology

- Fruitland Formation (Kf)
- Fruitland Formation Tongue (Kft)
- Kirtland Formation (Kk)
- Pictured Cliffs Formation (Kpc)
- Pictured Cliffs Formation Tongue (Kpct)
- Quaternary Alluvium (Qa)
- Quaternary Gravel (Qg)
- Township Range Section

0 500 1,000
Feet

N

FIGURE 11G
DETAILED SPRING LOCATION MAP
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

ELM RIDGE RESOURCES AND PETROX RESOURCES

TABLES

TABLE 1

PROPERTY OWNER AND ACCESS INFORMATION
FRUITLAND FORMATION OUTCROP MONITORING 2007
ARCHULETA COUNTY, COLORADO

ID Number	Parcel Number	LTE Access	Physical Address	Owner Name	Mailing Address	Mailing City	Mailing State and Zip	Legal Description	Parcel Size (acres)	Geographic Position
1	568301100001	Access		Federal					0.000	
2	568501100001	Access		Federal					0.000	
3	568333200010	No	W HIGHWAY 160 X ESMT	HALVERSON HAROLD D ESTATE	23541 COUNTY RD S	DOLORES	CO 81323-0000	35-5W SEC 33	278.913	107.4276285W 37.2588724N
4	568510300009	Access	W HIGHWAY 160 26410	EDWARDS DURWOOD	710 E HOLLAND	ALPINE	TX 79830-0000	34-5W SEC 10	12.495	107.4170414W 37.2288842N
5	568505100016	No Response	W HIGHWAY 160 28061	KAHLER NOBLE GENE	PO BOX 405	BAYFIELD	CO 81122-0000	34-5W SEC 5	8.277	107.4397366W 37.2475521N
6	568505200020	No Response	W HIGHWAY 160 28444	INN ABOVE ONION CREEK INC	4444 HWY 150 WEST	KYLE	TX 78640-0000	34-5W SEC 5	245.669	107.4488552W 37.2467916N
7	568332300040	NA	W HIGHWAY 160 28644	COLORADO YELLOW JACKET LTD PTNSHP	PO BOX 774525	STEAMBOAT SPRINGS	CO 80477-0000	34-5W SEC 5	91.258	107.4471289W 37.2545177N
8	568332300009	NA	W HIGHWAY 160 28945	STRICKLAND SCOTT L & NIOBRA J	28945 E US HWY 160	BAYFIELD	CO 81122-0000	35-5W SEC 32	16.709	107.4437179W 37.2564906N
9	568319200034	No Response	W HIGHWAY 160 30301A	WATSON DAVID LLOYD &	30301 US HWY 160	BAYFIELD	CO 81122-0000	35-5W SEC 19	1064.422	107.4633925W 37.2839436N
10	567913300015	Access	W HIGHWAY 160 31861M	LEONARD RAMONA	PO BOX 207	MAYER	AZ 86333-0000	35-6W SEC 13	26.772	107.4807203W 37.2986948N
11	567913400016	Access	W HIGHWAY 160 31861B	PEINADO EMILIO JR & KAREN R	PO BOX 706	BAYFIELD	CO 81122-0000	35-6W SEC 13	40.098	107.4751287W 37.2974749N
12	567913400017	Access	W HIGHWAY 160 31861L	WOOD LEE THOMAS & PEGGY DARLENE	31861 L W HWY 160	BAYFIELD	CO 81122-0000	35-6W SEC 13	37.432	107.4772925W 37.2954878N
13	589701400003 SJNF	Access		Federal					0.000	
14	589528400043	No Response	COUNTY RD 917 1023	EGAN JOHN T	1023 COUNTY ROAD 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 28	35.213	107.2895008W 37.1560879N
15	589528400051	No Response	COUNTY RD 917 1000A	LEISER SANDRA J		MADISON	KS 66860-0000	34U-4W SEC 28	39.470	107.2827076W 37.1606722N
16	589511200003	Access	HIGHWAY 151 368	UNITED STATES OF AMERICA T/F	PO BOX 737	IGNACIO	CO 81137-0000	34U-4W	3505.197	107.2846571W 37.1913186N
17	589528400042	No Response	COUNTY RD 917 1000	HALLOCK JAMES & NORA	1000 COUNTY RD 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 28	35.086	107.2871869W 37.1588274N
18	589528400049	Access	COUNTY RD 917 1019	MUHLIG BRITT & MAYUMI	1019 COUNTY RD 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 28	34.963	107.2905460W 37.1573476N
19	589528300041	No Response	COUNTY RD 917 1001	CHENAULT ROBERT G	1001 COUNTY RD 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 28	34.960	107.2917877W 37.1615535N
20	589528400050	No Response	COUNTY RD 917 1000	LEISER SANDRA J		MADISON	KS 66860-0000	34U-4W SEC 28	35.036	107.2886189W 37.1615376N
