



COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental Inc.

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May 6, 2010

Ms. Kara Hellige
U.S. Army Corps of Engineers
766 E. Third Street, Suite #2
Durango, Colorado 81301

RE: NWP PCN for the South Fork of Texas Creek Methane Mitigation Project

Ms. Hellige:

LT Environmental, Inc. (LTE) has been retained by the Colorado Oil and Gas Conservation Commission (COGCC) to address uncontrolled methane seepage along the Fruitland Formation outcrop near the South Fork of Texas Creek. This letter is to submit to you for your review and approval a pre-construction notification for activities under Nationwide Permits number 18 and 33. The funds for this project expire on June 30, 2010.

If you have any questions or comments regarding this project, please feel free to contact me at (970) 385-1096 or via email at jlinn@ltenv.com.

Sincerely,

A handwritten signature in blue ink that reads 'Julie Linn'.

Julie Linn, RG
Project Geologist

Cc: Chris Shepherd, PE, LTE
Karen Spray, COGCC

**NATIONWIDE PERMIT 18 and 33 PRE-CONSTRUCTION NOTIFICATION
SOUTH FORK TEXAS CREEK METHANE MITIGATION SITE
LA PLATA COUNTY, COLORADO**

**4M OUTCROP MITIGATION PROJECT
COLORADO DEPARTMENT OF NATURAL RESOURCES
COLORADO OIL & GAS CONSERVATION
COMMISSION**

MAY 6, 2010

Prepared for:

**U.S. ARMY CORPS OF ENGINEERS
Durango Regulatory Office
766 East Third Street, Suite #2
Durango, Colorado 81301**

Prepared by:

**LT ENVIRONMENTAL, INC.
2243 North Main Avenue, Suite #3
Durango, Colorado 81301
(970) 385-1096**



**NATIONWIDE PERMIT 18 and 33 PRE-CONSTRUCTION NOTIFICATION
SOUTH FORK TEXAS CREEK METHANE MITIGATION SITE
LA PLATA COUNTY, COLORADO**

INTRODUCTION

LT Environmental, Inc. (LTE) has been retained by the Colorado Oil and Gas Conservation Commission on matters relating to Clean Water Act Section 404 compliance for the South Fork Texas Creek (SFTC) Methane Mitigation project located in La Plata County, Colorado. This document serves as a Pre-Construction Notification (PCN) that the Applicant intends to temporarily impact 0.018 acres of “Waters of the United States” under Nationwide Permit (NWP) 18, minor discharges. Compensatory mitigation will not be required since the impacts are temporary. Additionally, a component of this project will qualify under NWP 33, Temporary Construction, Access, and Dewatering. This document is intended to describe the project in sufficient detail to provide the U.S. Army Corps of Engineers (USACE) all the necessary information to determine that the project qualifies for authorization under NWPs 18 and 33 and that it complies with each of the General Conditions of the permits in addition to the Regional Conditions specific to Colorado.

PROJECT APPLICANT:

Mr. Karen Spray
Colorado Oil and Gas Conservation Commission
P.O. Box 2651
Durango, Colorado 81302-2651

PROJECT AGENT:

Ms. Julie Linn, RG
LT Environmental, Inc.
2243 N. Main Avenue, Suite 3
Durango, Colorado 81301
(970) 385-1096
jlinn@ltenv.com

PROJECT LOCATION

The SFTC methane mitigation site is located approximately 7 miles north of Bayfield, Colorado. From Durango, drive east on U.S. Highway 160 to La Plata County Road (CR) 501. Drive north on CR 501 to CR 245. Turn left on CR 245 to CR 502. Turn left on CR 502. The site is approximately 1 mile from the intersection of CR 245 / CR 502. Look for a green shed (houses the methane processing equipment) on the left side of the road with a sparsely vegetated field adjacent to it.

7.5-minute USGS Quadrangle:

Ludwig Mountain, Colorado.

Cadastral Location:

NE ¼ of the SE ¼ of Section 8
Township 35 North, Range 7 West, NMPM

#



Latitude and Longitude (WGS84): 37° 18' 55" N / 107° 39' 08" W

Watershed: Upper San Juan

HUC Level 8: 14080108

PROJECT DESCRIPTION

LT Environmental, Inc. (LTE) is completing the 4M Outcrop Mitigation Project on behalf of the Colorado Department of Natural Resources (DNR) Colorado Oil & Gas Conservation Commission (COGCC). The objective of the project is to demonstrate the economical and technical viability to recover and use the uncontrolled methane seepage along the Fruitland Formation Outcrop (outcrop). The methane seepage has resulted in distressed vegetation, a former explosive hazard in structures previously existing at the location and visible methane seepage within the South Fork of Texas Creek near Bayfield, Colorado. The project includes collecting a valuable resource to generate electricity, improving the negative visual impact of the seep and accomplishing an overall reduction in greenhouse gas emissions.

The project area is located adjacent to the South Fork of Texas Creek (SFTC), north of Bayfield, Colorado. In the project area, the Cretaceous Age Fruitland Formation is exposed at and just below the surface of the ground. The Fruitland Formation contains beds of coal which produce methane. Natural methane seepage occurs in the general vicinity of the Fruitland Formation outcrop. In the project area, the seepage occurs in the vicinity of the South Fork of Texas Creek.

In November of 2008, LTE installed a methane collection system adjacent to the South Fork of Texas Creek, consisting of a series of horizontal slotted pipes laid approximately 12 inches below the ground surface, bedded in six inches of gravel, and then covered with a 15-mil impervious membrane. On top of the vapor barrier, the area was backfilled with native soils and reseeded with a native seed mix (the specifications of the native seed mix is not known). The impervious membrane prevents vapor migration upward through the soil to the atmosphere. The methane travels through the pipes to a mitigation system where the gas is compressed and then used to operate a turbine driven generator that generates electrical power. The generated electrical power is used to run the mitigation system and any excess power is input back onto the power grid. Attached figures depict the layout of the methane collection system.

Results from the initial phase of the mitigation project indicate the methane collection system is successfully mitigating a methane seep along the areas adjacent to both sides of the South Fork of Texas Creek. Due to project timing and available funding during the initial installation, the methane collection system did not include collection of visible methane seeps directly affecting the creek. The current layout of the methane collection system allows methane to escape from the bed of the creek to the atmosphere. This is visible in many areas where methane bubbles through the water vigorously. LTE is proposing to install additional vapor collection and barrier systems to collect the methane beneath the bed of South Fork Texas Creek.

Operational results indicate it is desirable to expand the system to collect gas from these seeps, and is necessary to fully optimize the pilot project. Installing a liner to direct the methane toward collection piping is the most feasible way to collect the bulk of the methane gas seepage and reduce the adverse impact to vegetation resulting from the seepage.

The available gas from the existing system is inadequate to supply the turbine generator at optimum capacity. A gas survey indicates additional gas is seeping within the creek and immediately adjacent to the creek, and the estimated seepage rate is sufficient to improve the gas supply and substantially improve the turbine operation. Other seepage located further away from the creek does not appear adequate to provide sufficient gas to contribute to the success of the program.

The proposed construction includes installing a vapor barrier to direct methane gas toward the existing collection piping beneath the existing liner. This will require temporarily diverting the creek into a 12 inch culvert in order to allow a liner and gravel bedding installation. The construction activity will be completed in less than one week and is anticipated to be complete before June 18, 2010.

Construction will be completed using a track hoe or back hoe to remove approximately 870 square feet of soil and vegetation currently within the ordinary high water mark and the adjacent palustrine emergent wetlands along the South Fork of Texas Creek. The root zone (approximately 6 to 10 inches) of soils currently in the creek bottom will be segregated from other excavate soils. After the soils are excavated to a depth of approximately 32 inches, a layer of gravel 12 inches thick will be placed in the excavation and the 15-mil impermeable membrane will be placed on top of the gravel. The soils from the non-root zone will be placed on top of the 15-mil impermeable membrane and finally soils from the root zone will be placed on top, and the elevation of the bottom of the creek bed will be returned to its current (original) elevation. The flow of water will then be returned to the South Fork of Texas Creek.

Impacts in the form of fill to waters of the U.S. (wetlands and below the ordinary high water mark) are summarized in the table below:

	Description	OHW	Wetlands	Total
Temporary Fill Impacts	Diversion Pipe and Earthen Berms	0.007 acres	0.01 acres	0.017 acres
Permanent Fill Impacts	½" clean washed gravel	0.018 acres	0.001 acres	0.019 acres
TOTALS		0.025 acres	0.021 acres	0.036 acres

Valuable information regarding mitigation of these types of seeps can be obtained from this study, and due to project funding requirements, this work needs to proceed this spring. The results of this study can then be available for mitigation of other methane seeps.

NWP GENERAL CONDITIONS

Navigation

This project will not cause adverse effect on navigation. Safety lights and signals are not prescribed by this activity. The permittee agrees to hold no claim against the United States on account of any removal, relocation, or other alteration of the work if the work is determined to cause unreasonable obstruction to the free navigation of navigable waters, as determined by the Secretary of the Army or their authorized agent.

Aquatic Life Movements

This activity will not substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the water body, including migratory species. Due to the presence of methane in the water of the South Fork of Texas Creek, there is minimal aquatic life species present in the water body.

Spawning Areas

This activity will, to the maximum extent practicable, avoid spawning season in spawning areas. There are no known spawning areas in the South Fork of Texas Creek.

Migratory Bird Breeding Areas

This activity will, to the maximum extent practicable, avoid breeding areas for migratory birds. There are no known breeding areas for migratory birds within the proposed activity area.