21	589528400053	Access	COUNTY RD 917	WOZNY THEODORE G TRUST ACCOUNT	1601 COUNTY RD 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 28	35.375	107.2872467W 37.1534398N
22	589533200046	Access	COUNTY RD 917 1601	LEON EUGENIA &	1601 A CR 917	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 33	41.103	107.2902055W 37.1534003N
23	589533400048	No Response	COUNTY RD 917 1859	MODISETTE JERRY L & BEVERLY A	17110 CYPRESS ROSE HILL DR	CYPRESS	TX 77429-0000	34U-4W SEC 33	39.371	107.2873806W 37.1462336N
24	589533100045	No Response	COUNTY RD 917 1590	MISER PATRICIA	2341 JOY AVE	WHITE BEAR LAKE	MN 55110-0000	34U-4W SEC 33	42.697	107.2833805W 37.1498740N
25	589533100047	No Response	COUNTY RD 917 1589	SCHAEFER JAMES & NANCY	2754 S LAS PALMAS	MESA	AZ 85202-0000	34U-4W SEC 33	36.129	107.2874029W 37.1498359N
26	589533400033	No Response	COUNTY RD 917 1818	MODISETTE JERRY L & BEVERLY A	17110 CYPRESS ROSE HILL RD	CYPRESS	TX 77429-0000	34U-4W SEC 33	39.329	107.2828948W 37.1462775N
27	589533400034	No Response	COUNTY RD 917 2255	ADAM ROBERT J	12611 JONES RD STE #200	HOUSTON	TX 77070-0000	34U-4W SEC 33	39.331	107.2874383W 37.1426306N
28	568510300010	No Response	W HIGHWAY 160 26260	DREW DANNY S	PO BOX 13	CHIMNEY ROCK	CO 81127-0000	34-5W SEC 10	17.346	107.4141421W 37.2285446N
29	589712400002	No	COUNTY RD 175 2117 & 2119 & 2121	COONEY PROPERTIES 21 LLC	33 INVERNESS PL	DURANGO	CO 81301-0000	34U-5W SEC 12	792.487	107.3344796W 37.1930959N
30	589529300027	Access	HIGHWAY 151 X	EF COAL RESOURCES LIMITED PRTN	PO BOX 773457	STEAMBOAT SPRINGS	CO 80477-0000	34U-4W SEC 29	157.152	107.3074462W 37.1570456N
31	589725400016	Access	HIGHWAY 151 6971	MARTINEZ AMOS MEL	2400 COUNTY RD 329	IGNACIO	CO 81137-0000	34U-5W SEC 25	19.762	107.3412769W 37.1560602N
32	589711200001	Access	W HIGHWAY 160 24160	GRUB JOHN	2841 WANDER CIR	SALT LAKE CITY	UT 84117-0000	34U-5W SEC 11	159.274	107.3596091W 37.2093422N
33	589725100011	No	COUNTY RD 193 5801	CANDELARIA ROGER	9105 SIXTH ST	LANHAM	MD 20706-0000	34U-5W SEC 25	60.135	107.3412773W 37.1659743N
34	589725400015	No Response	HIGHWAY 151 6505A	VAUGHN LARRY C	6505A HWY 151	PAGOSA SPRINGS	CO 81147-0000	34U-5W SEC 25	19.762	107.3412769W 37.1578502N
35	589725400013	No	HIGHWAY 151 X	MARTINEZ JOHN L &	5768 HANSEN CIR	MURRAY	UT 84107-0000	34U-5W SEC 25	39.523	107.3412770W 37.1605367N
36	589724400008	No	COUNTY RD 193 X	CANDELARIA SY TRUSTEE & GILBERT	PO BOX 1771	ARBOLES	CO 81121-0000	34U-5W SEC 24	59.991	107.3390038W 37.1713890N
37	589713300006	No	COUNTY RD 193 6551	CANDELARIA SUSIE	PO BOX 1764	ARBOLES	CO 81121-0000	34U-5W SEC 13	160.288	107.3436380W 37.1849042N
38	589724400010	No	COUNTY RD 193 5801A	CANDELARIA ROGER	9105 SIXTH ST	LANHAM	MD 20706-0000	34U-5W SEC 24	19.859	107.3412824W 37.1704889N
39	589726400024	Access		Federal					0.000	
40	589725400014	Access	HIGHWAY 151 X	MARTINEZ MEL	5671 STATE HWY 151	PAGOSA SPRINGS	CO 81147-0000	34U-5W SEC 25	118.324	107.3322090W 37.1605486N
41	589724400007	No	COUNTY RD 193 5879	CANDELARIA LUCY S &	PO BOX 1812	ARBOLES	CO 81121-0000	34U-5W SEC 24	39.283	107.3367759W 37.1750192N
42	589530100037	No Response	HIGHWAY 151 5461	CHIMNEY ROCK COAL CO C/O	3633 INLAND EMPIRE BLVD STE 480	ONTAIRO	CA 91764-0000	34U-4W SEC 30	79.285	107.3163700W 37.1642304N
43	589530100020	Access	HIGHWAY 151 5671	MARTINEZ MEL	5671 STATE HWY 151	PAGOSA SPRINGS	CO 81147-0000	34U-4W SEC 30	243.370	107.3175202W 37.1642058N
44	589529100026	No Response	HIGHWAY 151 X	CAZEDESSUS CAMILE E JR	PO BOX 2340	PAGOSA SPRINGS	CO 81147-2340	34U-4W SEC 29	15.597	107.3094626W 37.1633518N
45	589725100012	Access		Federal					0.000	

Notes:
Indicates property access was denied
Indicates landowner did not respond to access request

TABLE 2

GAS SAMPLE ANALYTICAL RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

Isotech Lab No.	Sample Date	Sample Name	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+ %	$d^{13}CO_2$ ‰	$d^{13}C_1$ ‰	dDC_1 ‰	H_2S %	Specific Gravity	BTU	Helium dilution factor *
103425	9/7/2006	Squaw Creek	0.207	0.073	3.79	10.47	ND	85.46	ND	ND	ND	ND	ND	ND	ND	ND	NM	-60.67	-375.1	NM	0.636	866	NA
127704	11/14/2007	Stollsteimer Creek	0.027	2.37	0.82	0	ND	99.12	0.029	ND	ND	ND	ND	ND	ND	ND	NM	-44.88	-229.1	NM	0.604	911	NA

Notes:

Chemical analysis based on standards accurate to within 2%

* Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace.

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 = iso-butane
ND = not detected above laboratory detection limit
nC_4 = n-butane
iC_5 = iso-pentane
nC_5 = n-pentane
C_{6+} = hexanes
$d^{13}CO_2$ = isotopic carbon of carbon dioxide
$d^{13}C_1$ = isotopic carbon of methane
dDC_1 = isotopic hydrogen of methane
H_2S = hydrogen sulfide
BTU = british thermal units
NM = not measured
NA = not applicable

TABLE 3

GAS FLUX MEASUREMENT RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

SITE	POINT ID	NORTHING	EASTING	DATE	CH4flux (moles/m2/day)	H2Sflux (moles/m2/day)	CO2flux (moles/m2/day)	CAHMBER	PRESS (HPa):	TEMP DegC	CH4slope (ppm/sec)	H2Sslope (ppm/sec)	CO2slope (ppm/sec)	AcK
Beaver Creek	BVC01	1234725	2425084	10/10/2007	0.00000	0.00720	0.22986	A	777.28000	29.84790	0.00000	0.03000	0.95800	0.23993
Beaver Creek	BVC02	1234736	2425287	10/10/2007	0.16108	0.01534	0.42091	A	778.80000	30.73810	0.67200	0.06400	1.75600	0.23970
Beaver Creek	BVC03	1234835	2425384	10/10/2007	0.11584	0.00368	0.43073	A	799.66000	31.58660	0.47200	0.01500	1.75500	0.24543
Beaver Creek	BVC04	1235028	2425384	10/10/2007	0.20274	0.01519	0.36014	A	776.88000	32.91980	0.85400	0.06400	1.51700	0.23740
Beaver Creek	BVC05	1234927	2425500	10/10/2007	0.10407	0.00534	0.36146	A	795.88000	33.69840	0.42900	0.02200	1.49000	0.24259
Beaver Creek	BVC06	1235039	2425273	10/10/2007	0.08673	0.01772	0.10044	A	777.15000	34.42980	0.36700	0.07500	0.42500	0.23632
Beaver Creek	BVC07	1235032	2425183	10/10/2007	0.05167	0.01014	0.09012	A	777.15000	34.95560	0.21900	0.04300	0.38200	0.23592
Beaver Creek	BVC08	1235029	2425060	10/10/2007	0.08802	0.00706	0.09320	A	776.10000	35.28040	0.37400	0.03000	0.39600	0.23535
Beaver Creek	BVC09	1234941	2425077	10/10/2007	0.17242	0.01270	0.25780	A	776.10000	35.44750	0.73300	0.05400	1.09600	0.23522
Beaver Creek	BVC10	1234929	2425162	10/10/2007	0.00000	0.00519	0.26666	A	777.82000	35.40300	0.00000	0.02200	1.13100	0.23578
Beaver Creek	BVC11	1234934	2425278	10/10/2007	0.00000	0.00920	0.21629	A	778.12000	35.40000	0.00000	0.03900	0.91700	0.23587
Beaver Creek	BVC12	1234935	2425379	10/10/2007	0.00000	0.00589	0.27813	A	776.91000	35.40000	0.00000	0.02500	1.18100	0.23550
Beaver Creek	BVC13	1234838	2425281	10/10/2007	0.00000	0.00966	0.26771	A	777.58000	35.46330	0.00000	0.04100	1.13600	0.23566
Beaver Creek	BVC14	1234835	2425168	10/10/2007	0.16065	0.00891	0.36418	A	795.21000	35.64630	0.66700	0.03700	1.51200	0.24086
Little Squaw Creek	LSC01	1208938	2443442	10/10/2007	0.04746	0.01057	0.22477	A	791.40000	27.83730	0.19300	0.04300	0.91400	0.24592
Little Squaw Creek	LSC02	1208934	2443241	10/10/2007	0.07659	0.00712	0.12543	A	791.40000	28.39400	0.31200	0.02900	0.51100	0.24547
Little Squaw Creek	LSC03	1208740	2443245	10/10/2007	0.21713	0.00660	0.38388	A	791.44000	29.59070	0.88800	0.02700	1.57000	0.24451
Little Squaw Creek	LSC04	1208546	2443253	10/10/2007	0.09091	0.00219	0.17962	A	791.44000	30.57450	0.37300	0.00900	0.73700	0.24372
Little Squaw Creek	LSC05	1208528	2443029	10/10/2007	0.05667	0.00584	0.21231	A	791.44000	31.22150	0.23300	0.02400	0.87300	0.24320
Little Squaw Creek	LSC06	1208738	2443035	10/10/2007	0.05779	0.00534	0.17749	A	791.03000	31.55250	0.23800	0.02200	0.73100	0.24281
Little Squaw Creek	LSC07	1208731	2442847	10/10/2007	0.00218	0.00534	0.18393	A	791.03000	31.75970	0.00900	0.02200	0.75800	0.24265
Little Squaw Creek	LSC08	1208551	2442842	10/10/2007	0.02262	0.00447	0.22919	A	810.84000	31.93920	0.09100	0.01800	0.92200	0.24858
Little Squaw Creek	LSC09	1208331	2442841	10/10/2007	0.02939	0.00413	0.13603	A	792.65000	32.03990	0.12100	0.01700	0.56000	0.24292
Little Squaw Creek	LSC10	1208331	2442627	10/10/2007	0.00605	0.00799	0.17993	A	790.09000	32.00000	0.02500	0.03300	0.74300	0.24217
Little Squaw Creek	LSC11	1208530	2442636	10/10/2007	0.04367	0.01262	0.27222	A	791.57000	32.00000	0.18000	0.05200	1.12200	0.24262
Little Squaw Creek	LSC12	1208333	2442434	10/10/2007	0.12790	0.01066	0.14340	A	791.03000	32.28380	0.52800	0.04400	0.59200	0.24223
Little Squaw Creek	LSC13	1208526	2442441	10/10/2007	0.22795	0.01257	0.18371	A	790.90000	32.86860	0.94300	0.05200	0.76000	0.24173
Little Squaw Creek	LSC14	1208520	2442225	10/10/2007	0.00000	0.00818	0.05319	A	789.55000	33.67980	0.00000	0.03400	0.22100	0.24068
Little Squaw Creek	LSC15	1208339	2442242	10/10/2007	0.06883	0.00794	0.24065	A	790.63000	34.12760	0.28600	0.03300	1.00000	0.24065
Little Squaw Creek	LSC16	1208148	2442215	10/10/2007	0.01847	0.00886	0.35040	A	810.04000	34.52590	0.07500	0.03600	1.42300	0.24624
Little Squaw Creek	LSC17	1207936	2442227	10/10/2007	0.04298	0.00264	0.19975	A	790.25000	34.70550	0.17900	0.01100	0.83200	0.24009
Little Squaw Creek	LSC18	1207927	2442037	10/10/2007	0.06060	0.00671	0.32430	A	788.61000	34.80000	0.25300	0.02800	1.35400	0.23952
Little Squaw Creek	LSC19	1208131	2442026	10/10/2007	0.16023	0.00671	0.11688	A	789.15000	35.01350	0.66900	0.02800	0.48800	0.23951
Little Squaw Creek	LSC20	1208119	2441830	10/10/2007	0.19589	0.00860	0.11132	A	788.50000	35.55850	0.82000	0.03600	0.46600	0.23889
Little Squaw Creek	LSC21	1207936	2441822	10/10/2007	0.02170	0.00644	0.20653	A	788.91000	36.23890	0.09100	0.02700	0.86600	0.23849
Peterson Gulch	PET02	1205345	2456246	10/12/2007	0.00000	0.00640	0.02340	A	782.30000	23.94620	0.00000	0.02600	0.09500	0.24628
Peterson Gulch	PET04	1205527	2456235	10/12/2007	0.22867	0.00758	0.07802	A	784.29000	26.78620	0.93500	0.03100	0.31900	0.24457
Peterson Gulch	PET05	1205733	2456220	10/12/2007	0.15249	0.00923	0.06702	A	783.35000	28.59010	0.62800	0.03800	0.27600	0.24281