Shellfish Beds

There are no known shellfish beds on the subject property.

Suitable Material

Fill material will consist of ½" clean washed gravel obtained from a local quarry. Temporary fill for the earthen dams will be obtained from on site upland soils. No unsuitable fill materials (i.e. trash, debris, car bodies, broken concrete, asphalt, or pollutants of any sort) will be used as fill material.

Water Supply Intakes

This project is not in proximity of a public water supply intake.

Adverse Effects from Impoundments



This project will not involve creating any impoundments of water.

Management of Water Flows

The water flowing in the South Fork of Texas Creek will be temporarily diverted into flexible plastic pipe while the soils in the creek are excavated and the gravel and liner is placed in the excavation. Water flows will be returned to the creek after the vegetative topsoil layer is placed back in the creek.

Fills Within 100-Year Floodplains

The project site is located within the 100-year floodplain. The activity will comply with the applicable FEMA-approved local floodplain management requirements. The La Plata County codes for floodplain management primarily address construction of structures within the flood plain. No structures will be constructed as part of this activity. Additionally, this activity will return the creek to its original elevation and will not alter the flood level.

Equipment

Heavy equipment working in wetlands or mudflats will be placed on mats or other measures will be implemented to minimize soil disturbance. Equipment working below the ordinary high water mark (OHWM) will not have the undercarriage of the equipment contact the flowing water. For further information, see the section in this PCN discussing soil erosion and sediment controls.

Soil Erosion and Sediment Controls

Appropriate soil erosion and sediment controls will be used and maintained in effective operation condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark, will be permanently stabilized at the earliest practicable date. Soils replaced in the creek will be from the vegetated material removed from the creek. Additional *phalaris arundinacea* cuttings will be planted in the creek as necessary to ensure permanent stabilization as soon as possible.

Removal of Temporary Fills

Temporary fill will include the earthen berms constructed across Texas Creek to divert flows into and out from the temporary culvert. Temporary fills will be removed in their entirety and the affected areas will be returned to pre-construction elevations. The areas impacted by the temporary fill will be revegetated and monitored to ensure recovery to pre-construction condition.

Proper Maintenance

The permanent fill will be approximately 20 to 32 inches below the ground surface, and below the bed of the creek. The impermeable liner will be placed 20 to 32 inches below the bottom of the creek bed. There is no anticipated maintenance associated with this structure. Additionally, there is no public access to the project area.

Wild and Scenic Rivers

This activity will occur in and adjacent to the South Fork of Texas Creek, that discharges to the Pine River. The Pine River is not a component of the National Wild and Scenic River System, and is not a river designated by Congress as a “study river” for possible inclusion in the system.

Tribal Rights

This activity or its operation will not impair any reserved tribal rights, including, but not limited to, reserved water rights or treaty hunting and fishing rights.

Endangered Species

The project area does not contain any critical habitat for any threatened or endangered species. Implementation of this project will not result in any “takes” of any threatened or endangered species. There will be no impact to any threatened or endangered species or designated critical habitat due to completion of this project.

Historic Properties

A limited cultural resource survey was conducted by Stratified Environmental and Archaeological Consultants, LLC. There are no historic or prehistoric structures, buildings or other objects remaining in the project area that are eligible for inclusion in the National Register of Historic Places. A copy of the survey can be found in the attachments.

Designated Critical Resource Waters

This activity will occur in and adjacent to the South Fork of the Texas Creek, that discharges to the Pine River. The Pine River is not a Critical Resource Waters in the State of Colorado. Additionally, the Pine River is not considered important spawning water or a “Wild Trout Water” by the State of Colorado.

Mitigation

Mitigation is not required since there are no permanent impacts to waters of the U.S. The project area will be monitored annually for a minimum of three years to ensure that the vegetation, hydrology, and soils in the project area return to their current condition, or improve. The project area will be visited and the wetlands and OHWM will be delineated annually to verify there is no net loss of wetlands. If a loss of wetlands is observed, the USACE will be notified and the appropriate actions will be taken to restore the project area to 0.021 acres of palustrine emergent

wetlands and 0.025 acres below the ordinary high water mark. Monitoring reports will be submitted annually to the USACE on or before December 1 of each year.

Water Quality

Under the Colorado 401 Certification Regulation, all nationwide permits are certified by statute and do not require a certification by the Colorado Department of Public Health and Environment Water Quality Control Division (WQCD). Applicants for nationwide permits do not need to submit any information or documents to the WQCD.

Coastal Zone Management

This project is not located in a coastal state; therefore, coastal zone management requirements do not apply to this project.

Regional and Case-by-Case Conditions

This activity will comply with regional conditions added by the USACE Division Engineer as discussed in this PCN (see section below on Regional Conditions). It will also comply with any and all case specific conditions added by the USACE. There are no specific conditions added by the Colorado WQCD in its Section 401 Water Quality Certification; and Colorado is not a coastal state and does not have a Coastal Zone Management Act.

Use of Multiple Nationwide Permits

There are two NWP for this project: NWP 18 and NWP 33. NWP 18 is for the minor discharge of the ½" clean washed gravel to Waters of the US below the bottom of the creek bed. NWP 33 authorizes temporary structures for construction sites. This permit is necessary to construct the earthen berm across Texas Creek and the diversion pipe to divert flows from Texas Creek around the impact area.

Transfer of Nationwide Permit Verifications

If the permittee sells the property associated with this NWP Verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the USACE Durango Regulatory Field Office to validate the transfer. A copy of the NWP verification will be attached to the letter and the letter will contain the following statement and the appropriate signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

Compliance Certification

If/when the permittee receives a NWP verification from the USACE, the permittee agrees to submit a signed certification regarding the completed work and any required mitigation. The certification form will be forwarded by the USACE with the NWP verification letter and will include:

- A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;
- A statement that any required mitigation was completed in accordance with the permit conditions; and
- The signature of the permittee certifying the completion of the work and mitigation.

Single and Complete Project

This activity is a complete and single project. The same NWP will not be used more than once for this project.

REGIONAL CONDITIONS – COLORADO ONLY

Temporary Fill

Temporary fill for the earthen berms will be obtained from on site soils. No unsuitable fill materials (i.e. trash, debris, car bodies, broken concrete, asphalt, or pollutants of any sort) will be used as fill material. Temporary fill will include the earthen berms constructed across Texas Creek to divert flows into and out from the temporary culvert. Temporary fills will be removed in their entirety and the affected areas will be returned to pre-construction elevations. The areas impacted by the temporary fill will be revegetated and monitored to ensure recovery to pre-construction condition.

Spawning Areas

This activity will, to the maximum extent practicable, avoid spawning season in spawning areas. There are no known spawning areas in the South Fork of Texas Creek. Additionally, the South Fork of Texas Creek is not considered a Designated Critical Resource Water (i.e. an important spawning area).

Suitable Fill

Permanent fill material will consist of ½" clean washed gravel. Temporary fill for the earthen dams will be obtained from on site upland soils. No unsuitable fill materials (i.e. trash, debris, car bodies, broken concrete, asphalt, or pollutants of any sort) will be used as fill material. Temporary fill will include the earthen berms constructed across Texas Creek to divert flows into

and out from the temporary PVC culvert. Temporary fills will be removed in their entirety and the affected areas will be returned to pre-construction elevations. The areas impacted by the temporary fill will be revegetated and monitored to ensure recovery to pre-construction condition.

Invasive Aquatic Species

If the equipment to be utilized during the grading activities at the SFTC site was utilized in another stream, river, lake, pond, or wetland within 10 days of initiating work at the SFTC Site, then all of the equipment will undergo the following procedures to prevent the spread of invasive aquatic species:

- All mud and debris will be removed from all of the equipment (buckets, teeth, tracks etc).
- The equipment will be sprayed with at either a 1:1 solution of Formula 409 household cleaner and water or with water at a temperature greater than 120°F for a minimum of 10 minutes.
- Alternately, after all mud and debris has been removed from the equipment, the equipment can be kept dry for 10 days prior to use in any waters of the U.S.

Fens and Springs

There are no known fens or springs at the SFTC site or in the project area.

Fema/Floodplain Map

A copy of the FEMA/locally approved floodplain map can be found attached to this document.

WETLANDS DELINEATION

This wetland delineation report has been prepared and meets those minimum standards for acceptance of preliminary wetland delineations, as specified in the November 30, 2001 document prepared by the U.S. Army Corps of Engineers, Sacramento District.

Statement of Delineation Performance

This wetland delineation has been conducted in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, September 2008 and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Regions*, April 2008. Both regional supplements are designed to be used with the 1987 *Corps of Engineers Wetlands Delineation Manual*. Where differences occur, the regional supplements take precedence over the 1987 Manual for applications at the project site.

Narrative Describing the Wetland

The project area is located adjacent to the South Fork of Texas Creek (SFTC), north of Bayfield, Colorado. In the project area, the Cretaceous Age Fruitland Formation is exposed at and just below the surface of the ground. The Fruitland Formation contains beds of coal which produce methane. Natural methane seepage occurs in the general vicinity of the Fruitland Formation outcrop. In the project area, the seepage occurs in the vicinity of the South Fork of Texas Creek. The methane can potentially seep into groundwater and wells and can also create an explosive condition if it accumulates in a structure. The gas also negatively impacts vegetation, killing trees, grass, and bushes, and decreasing available wildlife habitats.