TABLE 3 (continued)

GAS FLUX MEASUREMENT RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

SITE	POINT ID	NORTHING	EASTING	DATE	CH4flux (moles/m2/day)	H2Sflux (moles/m2/day)	CO2flux (moles/m2/day)	CAHMBER	PRESS (HPa):	TEMP DegC	CH4slope (ppm/sec)	H2Sslope (ppm/sec)	CO2slope (ppm/sec)	AcK
Peterson Gulch	PET07	1205580	2456343	10/12/2007	0.04187	0.00698	0.10902	A	779.87000	29.94740	0.17400	0.02900	0.45300	0.24065
Peterson Gulch	PET08	1205538	2456445	10/12/2007	0.14922	0.00457	0.08290	A	782.68000	31.49960	0.62100	0.01900	0.34500	0.24029
Peterson Gulch	PET09	1205330	2456441	10/12/2007	0.05729	0.00597	0.08593	A	781.76000	33.15870	0.24000	0.02500	0.36000	0.23871
Peterson Gulch	PET10	1203971	2456889	10/12/2007	0.03142	0.00714	0.10640	A	784.16000	34.95740	0.13200	0.03000	0.44700	0.23804
Peterson Gulch	PET11	1203679	2458173	10/12/2007	0.05188	0.00690	0.21559	A	784.83000	35.32580	0.21800	0.02900	0.90600	0.23796
Peterson Gulch	PET13	1202842	2459195	10/12/2007	0.02450	0.00785	0.27970	A	785.78000	35.85690	0.10300	0.03300	1.17600	0.23784
Peterson Gulch	PET15	1203085	2459045	10/12/2007	0.04205	0.00689	0.08482	A	785.78000	36.17560	0.17700	0.02900	0.35700	0.23759
Peterson Gulch	PET16	1202457	2459739	10/12/2007	0.10646	0.00640	0.14060	A	786.18000	36.98210	0.44900	0.02700	0.59300	0.23710
Peterson Gulch	PET17	1201723	2460418	10/12/2007	0.11730	0.00782	0.16848	A	787.42000	37.64200	0.49500	0.03300	0.71100	0.23697
Peterson Gulch	PET19	1201163	2460816	10/12/2007	0.08284	0.01018	0.14793	A	787.42000	38.00500	0.35000	0.04300	0.62500	0.23669
Peterson Gulch	PET20	1200954	2460815	10/12/2007	0.00000	0.00521	0.11145	A	788.20000	38.39420	0.00000	0.02200	0.47100	0.23663
Peterson Gulch	PET22	1200747	2460806	10/12/2007	0.00946	0.01112	0.17102	A	788.20000	38.50000	0.04000	0.04700	0.72300	0.23655
Peterson Gulch	PET23	1200748	2460628	10/12/2007	0.03116	0.00968	0.14802	A	786.31000	38.37310	0.13200	0.04100	0.62700	0.23608
Peterson Gulch	PET24	1200951	2460606	10/12/2007	0.00000	0.01016	0.17104	A	786.31000	38.15520	0.00000	0.04300	0.72400	0.23624
Peterson Gulch	PET25	1201168	2460614	10/12/2007	0.00000	0.00640	0.07468	A	788.50000	37.92520	0.00000	0.02700	0.31500	0.23708
Pole Gulch	PG01	1207005	2446102	10/11/2007	0.29898	0.00463	0.19607	A	785.64000	28.16790	1.22600	0.01900	0.80400	0.24387
Pole Gulch	PG02	1207214	2446297	10/11/2007	0.00000	0.00194	0.24318	A	785.64000	29.92760	0.00000	0.00800	1.00300	0.24245
Pole Gulch	PG03	1207408	2446458	10/11/2007	0.00000	0.00411	0.09945	A	786.72000	30.92950	0.00000	0.01700	0.41100	0.24198
Pole Gulch	PG04	1207604	2446485	10/11/2007	0.02368	0.00556	0.18218	A	787.39000	31.64620	0.09800	0.02300	0.75400	0.24162
Pole Gulch	PG05	1207619	2446688	10/11/2007	0.15217	0.00555	0.11045	A	788.34000	32.60250	0.63100	0.02300	0.45800	0.24115
Pole Gulch	PG06	1207826	2446690	10/11/2007	0.01588	0.00337	0.19489	A	788.34000	33.29600	0.06600	0.01400	0.81000	0.24061
Pole Gulch	PG07	1207819	2446484	10/11/2007	0.00000	0.01081	0.20421	A	788.07000	33.65550	0.00000	0.04500	0.85000	0.24024
Pole Gulch	PG08	1208009	2446678	10/11/2007	0.06301	0.00575	0.17919	A	786.99000	34.10470	0.26300	0.02400	0.74800	0.23956
Pole Gulch	PG09	1208013	2446864	10/11/2007	0.02154	0.00814	0.10126	A	787.56000	34.56610	0.09000	0.03400	0.42300	0.23938
Pole Gulch	PG10	1208201	2446673	10/11/2007	0.03807	0.00766	0.18723	A	788.47000	34.86480	0.15900	0.03200	0.78200	0.23942
Squaw Creek	SC01	1215303	2436375	10/11/2007	0.04878	0.00642	0.13634	A	777.42000	32.42950	0.20500	0.02700	0.57300	0.23795
Squaw Creek	SC04	1215095	2436672	10/11/2007	0.00000	0.00617	0.11696	A	777.42000	33.32870	0.00000	0.02600	0.49300	0.23725
Squaw Creek	SC07	1214831	2436992	10/11/2007	0.00000	0.00570	0.15187	A	777.42000	33.27050	0.00000	0.02400	0.64000	0.23730
Squaw Creek	SC10	1214480	2437233	10/11/2007	0.00000	0.00570	0.16798	A	778.12000	33.16060	0.00000	0.02400	0.70700	0.23759
Squaw Creek	SC14	1214367	2437405	10/11/2007	0.00000	0.00381	0.08414	A	780.28000	33.01790	0.00000	0.01600	0.35300	0.23836
Squaw Creek	SC16	1214273	2437448	10/11/2007	0.00000	0.00952	0.14681	A	778.63000	32.92300	0.00000	0.04000	0.61700	0.23793
Squaw Creek	SC19	1214245	2437500	10/11/2007	0.02356	0.00547	0.12185	A	779.34000	33.14290	0.09900	0.02300	0.51200	0.23798
Squaw Creek	SC21	1214116	2437993	10/11/2007	0.07065	0.00356	0.02228	A	779.44000	34.35590	0.29800	0.01500	0.09400	0.23707
Squaw Creek	SC24	1213966	2438387	10/11/2007	0.00000	0.00664	0.12026	A	779.71000	34.30000	0.00000	0.02800	0.50700	0.23720
Squaw Creek	SC28	1213721	2438761	10/11/2007	0.00000	0.00357	0.05289	A	782.68000	34.08840	0.00000	0.01500	0.22200	0.23826
Stollsteimer Creek	ST01			10/16/2007	0.00000	0.00000	0.07701	A	801.54000	21.82590	0.00000	-0.00100	0.30300	0.25415
Stollsteimer Creek	ST15	1185275	2468635	10/16/2007	0.14197	0.00307	0.14274	A	812.77000	24.02860	0.55500	0.01200	0.55800	0.25580
Stollsteimer Creek	ST20	1185280	2468660	10/16/2007	0.00000	0.00000	0.07701	A	801.54000	21.82590	0.00000	-0.00100	0.30300	0.25415

TABLE 3 (continued)

GAS FLUX MEASUREMENT RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

SITE	POINT ID	NORTHING	EASTING	DATE	CH4flux (moles/m2/day)	H2Sflux (moles/m2/day)	CO2flux (moles/m2/day)	CAHMBER	PRESS (HPa):	TEMP DegC	CH4slope (ppm/sec)	H2Sslope (ppm/sec)	CO2slope (ppm/sec)	AcK
Stollsteimer Creek	ST24	1185312	2468651	10/16/2007	0.05275	0.00100	0.10601	A	801.44000	25.25540	0.21000	0.00400	0.42200	0.25120
Stollsteimer Creek	ST30	1185522	2468556	10/16/2007	0.02981	0.00351	0.11522	A	801.44000	26.11310	0.11900	0.01400	0.46000	0.25048
Stollsteimer Creek	ST37	1186203	2469016	10/16/2007	0.14535	0.00506	0.22650	A	812.09000	27.31910	0.57500	0.02000	0.89600	0.25279
Stollsteimer Creek	ST42	1185899	2469007	10/16/2007	0.04729	0.00224	0.22476	A	801.04000	27.85130	0.19000	0.00900	0.90300	0.24891
Stollsteimer Creek	ST43	1185904	2468687	10/16/2007	0.00000	0.00522	0.18168	A	800.87000	28.23260	0.00000	0.02100	0.73100	0.24854
Stollsteimer Creek	ST46	1185598	2468678	10/16/2007	0.00000	0.00546	0.19642	A	800.87000	28.50550	0.00000	0.02200	0.79100	0.24831
Stollsteimer Creek	ST47	1185394	2468993	10/16/2007	0.00000	0.01240	0.24531	A	800.64000	28.75330	0.00000	0.05000	0.98900	0.24804
Stollsteimer Creek	ST48	1185097	2468262	10/16/2007	0.01782	0.00198	0.09950	A	800.37000	29.29080	0.07200	0.00800	0.40200	0.24752
Big Horn Schomburg #1	SCH03	1194629	2459556	10/11/2007	0.10697	0.00438	0.15697	A	816.64000	23.18130	0.41500	0.01700	0.60900	0.257753
Big Horn Schomburg #1	SCH04	1194627	2459522	10/11/2007	0.03377	0.00609	0.07972	A	799.39000	21.34190	0.13300	0.02400	0.31400	0.253885
Big Horn Schomburg #1	SCH05	1194629	2459480	10/11/2007	0.23640	0.00476	0.09050	A	798.85000	24.89770	0.94300	0.01900	0.36100	0.250686
Big Horn Schomburg #1	SCH06	1194591	2459525	10/11/2007	0.15615	0.00549	0.09928	A	798.85000	26.39250	0.62600	0.02200	0.39800	0.249435
Big Horn Schomburg #1	SCH07	1194676	2459522	10/11/2007	0.11415	0.00609	0.06443	A	815.56000	27.56170	0.45000	0.02400	0.25400	0.253663