LT Environmental, Inc. (LTE) has been retained by the Colorado Oil and Gas Conservation Commission (COGCC) to investigate these methane seeps and evaluate the feasibility of capturing this methane for energy production. This project is known as the 4M methane mitigation project. The objective of the 4M methane mitigation project is to demonstrate the economical and technical viability to recover and use the uncontrolled methane along the Fruitland Outcrop. Additional project objectives are to operate while helping protect the environment, including reducing carbon emissions and improving plant growth.

In November of 2008, LTE installed a methane collection system, consisting of a series of horizontal slotted pipes laid approximately 12 inches below the ground surface, bedded in six inches of gravel, and then covered with a 15-mil impervious membrane. On top of the vapor barrier, the area was backfilled with native soils and reseeded with a native seed mix (the specifications of the native seed mix is not known).

The impervious membrane prevents vapor migration upward through the soil to the atmosphere. The methane travels through the pipes to a mitigation system where the gas is compressed to generate power. The generated power is used to run the mitigation system and any excess power is input back onto the power grid. An attached figure depicts the layout of the methane collection system.

Due to this persistent off-gassing of methane and the recent installation of the underground piping for the methane collection system; much of the vegetation in the area is impaired or dead. While it appears some vegetation is becoming re-established; overall vegetation in the areas of the underground collection system is sparse. Additionally, it appears that the impermeable membrane is causing infiltrating precipitation and snowmelt to pond on top of it, creating artificially saturated conditions observed especially during the spring thaw.

The wetland delineated during this project is a palustrine emergent wetland lying adjacent to the South Fork of Texas Creek. Additionally, the ordinary high water mark (OHWM) of the South Fork of Texas Creek was delineated in the project area.



Justification for the Wetland Boundaries

Soils were evaluated by digging 6 pits. Soils from each pit were described for depth, moist color, redox features, and texture. Soil matrix and redox features were described using the Munsell Soil Color Chart. Additionally, observed hydric soil indicators were also noted on the forms. All of these features were evaluated together to determine whether hydric soils were present or not.

Vegetation was evaluated in an approximate 3 foot by 3 foot area around each pit. Vegetation name and percent cover was noted on the delineation forms. The dominance test, prevalence index, and hydrophytic vegetation indicators were noted on the form as necessary in order to determine whether hydrophytic vegetation was present or not. Vegetation in portions of the property was problematic due to impacts from methane and impacts from installation of the methane collection system.

Lastly, indicators of wetland hydrology were evaluated. The hydrology is somewhat problematic in areas where the 15-mil impervious membrane exists. This is because the impervious membrane causes infiltrating snowmelt and precipitation to pond on top of the membrane and not infiltrate, which causes the soils to be saturated and a “water table” to be visible in the pits; however, this is not the true water table.

Based on evaluation of the vegetation, soils, and hydrology at the 6 pit locations, the remainder of the site was visually surveyed and pin flags were placed in the ground to demark the wetland/upland boundary. Pit 4 was the only pit excavated in an area where the impervious membrane is present. In areas where the impervious membrane is present, vegetation was sparse and saturated conditions existed solely due to the presence of the impervious membrane. These areas were not considered wetlands currently due to the artificial nature of the saturated soils and lack of hydric soil indicators. It is possible that these soils may become hydric and hydrophytic vegetation may develop here in the future. The seasonal effect of the impervious membrane on the degree of saturation of soils is not yet known.

Total Acreage of the Project Site

The total area of wetlands to be impacted is summarized in the table below:

Description / Type	Acreage
Palustrine Emergent	0.021
Ordinary High Water Mark	0.025

Existing Field Conditions

The existing field conditions are impacted due to the methane seeps and related mitigation system in the project area. The delineation was conducted on April 21, 2010. The site was free of snow, and Texas Creek was at or near its ordinary high water flows. The presence of the impermeable membrane, as part of the methane collection system, allows water to pond on top of

it, creating saturated soils due to infiltration of snowmelt where previously no saturated soils likely existed. This was observed both in a series of pits dug perpendicular to the creek at the location of Pit 4 and on the east side of the creek where the impermeable membrane ends and escaping methane in saturated soils was observed (see photos).

Hydrology Source Discussion

The primary source of hydrology for the wetland is the creek. Infiltrating precipitation and snowmelt ponding on the impermeable membrane in the soils is a secondary and minor, anthropogenic source of hydrology.

Site Location Map

A site location map can be found in the attachments.

Directions to the Site

From Durango, drive east on U.S. Highway 160 to La Plata County Road (CR) 501. Drive north on CR 501 to CR 245. Turn left on CR 245 to CR 502. Turn left on CR 502. The site is approximately 1 mile from the intersection of CR 245 / CR 502. Look for a green shed (houses the methane processing equipment) on the left side of the road with a sparsely vegetated field adjacent to it.

Contact Information for Applicant and Property Owner

Applicant:	Colorado Oil and Gas Conservation Commission
Mailing Address:	Attn: Ms. Karen Spray P.O. Box 2651 Durango, Colorado 81302-2651
Site Address:	12230 County Road 502 Bayfield, Colorado 81122
Contact Name:	Julie Linn, RG LT Environmental, Inc. 2243 Main Avenue, Suite 3 Durango, Colorado 81301
Contact Phone:	(970) 385-1096
Contact email:	jlinn@ltenv.com
T/R/S:	T 35 N / R7 W / Section 8 / NE ¼ of the SE ¼

#



County: La Plata

Parcel #: 5675-084-00-263

Discussion of Plant Communities and Habitat Types Present On Site and List Of Scientific Name, Common Name, and Indicator Status of All Plants

Scientific Name	Common Name	R8 Indicator Status	Comments
<i>Bromus inermis</i>	Smooth Brome	None	Only in uplands
<i>Cynoglossum officinale</i>	Houndstongue	None	Noxious Weed
<i>Onopordum acanthium</i>	Scotch Thistle	None	Noxious Weed
<i>Centaurea maculosa</i>	Spotted knapweed	None	Noxious Weed
<i>Carduus nutans</i>	Musk Thistle	None	Noxious Weed
<i>Cirsium arvense</i>	Canada thistle	None	Noxious Weed
<i>Juncus Balticus</i>	Arctic Rush	FACW	Very few plants
<i>Trifolium repens</i>	White clover	FACU	Only in uplands
<i>Salix discolor</i>	Pussy willow	R9 FACW	Only in Creek
<i>Phalaris arundinacea</i>	Reed canarygrass	OBL	Primary Wetland Indicator Plant

Soil Descriptions, Soil Map, and List of Hydric Soils or Soils With Hydric Inclusions on the Site

Based on the NRCS Web Soil Survey, soils in the project area are the Hesperus Loam, 3 to 12 percent slopes. This soil is a loam to clay/silty loam. It is rated as a hydric soil. The soil map and soil description from the NRCS Soil Survey can be found in the attachments.

Any Observed and/or Documented Examples of an Interstate or Foreign Commerce Connection

There are no observed or documented examples of interstate or foreign commerce connection for this project.

Delineation Map

Pin flags were placed at the wetland/upland boundary in addition to the ordinary high water mark. The flags were labeled with a “W” for wetland / upland boundary and “OHWM” to depict the ordinary high water mark. Each subset of flags was consecutively numbered. The wetland flags, the OHWM flags, and the pits were located with a Trimble GeoXT 2005 Series sub-meter global positioning system (GPS). This data was downloaded into ArcView GIS and utilized to create the wetland delineation map and the OHWM map. The wetland delineation map and the OHWM map can be found in the attachments.



Data Sheets

The data sheets can be found in the attachments.

Paired Data Points Documented for Each Feature or Complex

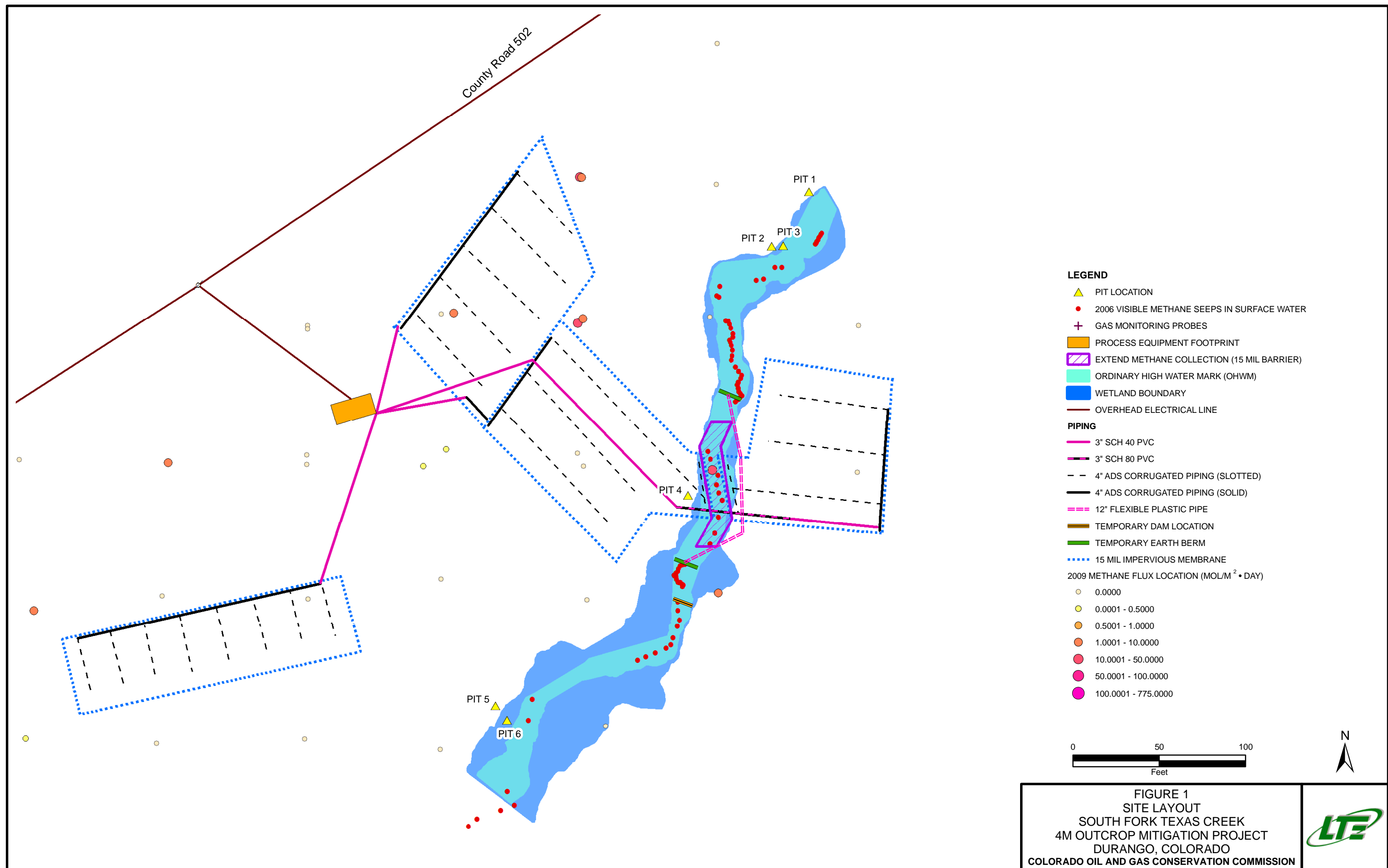
Data points were paired for the purpose of delineating wetland/upland boundaries. After hydric/upland soils were identified, topography and vegetative patterns were used as a guide to determine wetland/upland boundary. Additional data points and pits were dug to verify the wetland/upland boundary. Dominant species were recorded at each data point.