Notes:

Northing and Easting data reported in United States, State Plane South Feet, North American Datum 1983
CH4 - Methane
H2S - Hydrogen Sulfide
CO2 - Carbon Dioxide
PRESS (Hpa) - Pressure reported in hectopascals
TEMP DegC - Temperature reported in degrees Celcius
AcK - Accumulation Chamber Factor
moles/m2/day - moles per meter squared per day
ppm/sec - parts per million per second

TABLE 4

NATURAL SPRING SURVEY RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

Spring ID	Description	Location	Inspection Date	Water Quality Field Measurements						Laboratory Result
				Conductivity (uS)	pH	ORP (mV)	Temperature (C)	TDS (ppm)	Estimated Flow (gal/min)	Methane (mg/L)
Ramona Leonard Spring (Mona)	Spring on Ramona Leonard property, on outcrop near county border.	NESW, Sec 13, T35N, R6W	9/19/2005	NM	NM	NM	NM	NM	NM	<0.0005
			6/1/2006	768.4	6.35	107	13.5	522.4	0.6	<0.0010
			10/13/2007	793.5	7.68	42	11.8	413.4	0.4	<0.02
Ramona Spring	Spring on Ramona Leonard property, unable to locate.	NESW, Sec 13, T35N, R6W	6/1/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Wood Spring	Spring in Beaver Creek meadow, unable to locate.	SWSE, Sec 13, T35N, R6W	6/1/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Corrigan Spring	Tributary spring seeping from hillside on southeast side of Beaver Creek, on outcrop. Spring was dry.	SWSE, Sec 13, T35N, R6W	6/1/2006	170.3	6.08	122	17.7	109.7	1	<0.0010
			10/13/2007	NM	NM	NM	NM	NM	NM	NS
Beaver Creek	Sample taken below confluence of Corrigan Spring drainage and Beaver Creek because Corrigan Spring is dry.	SWSE, Sec 13, T35N, R6W	10/13/2007	286.6	8.00	21	10.0	146.6	7	<0.02
Watson Well Spring	Hand dug water well on Watson property, on outcrop. Gate locked, did not receive response to request for property access.	SENW, Sec 19, T35N, R5W	6/1/2006	745.5	7.29	34	13.0	507.7	NM	0.016
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Grassy Spring	Spring located southwest of outcrop and Watson Well Spring.	NESW, Sec 19, T35N, R5W	6/1/2006	570.3	7.5	-115	29.1	375.3	NM	0.0067
			10/14/2007	88.37	8.18	16	8.6	44.32	<0.25	<0.02
Crain Spring	Tributary spring seeping from embankment in drainage, east of Watson property, on outcrop.Gate locked, did not receive response for property access.	SWSW, Sec 20, T35N, R5W	6/1/2006	570.3	7.5	-115	29.1	375.3	NM	0.0067
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Seep Spring	Spring located northwest of Walt Spring #1, on outcrop. Unable to locate.	SESW, Sec 04, T34N, R5W	5/24/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Walt Spring #1	Spring in drainage north of Yellow Jacket Pass, on outcrop, spring is dry.	SESW, Sec 04, T34N, R5W	5/24/2006	524	7.9	86	12.1	345.4	<1	<0.0010
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Townsend Spring	Spring located north of Hwy 160, east of Yellow Jacket Pass, on outcrop, spring is dry.	SESW, Sec 04, T34N, R5W	5/24/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Thick Spring	Spring on east side of Yellow Jacket Pass, becomes Squaw Creek, on outcrop.	SESE, Sec 05, T34N, R5W	5/24/2006	325.6	7.80	120	11.7	214.6	2	<0.0010
			10/13/2007	376.5	7.74	32	12.9	192.2	<1	<0.02
Vance Spring #1	Spring in drainage on Vance Property south of Hwy 160, not located on outcrop	NENW, Sec 08, T34N, R5W	5/26/2006	404	7.75	-12	11.6	269.6	1	0.022
			10/14/2007	417.1	7.34	519	9.6	213.2	<0.5	<0.02
Vance Meadow Spring	Spring in meadow south of Vance residence, not located on outcrop	SWNE, Sec 08, T34N, R5W	6/6/2006	459.9	7.2	-60	16.5	310.9	<0.5	0.011
			10/14/2007	389.8	7.2	-67	12.2	195.1	<0.5	0.06

TABLE 4 (continued)

NATURAL SPRING SURVEY RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

Spring ID	Description	Location	Inspection Date	Water Quality Field Measurements						Laboratory Result
				Conductivity (uS)	pH	ORP (mV)	Temperature (C)	TDS (ppm)	Estimated Flow (gal/min)	Methane (mg/L)
Big Hole Spring	Spring in Pole Gulch, near contact of Kpc-Kf, on outcrop, spring is dry.	NWNW, Sec 14, T34N, R5W	5/24/2006	365.5	7.27	141	11.7	249.1	<1	0.001
			10/13/2007	NM	NM	NM	NM	NM	NM	NS
Willow Spring	Spring in Pole Gulch, south of Big Hole Spring, on outcrop	NWNW, Sec 14, T34N, R5W	5/24/2006	252.9	7.39	122	14.0	178.7	1	<0.0010
			10/13/2007	318.3	7.42	508	13.9	161.4	<0.25	<0.02
Section 14 Spring (Reich)	Spring located between Pole Gulch and Peterson Gulch, on outcrop	SWNE, Sec 14, T34N, R5W	9/19/2005	412.2	7.93	NM	20.2	277.5	NM	0.0006
			5/24/2006	372.9	7.48	79	13.3	251.5	<1	<0.0010
			10/14/2007	394.7	7.92	0	10.7	198.7	<0.5	0.020
Waypoint 0003 Spring	Unable to locate.	NWSE Sec 13, T34N, R5W	5/26/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
NW John Grub Spring	North spring in Peterson Gulch, on outcrop	NWNE, Sec 11U, T34N, R5W	9/19/2005	415.8	6.97	NM	15.8	282.3	0.1	0.015
			5/26/2006	421.7	7.83	108	27	275.9	<1	0.0016
			10/14/2007	292.2	7.28	-162	17.1	254.8	<0.5	0.30
SE John Grub Spring	South spring in Peterson Gulch, on outcrop	SENE, Sec 11U, T34N, R5W	9/19/2005	524.5	7.04	NM	15.6	358.5	0.25	<0.0005
			5/26/2006	509.5	7.86	-49	24.4	336.9	<1	0.0025
			10/14/2007	980.1	7.29	-68	18.4	513	<0.25	0.65*
Section 10U Spring	Candelaria property spring, not located on outcrop. Access to property denied by landowner.	SWSE, Sec 10U, T34N, R5W	9/19/2005	458.1	7.27	131	10.9	314.7	0.9	<0.0005
			6/6/2006	489.9	7.18	521	20.0	328.2	1	0.0062
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Spring 1212	Spring at homestead inside cistern, not located on outcrop, located on Candelaria property, access to property denied by landowner.	SWNW, Sec 14U, T34N, R5W	10/7/2005	420	6.59	NM	9.1	NM	NM	0.0005
			6/6/2006	356.6	7.29	75	15.3	243.9	5.28	<0.0010
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Spring 3424	Spring adjacent to Susie Candelaria residence, used as water supply for both Susie and Gilbert Candelaria residences, on outcrop. Access to property denied by landowner.	SESE, Sec 13U, T34N, R5W	9/14/2005	725.2	6.86	71	16.5	504	1	0.0017
			5/26/2006	641.5	7.97	-98	17.3	436.7	1	0.023
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Candelaria A Spring	Spring located on Candelaria property, access to property denied by landowner.	NWNE, Sec 24U, T34N, R5W	5/26/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS

TABLE 4 (continued)

NATURAL SPRING SURVEY RESULTS
2007 FRUITLAND OUTCROP MONITORING
ARCHULETA COUNTY, COLORADO

Spring ID	Description	Location	Inspection Date	Water Quality Field Measurements						Laboratory Result
				Conductivity (uS)	pH	ORP (mV)	Temperature (C)	TDS (ppm)	Estimated Flow (gal/min)	Methane (mg/L)
Candelaria B Spring	Spring located on Candelaria property, access to property denied by landowner.	SWNE, Sec 24U, T34N, R5W	5/26/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Vaughn Spring	Tributary spring seeping out of embankment on north side of Stollsteimer Creek, on outctop. Gate locked, did not receive response to request for property access.	SESE, Sec 25, T34N, R5W	6/6/2006	730.7	7.55	521	20.1	509.5	<1	0.0037
			10/14/2007	NM	NM	NM	NM	NM	NM	NS
Miser Spring and Pipeline	Inaccessible due to well infrastructure.	NESW, Sec 28, T34N, R4W	6/6/2006	NM	NM	NM	NM	NM	NM	NS
			10/14/2007	NM	NM	NM	NM	NM	NM	NS

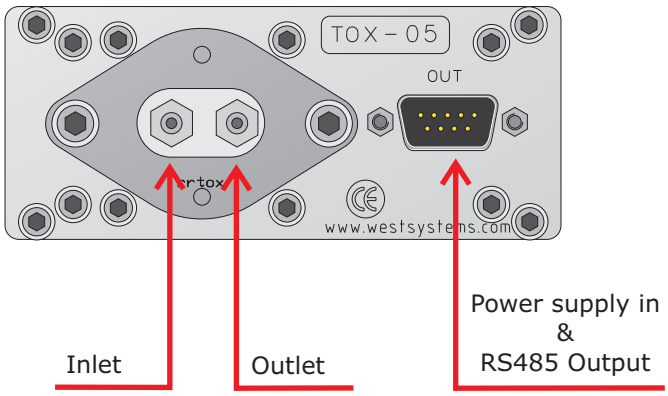
Notes:

uS = microSiemens
ORP = oxidation reduction potential
mV = millivolts
C = degrees celsius
TDS = total dissolved solids
Flow measured using graduated container and stop-watch
* = highest concentration in 2007
ppm = parts per million
gal/min = gallons per minutes
NM = not measured
NS = not sampled
< = less than the stated laboratory method detection limit

APPENDIX A

EQUIPMENT SPECIFICATIONS

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)

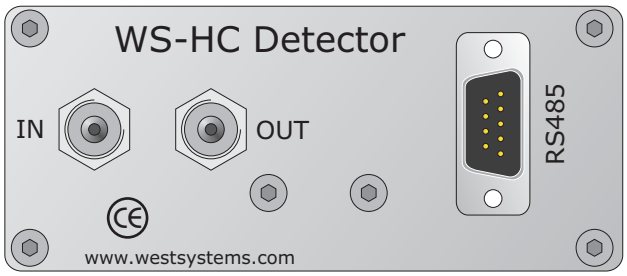
Full scale range is 50000 ppm of methane.

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)

Gasport® Gas Tester

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	O2
812389	CO
812390	H2S

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 H2S
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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1-800-MSA-2222

MSA International
Phone (412) 967-3354
FAX (412) 967-3451

Offices and representatives worldwide
For further information:

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.