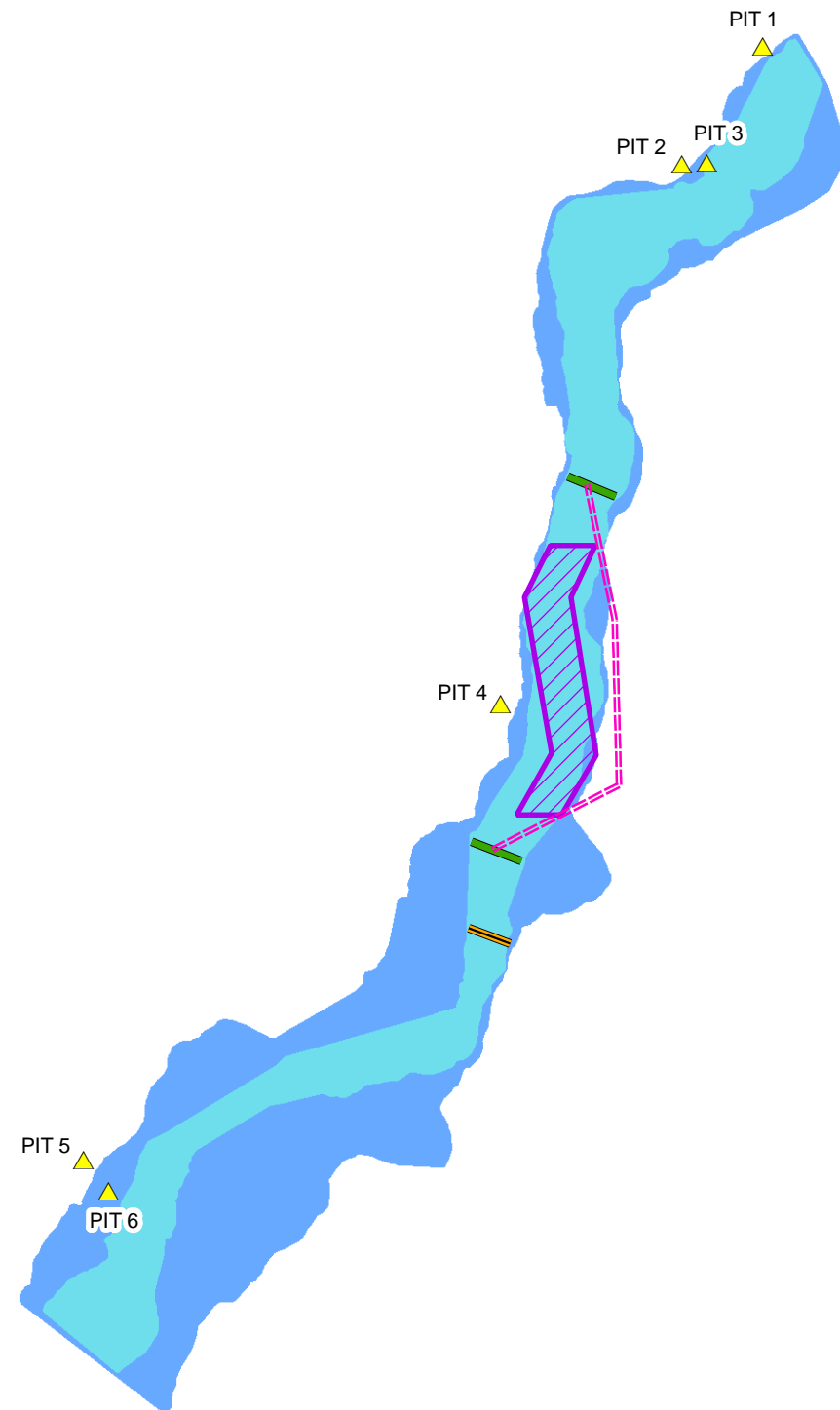
Photographs

Photographs of the site can be found in the attachments.



FIGURES





LEGEND

- ▲ PIT LOCATION
- ORDINARY HIGH WATER MARK (OHWM)
- WETLAND BOUNDARY
- ▨ EXTEND METHANE COLLECTION (15 MIL BARRIER)
- 12" FLEXIBLE PLASTIC PIPE
- TEMPORARY DAM LOCATION
- TEMPORARY EARTH BERM

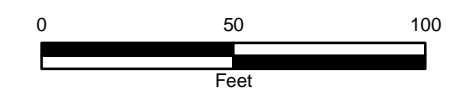
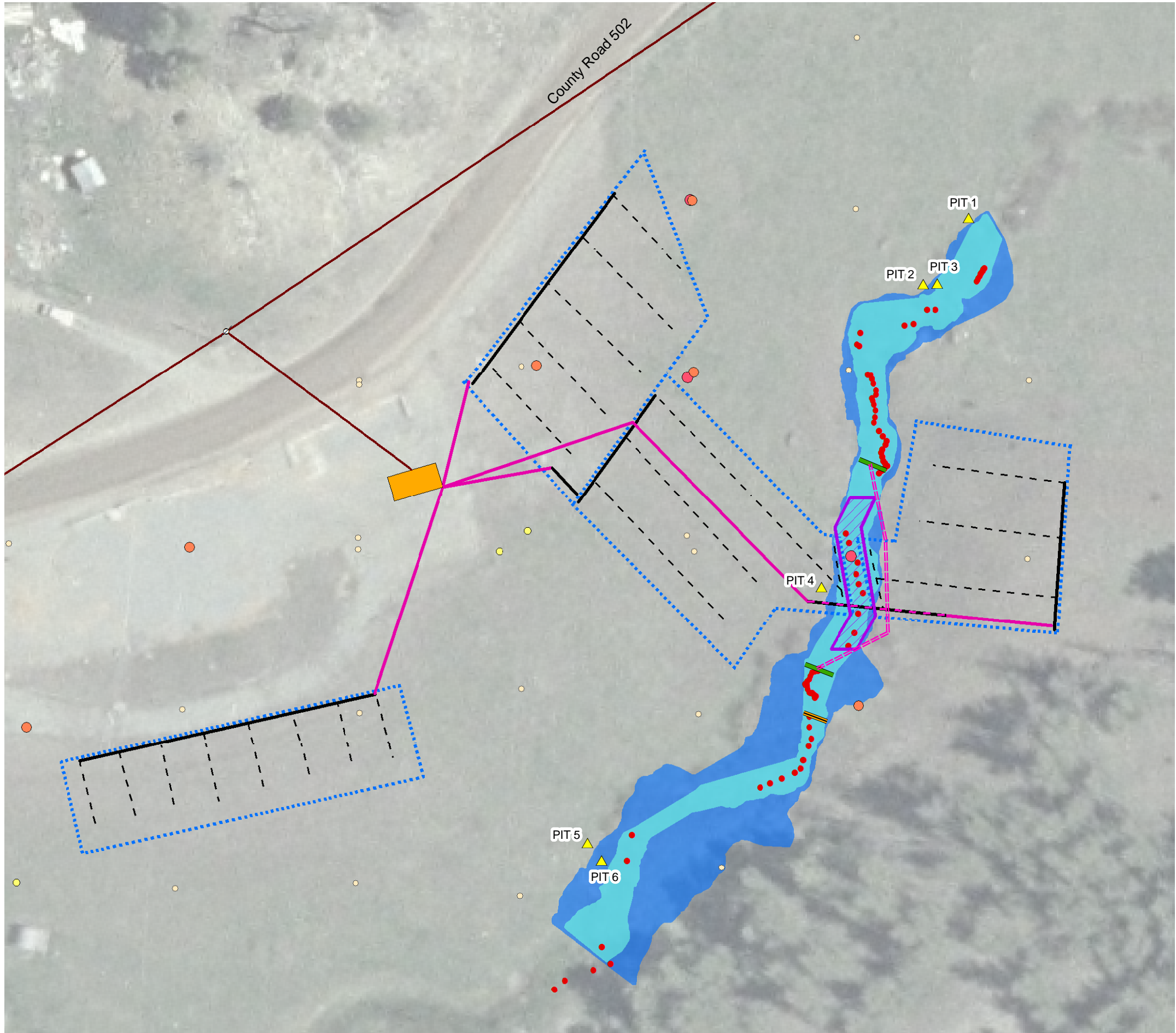


FIGURE 1
SITE LAYOUT
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
DURANGO, COLORADO
COLORADO OIL AND GAS CONSERVATION COMMISSION





LEGEND

- PIT LOCATION
- 2006 VISIBLE METHANE SEEPS IN SURFACE WATER
- GAS MONITORING PROBES
- PROCESS EQUIPMENT FOOTPRINT
- EXTEND METHANE COLLECTION (15 MIL BARRIER)
- ORDINARY HIGH WATER MARK (OHWM)
- WETLAND BOUNDARY
- OVERHEAD ELECTRICAL LINE

PIPING

- 3" SCH 40 PVC
- 3" SCH 80 PVC
- 4" ADS CORRUGATED PIPING (SLOTTED)
- 4" ADS CORRUGATED PIPING (SOLID)
- 12" FLEXIBLE PLASTIC PIPE
- TEMPORARY DAM LOCATION
- TEMPORARY EARTH BERM
- 15 MIL IMPERVIOUS MEMBRANE

2009 METHANE FLUX LOCATION (MOL/M² • DAY)

- 0.0000
- 0.0001 - 0.5000
- 0.5001 - 1.0000
- 1.0001 - 10.0000
- 10.0001 - 50.0000
- 50.0001 - 100.0000
- 100.0001 - 775.0000

IMAGE COURTESY OF LA PLATA COUNTY, 2007

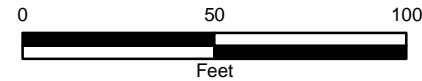



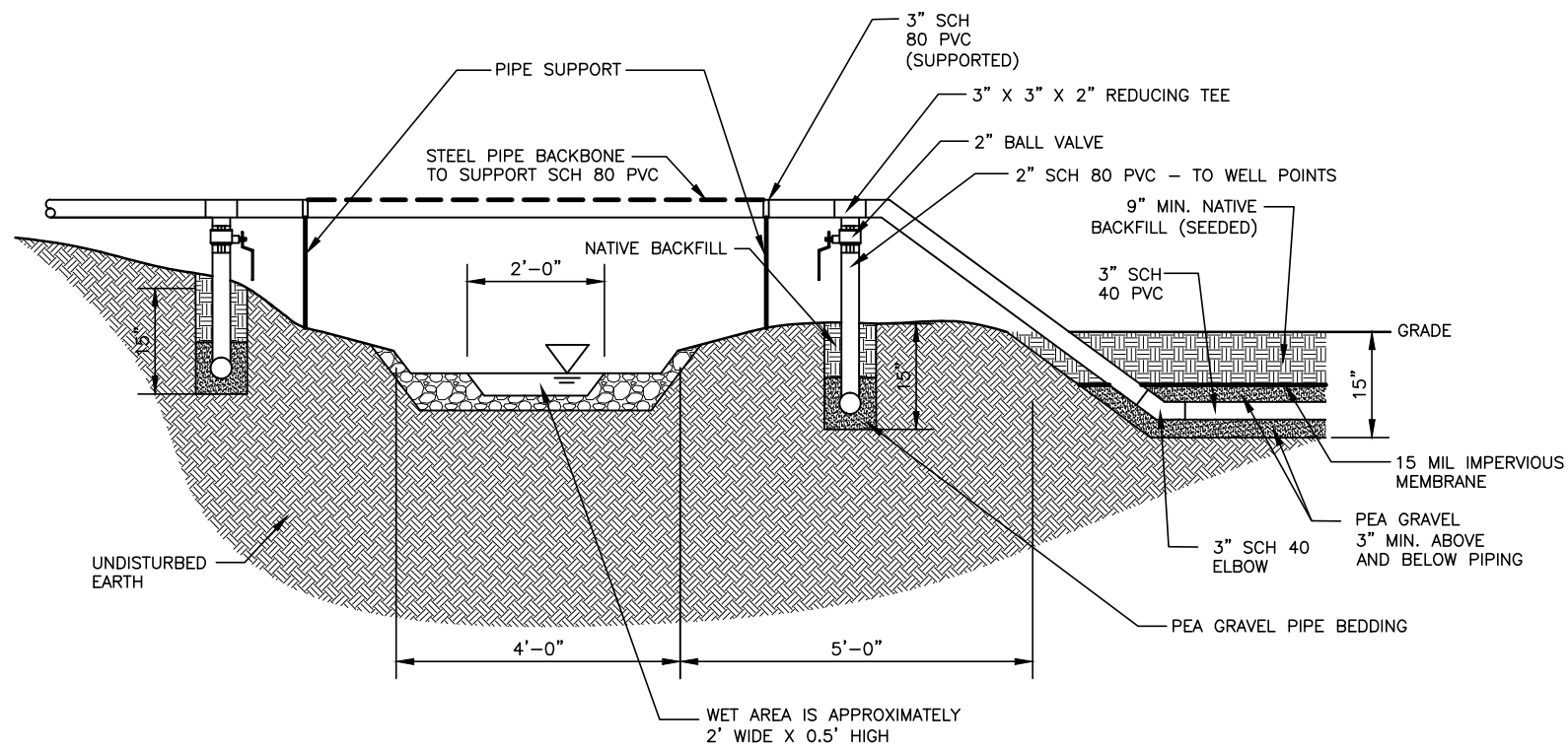
FIGURE 1
SITE LAYOUT
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
DURANGO, COLORADO
COLORADO OIL AND GAS CONSERVATION COMMISSION



PROJECT LOCATION: LA PLATA COUNTY, COLORADO		PROJECT NO. OGCC1001	
CLIENT: COLORADO OIL AND GAS CONSERVATION COMMISSION		REV NO. C	DWG NO. C112




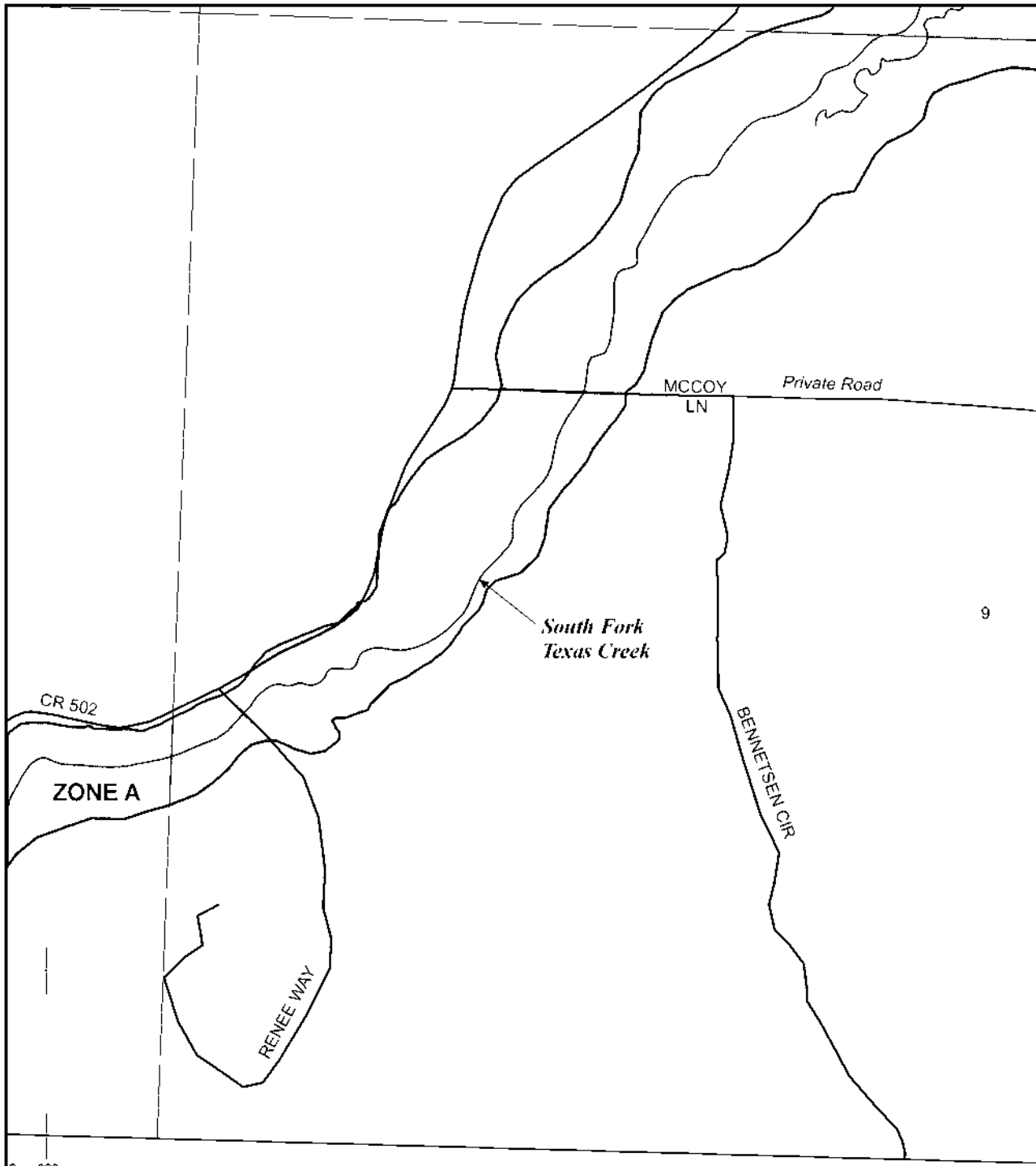
REVISIONS					DRAWING INFORMATION			BY		DATE		<div><p>LT Environmental, Inc. Denver, Colorado</p><p>Compliance • Engineering • Remediation</p></div>		VAPOR BARRIER INSTALLATION AT CREEK CROSSING SOUTH FORK TEXAS CREEK 4M OUTCROP MITIGATION PROJECT LA PLATA COUNTY, COLORADO			
					DESIGNED			CES		4/22/10							
					DRAWN			GVM		4/22/10							
					CHECKED			CES		4/22/10				PROJECT LOCATION: LA PLATA COUNTY, COLORADO CLIENT: COLORADO OIL AND GAS CONSERVATION COMMISSION PROJECT NO. OGCC1001 REV NO. C DWG NO. C114			
					REVIEWED			—		—							
					APPROVED			—		—							
					FILE: OGCC1001\C114												
					SCALE: AS SHOWN												
A PRELIMINARY DESIGN					CES			CES			4/22/10						
NO. DESCRIPTION					BY			APPROVED			DATE						