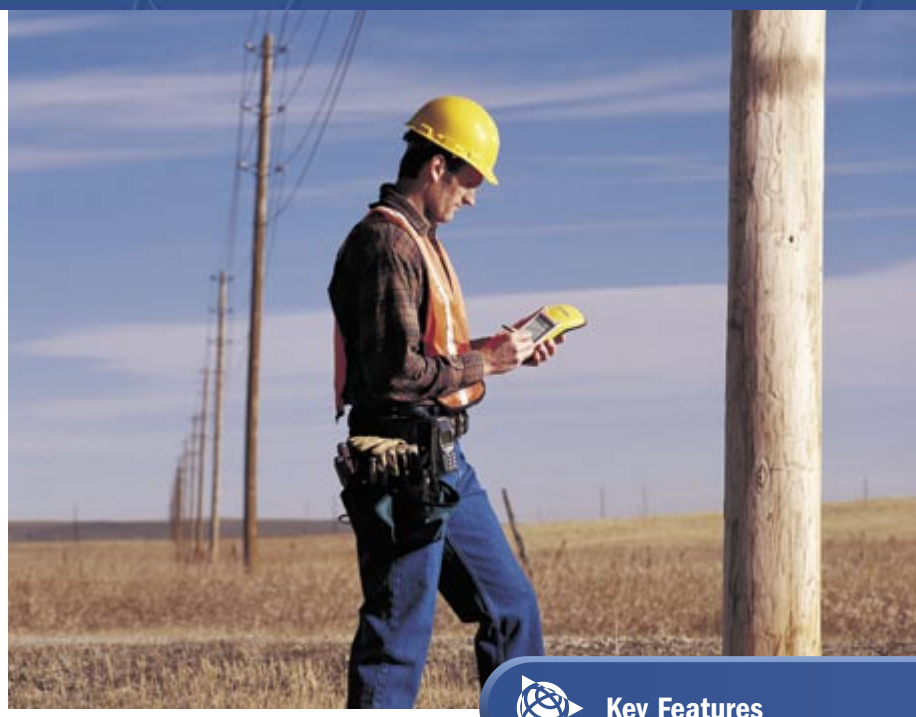
Windows Mobile includes familiar Microsoft productivity tools, including Pocket Word, Pocket Excel, and Pocket Outlook®. Pocket Outlook lets you synchronize e-mails, contacts, appointments, and data with your office computer, so whether you're in the office or in the field, you're always up to date.

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 via 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).*

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APPENDIX B

LABORATORY ANALYTICAL RESULTS

ANALYSIS REPORT

Lab #:	127704	Job #:	9102
Sample Name/Number:	Stollsteimer		
Company:	LT Environmental		
Date Sampled:	11/14/2007		
Container:	Dissolved Gas Bottle		
Field/Site Name:	MSO716.06		
Location:	Archuleta		
Formation/Depth:			
Sampling Point:			
Date Received:	11/21/2007	Date Reported:	12/19/2007

Component	Chemical mol. %	Chemical Air Free vol. %	Delta 13C per mil	Delta D per mil	Delta 15N per mil
Carbon Monoxide	nd	nd			
Hydogen Sulfide	nd	nd			
Helium	0.0030	0.0033			
Hydrogen	nd	nd			
Argon	0.13	0.027			
Oxygen	2.37				
Nitrogen	6.91	nd			
Carbon Dioxide	0.74	0.82			
Methane	89.82	99.12	-44.88	-229.1	
Ethane	0.026	0.029			
Ethylene	nd	nd			
Propane	nd	nd			
Iso-butane	nd	nd			
N-butane	nd	nd			
Iso-pentane	nd	nd			
N-pentane	nd	nd			
Hexanes +	nd	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 911

Specific gravity, calculated: 0.604

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

LT Environmental					***Lynn M. Fechter -Four Corners Geoscience***			
4600 west 60th Avenue				*Conducted Methane analysis per protocol and method established*				
Arvada,CO 80003				*by BLM San Juan Resource Area 1993 and USGS method.*				
Kyle Siesser				*Samples were collected by Lyle Siesser.Geologist LTE*				
970-764-7356				*Samples were delivered to Four Corners Geoscience and analyses*				
Report Date	***10/17/2007***			*were conducted on SRI FID within 24 hours of collection.*				
Methane Analysis Report			***Project Number Unknown***	*Laboratory calibration conducted same as sample run.*				
			Project Name Archuleta Cty	*Blanks and duplicated runs conducted for each sample set*				
Lab #	**Sample Date**	**Sample**	**Site ID-Location**					
FCGeo		***Time(Hrs)***		***Lab Blank***	***CH4***	***C2***	***Method***	***Detection***
				mg/L	mg/L			***Limit(mg/L)***
101307-1	10/13/2007	1130	Beaver Creek	0.02	<0.02	ND	USGS/BLM	0.02
101307-2	10/13/2007	1215	Thick Spring	0.02	<0.02	ND	USGS/BLM	0.02
101307-3	10/13/2007	1150	Ramona Leonard Spring(Mara)	0.02	<0.02	ND	USGS/BLM	0.02
101307-4	10/13/2007	1240	Willow Spring	0.02	<0.02	ND	USGS/BLM	0.02
101407-1	10/14/2007	915	Grassy Spring	0.02	<0.02	ND	USGS/BLM	0.02
101407-2	10/14/2007	1030	Vance Spring	0.02	<0.02	ND	USGS/BLM	0.02
101407-3	10/14/2007	1050	Vance Meadow Spring	0.02	0.06	ND	USGS/BLM	0.02
101407-4	10/14/2007	1130	Section 14 Spring (Reich)	0.02	0.020	ND	USGS/BLM	0.02
101407-5	10/14/2007	1215	NW John Grub Spring	0.02	0.30	ND	USGS/BLM	0.02
101407-6	10/14/2007	1225	NW John Grub Spring	0.02	0.65	ND	USGS/BLM	0.02
No field blanks received at FCGeo Lab								
January 24, 2008								
Emailed toKyle Siesser								

APPENDIX C

NATURAL SPRING PHOTOGRAPHIC DOCUMENTATION

Photograph 1 - Beaver Creek.

Photograph 2 - Ramona Leonard Spring (Mona).

Photograph 3 - Thick Spring.

Photograph 4 - Big Hole Spring.

Photograph 5 - Willow Spring.

Photograph 6 - Crain (Grassy) Spring.

Photograph 7 - Crain (Grassy) Spring.

Photograph 8 - Walt Spring #1.

Photograph 9 - Vance Spring #1.

Photograph 10 - Vance Meadow Spring.

Photograph 11 - Section 14 Spring (Reich).

Photograph 12 - NW John Grub Spring.

Photograph 13 - SE John Grub Spring.