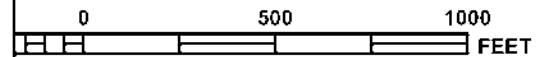
1
C118

HEADER PIPING AT CREEK CROSSING
SCALE: NOT TO SCALE

REVISIONS					<div><div>DRAWING INFORMATION</div><table><tr><td>DESIGNED</td><td>CES</td><td>4/22/10</td></tr><tr><td>DRAWN</td><td>GVM</td><td>4/22/10</td></tr><tr><td>CHECKED</td><td>CES</td><td>4/22/10</td></tr><tr><td>REVIEWED</td><td>—</td><td>—</td></tr><tr><td>APPROVED</td><td>—</td><td>—</td></tr></table><div>FILE: OGCC1001\C101</div><div>SCALE: AS SHOWN</div></div>	DESIGNED	CES	4/22/10	DRAWN	GVM	4/22/10	CHECKED	CES	4/22/10	REVIEWED	—	—	APPROVED	—	—	<div><div><div>LT Environmental, Inc. Denver, Colorado</div><div>Compliance • Engineering • Remediation</div></div></div>	HEADER PIPING AT CREEK CROSSING SOUTH FORK TEXAS CREEK 4M OUTCROP MITIGATION PROJECT LA PLATA COUNTY, COLORADO		
DESIGNED	CES	4/22/10																						
DRAWN	GVM	4/22/10																						
CHECKED	CES	4/22/10																						
REVIEWED	—	—																						
APPROVED	—	—																						
						PROJECT LOCATION: LA PLATA COUNTY, COLORADO		PROJECT NO. OGCC1001																
						CLIENT:		REV NO.	DWG NO.															
						COLORADO OIL AND GAS CONSERVATION COMMISSION		C	C118															
A	PRELIMINARY DESIGN				CES	CES	4/22/10																	
NO.	DESCRIPTION				BY	APPROVED	DATE																	



MAP SCALE 1" = 500'



PANEL 0534F

FIRM

FLOOD INSURANCE RATE MAP
LA PLATA COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 0534 OF 1025

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
LA PLATA COUNTY	380297	0534	F

Notice to Users: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
08067C0534F

EFFECTIVE DATE:
AUGUST 19, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

PHOTOGRAPHS



Photo 1: Pit 1, uplands



Photo 2: Pit 2, uplands



Photo 3: Pit 3, wetlands, note gleyed soils removed from lower portion of pit



Photo 4: Pit 2 (foreground) in uplands and Pit 3 (near creek) in palustrine emergent wetland on edge of creek. Wetland boundary next to Pit 3.



Photo 5: Pit 4, note water in pit ponding on top of impermeable liner



Photo 6: View of exploratory pits excavated perpendicular to creek. Arrow points to Pit 4; view is to the east. Pipeline across creek is visible in photo for reference. All pits encountered the impermeable liner at depths ranging from approximately 9 inches to 16 inches.



Photo 7: Pit 5 in uplands



Photo 8: Pit 6 in palustrine emergent wetlands adjacent to creek. *Phalaris arundinacea* is dominant wetland indicator species.



Photo 9: Pit 5 (in foreground) in uplands and Pit 6 in wetlands relative to creek. Note *Salix discolor* along creek.



Photo 10: Area proposed to have 15-mil impermeable liner installed beneath creek bed. View is to the south.



Photo 11: View of oxidized iron in palustrine emergent wetland soils adjacent to creek. Note *Phalaris arundinacea* plants emerging.



Photo 12: View of east side of creek where liner was installed in November 2008. View is to the north.



Photo 13: View of east side of the creek where liner was installed in November 2008. View is to the south.



Photo 14: View of methane bubbling from creek. View is to the northeast. This is the area proposed to have the liner installed beneath the creek.



Photo 15: View of methane bubbling from creek. This is the area proposed to install the liner.

WETLAND DELINEATION FORMS

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: LaPlata Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: Pit 1
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N R7W Selt 8 SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 45%
 Subregion (LRR): E Lat: 37°18'55.13"N Long: 107°39'08.34" Datum: NAD83
 Soil Map Unit Name: Hesperus loam, 3 to 12% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X Soil _____ or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>		
Wetland Hydrology Present?	Yes _____ No <u>X</u>		
Remarks:			

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>3' x 3'</u>)				
1. <u>Salix discolor</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
2. _____				
3. _____				
_____ = Total Cover				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>3' x 3'</u>)				
1. <u>Cynoglossum officinale</u>	<u>5</u>	<u>N</u>	<u>NONE</u>	
2. <u>Centaurea maculosa</u>	<u>5</u>	<u>N</u>	<u>NONE</u>	
3. <u>Brassica inermis</u>	<u>85</u>	<u>Y</u>	<u>NONE</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: <u>willows (Salix discolor) in creek & on creekbank only</u>				

Sampling Point: Pit 1

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: none
Depth (inches): _____

Hydric Soil Present? Yes No **X**

Remarks:

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

- Field Observations:**

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Pit approximately 5' from creek bank

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: La Plata Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: P.T. 2
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N, R7W, Sect. 8, SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 5.8
 Subregion (LRR): E Lat: 37°18'55.13"N Long: 107°39'08.34"W Datum: WGS84
 Soil Map Unit Name: Hesperus Loam, 3 to 12% Slopes NWI classification: UNKNOWN
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks:

Vegetation impacted by naturally occurring methane seeps

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>3' x 3'</u>) 1. <u>Bromus inermis</u> <u>30</u> <u>Y</u> <u>NONE</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>70</u> _____ = Total Cover				
Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: <u>Pit approximately 5' from creek</u>				

Sampling Point: Pit 2

[illegible]

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic

Hydric Soil Present? Yes _____ No X

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Western Mountains, Valleys, and Coast – Interim Version

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: Lapla Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: Pit 3
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N R7W Sect 8 SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 5%
 Subregion (LRR): E Lat: 37° 18' 55.13" N Long: 107° 39' 08.34" W Datum: NAD 83
 Soil Map Unit Name: Hesperus loam, 3 to 12 percent slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>Vegetation impacted by naturally occurring methane seeps</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>3' x 3'</u>)				
1. <u>Salix discolor</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>3' x 3'</u>)				
1. <u>Phalaris arundinacea</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>80</u>				
Remarks: <u>Pit approximately 1' from Creek</u>				

SOIL

Sampling Point: Pit 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-5	Gley 2.5/N	80	7.5YR 4/3	20	C	M	loam	
5-14	Gley 2.5/N	100	none				loam	saturated

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) | |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input checked="" type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input checked="" type="checkbox"/> | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☒ No ☐ Depth (inches): 8Saturation Present? Yes ☒ No ☐ Depth (inches): 5

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DI may be due to methane seepage
 Pit is ~1' from Creek
 CH₄ (methane) visible bubbling in vicinity of Pit

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: La Plata Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: Pit #4
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N R7W Sect 8 SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): ≤ 5%
 Subregion (LRR): E Lat: 37° 18' 55.13" N Long: 107° 39' 08.34" W Datum: WGS 84
 Soil Map Unit Name: Hesperus loam 3 to 12% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: <u>See notes in Hydrology section regarding impermeable membrane vegetation impacted by naturally occurring methane seeps</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Bromus inermis</u>	<u>5</u>		<u>NONE</u>	
2. <u>Dead vegetation - unidentifiable</u>	<u>15</u>			
3. <u>Mixed</u>				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>80</u>				
Remarks: _____				

SOIL

Sampling Point: Pit 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-4	10YR 3/1	100	None				loam	wet
4-9	10YR 3/1	100	None				loam	saturated

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

- ☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 15mil impermeable membrane
 Depth (inches): 9

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): 8
 Water Table Present? Yes ☒ No ☐ Depth (inches): 4
 Saturation Present? Yes ☒ No ☐ Depth (inches): 4
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

15 mil impermeable membrane is restricting infiltration & water is ponding on top of membrane causing saturated conditions that may not occur under normal conditions.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: La Plata Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: Pit 5
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N R7N Sect 8 SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 15%
 Subregion (LRR): E Lat: 37° 18' 55.13" N Long: 107° 08' 39" W Datum: NAD83
 Soil Map Unit Name: Hesperus loam, 3 to 12 percent slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X Soil _____ or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation X Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>3' x 3'</u>) 1. <u>Bromus inermis</u> <u>95</u> <u>Y</u> <u>none</u> 2. <u>Cirsium nutans</u> <u>5</u> <u>N</u> <u>none</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> _____ = Total Cover				
Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: <u>Pit 5 approximately 10' from creek</u>				

SOIL

Sampling Point: Pit 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	7.5 YR 2.5/1	100	none				loam	loos, slightly damp
3-16	7.5 YR 2.5/1	100	none				loam	dry

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Fork Texas Creek City/County: LaPlata Sampling Date: 4-21-2010
 Applicant/Owner: COGCC State: CO Sampling Point: Pit 6
 Investigator(s): J. Linn, LTE Section, Township, Range: T35N R7W Sect. 8 SE 1/4
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 5.8
 Subregion (LRR): E Lat: 37° 18' 55.13"N Long: 107° 39' 08.34"W Datum: WGS84
 Soil Map Unit Name: Hesperus loam 3 to 12 percent slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>3' x 3'</u>) 1. <u>Phalaris arundinacea</u> <u>100</u> <u>Y</u> <u>OBL</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks:				

SOIL

Sampling Point: Pit 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-6	Gley 1 2.5/N	95	2.5YR 4/8	5	C	PL	Loam	Roots
6-14	Gley 1 3/N	85	2.5YR 4/8	15	C	M	Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☒ No ☐ Depth (inches): 6 rising to 2

Saturation Present? Yes ☒ No ☐ Depth (inches): 18 2

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DEPARTMENT OF THE ARMY PERMIT



APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 0710-003
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Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, Searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States; the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

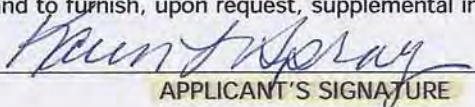
1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME Colorado Oil and Gas Conservation Commission	8. AUTHORIZED AGENT'S NAME & TITLE (an agent is not required) Julie Linn, RG; Project Geologist
6. APPLICANT'S ADDRESS P.O. Box 2651 Durango, CO 81302-2651	9. AGENT'S ADDRESS LT Environmental, Inc. 2243 N. Main; Suite #3, Durango, CO 81301
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business 970-259-1619	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business 970-385-1096

STATEMENT OF AUTHORIZATION

11. I hereby authorize LT Environmental, Inc. to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.


 APPLICANT'S SIGNATURE

May 5, 2010
 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) South Fork Texas Creek 4M Outcrop Mitigation Project	
13. NAME OF WATERBODY, IF KNOWN (if applicable) South Fork of Texas Creek	14. PROJECT STREET ADDRESS (if applicable) 12230 County Road 502 Bayfield, CO 81122
15. LOCATION OF PROJECT <div style="display: flex; justify-content: space-around; margin-top: 10px;"> La Plata COUNTY CO STATE </div>	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) T 35 N, R 7 W, Section 8, NE1/4 of the SE 1/4; La Plata County Parcel # 5675-084-00-263	
17. DIRECTIONS TO THE SITE From Durango, drive east on U.S. Highway 160 to La Plata County Road (CR) 501. Drive north on CR 501 to CR 245. Turn left on CR 245 to CR 502. Turn left on CR 502. The site is approximately 1 mile from the intersection of CR 245 / CR 502. Look for a green shed (houses the methane processing equipment) on the left side of the road with a sparsely vegetated field adjacent to it.	

18. NATURE OF ACTIVITY (Description of project, include all features)

Construct 2 berms, divert water into a 12 in. flexible culvert around a 119 foot stretch of the South Fork of Texas Creek, remove upland top soil, remove the top 6-8 inches of vegetation and roots from the bed of the creek and segregate, remove the hydric soils beneath the vegetated layer of the creek to a depth of approximately 30 inches, place 12 inches of 1/2" clean washed gravel in excavation with 15 mil impermeable membrane on top, replace soils, replace veg. layer, restore flow

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

Collect methane currently seeping into the creek and escaping into the atmosphere. Collected methane will be used to run a turbine and generate power. Capturing methane will allow the impacted vegetation in the area to grow, reduce greenhouse gas emissions, decrease explosive hazard in the area, and generate power.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. REASON(S) FOR DISCHARGE

Install 1/2" gravel with an impermeable membrane on top. Methane seeping from the ground will flow into the existing methane collection system and will no longer escape to the atmosphere.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

1/2 inch clean washed gravel; 12 cubic yards (permanent)
upland soils for earthen berms, .33 cubic yards (temporary)

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instructions)

Permanent: 0.018 acres of waters of the US (below the ordinary high water mark)
Permanent: 0.001 acres of palustrine emergent wetlands

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES ☐ NO ☒ IF YES, DESCRIBE THE WORK

24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC. WHOSE PROPERTY ADJOINS THE WATERBODY (If more than can be entered here, please attach a supplemental list)

Clarence Walker, Texas Creek Ranch Lot 13, Bayfield, CO
Gregory Sarafin, 12229 CR 502, Bayfield, CO
Thomas Trimberger, 12200 CR 502, Bayfield, CO
Richard Kurtz, 127 Renee Way, Bayfield, CO

Victoria Deal & Timothy Yale, 12651 CR 502, Bayfield, CO
BP America

25. LIST OF OTHER CERTIFICATIONS OR APPROVALS/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
NONE					

* Would include but is not restricted to zoning, building and flood plain permits.

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

Instructions For Preparing A Department of the Army Permit Application

Blocks 1 thru 4 - To be completed by Corps of Engineers.

Block 5 - APPLICANT'S NAME. Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked "Block 5".

Block 6 - ADDRESS OF APPLICANT. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked "Block 6".

Block 7 - APPLICANT PHONE NUMBERS. Please provide the number where you can usually be reached during normal business hours.

Block 8 - AUTHORIZED AGENT'S NAME AND TITLE. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer or any other person or organization. Note: An agent is not required.

Blocks 9 and 10 - AGENT'S ADDRESS AND TELEPHONE NUMBER. Please provide the complete mailing address of the agent, along with the telephone number where he/she can be reached during normal business hours.

Block 11 - STATEMENT OF AUTHORIZATION. To be completed by applicant if an agent is to be employed.

Block 12 - PROPOSED PROJECT NAME OR TITLE. Please provide name identifying the proposed project (i.e., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center).

Block 13 - NAME OF WATERBODY. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14 - PROPOSED PROJECT STREET ADDRESS. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15 - LOCATION OF PROPOSED PROJECT. Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked "Block 15".

Block 16 - OTHER LOCATION DESCRIPTIONS. If available, provide the Section, Township, and Range of the site and/or the latitude and longitude. You may also provide a description of the proposed project location, such as lot numbers or tract numbers. You may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile down from the Highway 14 Bridge). If a large river or stream, include the river mile of the proposed project site, if known.

Block 17 - DIRECTIONS TO THE SITE. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

Block 18 - NATURE OF ACTIVITY. Describe the overall activity or project. Give approximate dimensions of structures such as wingwalls, dikes, (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked "Block 18".

Block 19 - PROPOSED PROJECT PURPOSE. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20 - REASONS FOR DISCHARGE. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Instructions For Preparing A Department of the Army Permit Application

Block 21 - TYPES OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS.

Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22 - SURFACE AREAS OF WETLANDS OR OTHER WATERS FILLED. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked "Block 22".

Block 23 - IS ANY PORTION OF THE WORK ALREADY COMPLETE? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization if possible.

Block 24 - NAMES AND ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, etc., WHOSE PROPERTY ADJOINS THE PROJECT SITE. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked "Block 24".

Block 25 - INFORMATION ABOUT APPROVALS OR DENIALS BY OTHER AGENCIES. You may need the approval of other Federal, State, or Local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 26 - SIGNATURE OF APPLICANT OR AGENT. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS - GENERAL INFORMATION

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View, or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on an 8.5 X 11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate and contain all necessary information.

CULTURAL RESOURCE SURVEY

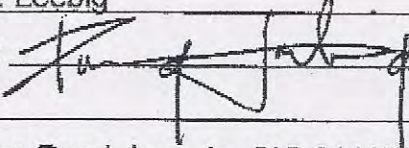


Colorado Historical Society - Office of Archaeology and Historic Preservation
COLORADO CULTURAL RESOURCE SURVEY
LIMITED-RESULTS CULTURAL RESOURCE SURVEY FORM
(Page 1 of 4)

OAHP 1420
Revised 9/98

This form (#1420) is for small scale limited results projects - block surveys less than 160 acres with linear surveys under four miles. Additionally, there should be no sites and a maximum of four Isolated Finds. This form must be typed.

I. IDENTIFICATION

1. Report Title (include County): An Intensive Cultural Resources Inventory of BP America's Proposed Project #OGCC 1001 to Install a Vapor Barrier System for Methane Collection Beneath the South Fork of Texas Creek in La Plata County, Colorado
2. Date of Field Work: April 23, 2010
3. Form completed by: Paula Fluder Date: May 5, 2010
4. Survey Organization/Agency: Stratified Environmental & Archaeological Services, LLC
Principal Investigator: Douglas E. Loebig
Principal Investigator's Signature: 
Other Crew: Doug Loebig
Address: 530 Cow Canyon Road, Ignacio, CO 81137
5. Lead Agency / Land Owner: Army Corps of Engineers/Private land owned by BP America
Contact: Karen Spray/Colorado Oil & Gas Conservation Commission (COGCC)
Address: P O Box 2651, Durango, CO 81302-2651
6. Client: LT Environmental, Inc., 2243 Main Ave, Suite 3, Durango, CO 81301
7. Permit Type and Number: State of Colorado Archaeological Permit 2009-38
8. Report / Contract Number: SEAS 10-020
9. Comments: _____

II. DESCRIPTION OF UNDERTAKING / PROJECT

10. Type of Undertaking: The cultural resource survey was conducted for an Army Corps of Engineers permit application under the Clean Water Act. LT Environmental proposes to install an additional vapor barrier system for methane collection beneath the bed of the South Fork of Texas Creek to augment the methane collection system

Limited-Results Archaeological Survey Form

(Page 2 of 4)

constructed in November of 2008. The proposed project consists of placement of a vapor barrier system along 100 ft of the creek in an area 20 ft wide. In addition, a temporary access is required measuring 70 ft long by 20 ft wide on previously disturbed and backfilled land between County Road 502 and the creek. A 50-foot wide buffer zone was also inventoried for cultural resources on both sides of the creek work area and the proposed temporary access road.

11. Size of Undertaking (acres): 0.08 Size of Project (if different) _____
12. Nature of the Anticipated Disturbance: Disturbance will consist of temporarily rerouting the creek to allow installation of a liner and gravel bedding. After excavation of 30 inches of soils in the creek bed, 12 inches of gravel will be placed in the excavated area. A 15 mil impermeable liner will be placed on the gravel to prevent vapor migration into the atmosphere and to direct the methane toward the existing collection system. The liner will be covered with approximately 18 inches of soil from the creek bottom to return the creek to its original elevation.
13. Comments: _____

III. PROJECT LOCATION

Please attach a photocopy of USGS Quad. clearly showing the project location. The Quad. should be clearly labeled with the Prime Meridian, Township, Range, Section(s), Quad. map name, size, and date. Please do not reduce or enlarge the photocopy.

14. Description: The proposed project is located on private lands owned by BP America approximately 9.5 miles north-northeast of Bayfield, CO.
15. Legal Location: Quad. Map: Rules Hill, CO Date(s): 1964
Principal Meridian: 6th ☐ NM ☒ Ute ☐
NOTE: Only generalized subdivision ("quarter quarters") within each section is needed
Township: 35 N Range: 7 W Sec.: unplatted 1/4s _____ ;
Township: _____ Range: _____ Sec.: _____ 1/4s _____ ;
- If section(s) is irregular, explain alignment method: _____
16. Total number of acres surveyed: 0.47
17. Comments: _____

IV. ENVIRONMENT

18. General Topographic Setting: The proposed project sits at elevations between 7,446 and 7,466 ft amsl along the South Fork of Texas Creek, which lies between outcrops of the Fruitland Formation.

Current Land Use: Livestock grazing, energy development, rural residences

19. Flora: Smooth brome, reed canary grass, Scotch thistle, Canada thistle, musk thistle, big sagebrush, wire rush, hounds tongue, Canadian wild rye, willows

20. Soils/Geology: Fill dirt and gravel cover the previously disturbed areas, and the underlying geology consists of the Fruitland Formation. Areas of active methane percolation occur within and adjacent to the creek.

21. Ground Visibility: 5-95% depending on proximity to creek

22. Comments: _____

V. LITERATURE REVIEW

23. Location of File Search: Compass Website Date: April 26, 2010

24. Previous Survey Activity - In the project area: No previous survey activity has occurred within a 1/4 mile radius of the project.

In the general region: Small surveys for energy development

III. LITERATURE REVIEW (continued)

25. Known Cultural Resources - In the project area: None

In the general region (summarize): According to a records search conducted through COMPASS, Colorado's on-line cultural resource database, no cultural resources exist within a 1/4 mile radius of the site.

26. Expected Results: No sites are expected because of the project's location adjacent to previously disturbed land and because of the project's proximity to the South Fork of Texas Creek and floodplain.

VI. STATEMENT OF OBJECTIVES

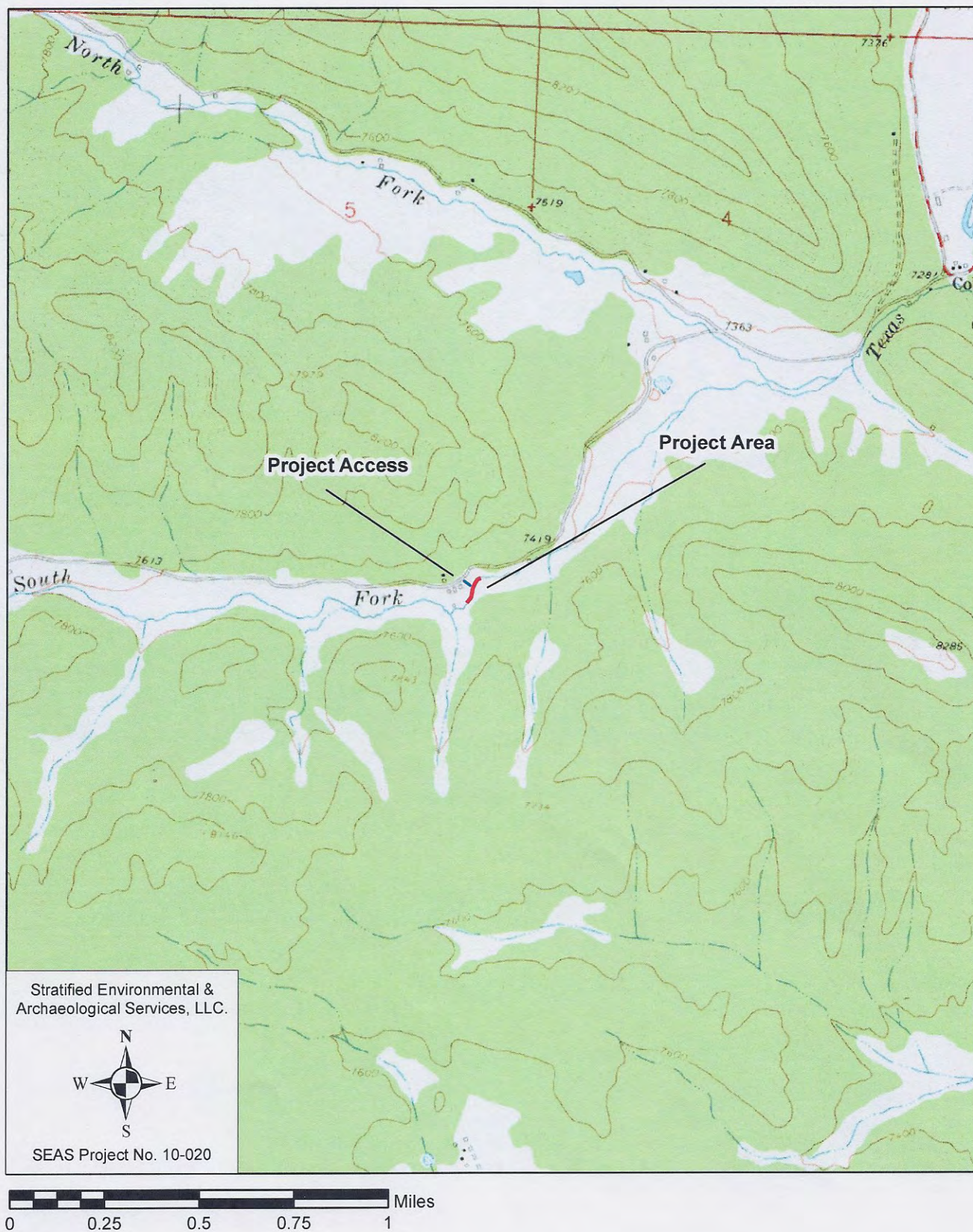
27. The objectives are to locate, record, interpret, and evaluate any cultural remains over 50 years old and make recommendations concerning management. If possible, the remains will add to our understanding of the prehistory and history of the area.
-
-

VII. FIELD METHODS

28. Definitions: Site Manifestation of past human activity consisting of a feature and/or 10 or more artifacts in a definable space
- IF One to nine artifacts in a definable space not associated with a feature or structure
29. Describe Survey Method: The archaeologist walked zigzag pedestrian transects spaced no more than 10 m apart in the affected areas and buffer zones.
-
-

VIII. RESULTS

30. List IFs if applicable. Indicate IF locations on the map completed for Part III.
- | | |
|------------------------------|--------------------|
| A. Smithsonian Number: _____ | Description: _____ |
| B. Smithsonian Number: _____ | Description: _____ |
| C. Smithsonian Number: _____ | Description: _____ |
| D. Smithsonian Number: _____ | Description: _____ |
31. Using your professional knowledge of the region, why are there none or very limited cultural remains in the project area? Small survey sample size, riparian zone setting, areas with low ground visibility, areas with active methane percolation, and previous disturbances may account for the lack of cultural remains.
- Is there subsurface potential? The project's location within and adjacent to previously disturbed soils, the creek channel, and the floodplain indicates a low potential for intact subsurface cultural materials. Archaeological clearance is recommended for this project.
-



Project Area Map: Rules Hill, CO 1964 USGS 7.5' Series Quadrangle Map (1:24,000 Scale)