COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental Inc.
4600 West 60th Avenue
Arvada, Colorado 80003
T 303.433.9788 / F 303.433.1432

August 28, 2012

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

Ms. Keri DePalma
BP America Production Company
501 Westlake Park Blvd.
Houston, Texas 77079
Dear Prefix. Last Name:

RE: 4M Operations and Maintenance Report July 2011 through June 2012

Dear Ms. Spray and Ms DePalma:

LT Environmental, Inc. (LTE) is pleased to submit this Operations and Maintenance (O&M) Report for the 4M Outcrop Mitigation Project in La Plata County, Colorado, to BP America Production Company and the Colorado Department of Natural Resources (DNR) Colorado Oil and Gas Conservation Commission (COGCC). This report includes the period of June 28, 2011, to June 30, 2012

Background

The objective of the 4M methane mitigation system is to demonstrate the technical viability to recover and use the methane seepage at specific locations where it seeps to the surface along the Fruitland Formation Outcrop. An additional goal of the mitigation system is to help protect the environment, which includes reducing carbon emissions and improving plant growth. To accomplish this objective, LTE designed and installed vapor collection and barrier systems for methane collection at the South Fork Texas Creek (SFTC) site (Figure 1) and Pine River Ranches (PRR) site (Figure 2). At the SFTC site, the recovered methane is being used to fuel a turbine, which is generating electricity to operate the collection system. The turbine is returning the excess generated power to the local electrical grid for credit as a renewable energy resource. Methane concentrations are too low to combust at the PRR site, so recovered methane is vented to the atmosphere. The initial design, installation, and startup of the 4M methane mitigation systems were completed in 2008 and 2009. Prior O&M operations beginning May 2009 are detailed in previous O&M reports completed by LTE.

During June 2010, the SFTC system was expanded in order to increase methane collection. A collection liner designed to direct vapors into the existing collection system was installed beneath the creek, and 32 diagonal well points were installed along the creek and piped into the existing manifold. In addition, gas from a COGCC monitoring well was piped to the collection system. This source was not sustainable and the line was shut-in and the well returned to monitoring status in late 2010.

Mitigation System Operation and Maintenance

Routine system operations are conducted at both sites. O&M activities included maintaining the equipment per manufacturer instructions, collecting data used to evaluate system performance, and adjusting the operating parameters to optimize system effectiveness. Operational parameters were recorded and included methane and oxygen concentrations in the collected gas, operational hours for the blower and turbine generator, applied vacuum to the subsurface piping, and electrical generation of the turbine.

Activities conducted during the reporting period included:

- Routine O&M activities to monitor and adjust system performance;
- Field screening the inlet gas quality;
- Reviewing gas quality measurements stored in the data loggers and obtaining weather station data;
- Changing oil, oil filters, an oil separator, and a coalescing filter in the gas compressor system;
- Changing the air filter on the turbine; and
- Conducting non-routine O&M services and troubleshooting as described below.

Immediately prior to September 23, 2011, the SFTC system operation time decreased, resulting from operational issues reported as fuel faults in the system. Troubleshooting the system indicated the gas pressure remained constant after shutdowns indicating that the line was blocked. The secondary moisture filter was found to be full of water, causing the blockage. Upon further investigation, the filter used to remove moisture from the gas before it enters the turbine was not functioning properly. The absorbent desiccant in the filter had formed a hard layer on the top, which gave the illusion that the filter was properly full, when the filter was nearly empty. The desiccant was replaced and the system resumed proper operation with frequent verification that moisture removal is functioning properly.

A problem with scale blocking a compressed gas line was encountered at SFTC on February 3, 2012. The problem was identified when gas compressor outlet pressure would not rise to the proper pressure, preventing the turbine from starting. The compressor system was subsequently disassembled to investigate the problem in more detail. A small blockage was observed and subsequently cleared and the problem has not reoccurred.

Other problems that have decreased system efficiency include faults from instantaneous electrical voltage changes related to the anti-islanding features of the turbine generator and

interaction with the electronic phase converter system. These faults resulted in repetitive intermittent turbine shutdowns on a daily basis. Typically the system restarted within several minutes of the shutdown occurrence. When turbine output is increased, the frequency of the intermittent shutdowns increases. Adjustments to the turbine have been made to increase the allowance for voltage variability; however the shutdowns have continued to occur. To optimize the turbine life expectancy and system run time, the system is operated to minimize these shutdowns and restarting requirements by reducing the turbine output to 11 kilowatts (kW).

Periodic gas measurements in the system identified hydrogen sulfide gas (H_2S) concentrations ranging from 5 parts-per-million (ppm) to 15 ppm in one line located adjacent to the creek. To reduce the potential for corrosion of system components, the control valve to methane recovery piping in this area was closed on April 15, 2011and remains closed.

Operations Summary

During normal operation, gas composition and flow remained fairly consistent at both sites, with better gas quality recorded at the SFTC system. During the reporting period, methane concentrations remained relatively stable (approximately 99 percent [%]) at the SFTC site (Figure 3). At the PRR site, methane concentrations remained near 1% (Figure 4). O&M data are provided in Table 1 for the SFTC site and in Table 2 for the PRR site.

The percentage of methane gas recovered was measured at both sites and a methane flow rate was calculated using the resultant methane concentrations. The average flow rate and cumulative recovered methane are plotted over time on Figure 5 for the SFTC site. Typical collected gas flow ranged from 279 cubic feet per hour (cfh) to 429 cfh. Collected methane gas flow ranged from 6 cfh to 149 cfh at the Pine River site.

The SFTC system produces the gas needed to operate the turbine, and excess gas is re-circulated within the compression system. The turbine generator was set at 11 kW output following operational difficulties encountered during 2011. With optimum system operation utilizing approximately 6 kW of electrical power, the remaining 5 kW are distributed back into the electrical grid for a net gain.

The system operation commenced on May 5, 2009 with an electrical meter reading of 51,540 kilowatt-hours (kW-h). From startup to March 2011, the electrical meter reading was reduced to zero then the meter rolled to 99,999 kW-h. On June 27, 2012, the reading was 51,039 kW-h. These readings indicate 100,501 kW-h have been returned to the grid since system operation commenced (Figure 6). The value of the electricity generated to date has been used to offset electrical usage at the Pine River site and to pay for administrative fees associated with the SFTC electrical service. The remainder of the net generation is held as a credit for the electrical service to the two facilities.

Vegetation Observations

Considerable plant growth at both sites has occurred in areas previously devoid of vegetative growth. At the SFTC site, the edges of the liners are evident due to an absence of vegetation where excess methane seeps from beneath the liner. At the Pine River site, the location of the vent piping is not obvious, as an overall decrease in methane seepage has been observed.

A report detailing the progress following the SFTC June 2010 system expansion was provided to the Army Corps of Engineers in December 2011, in accordance with the permit obtained to allow creek disturbance and installation of the methane barrier under the creek. During a site visit on June 28, 2011, LTE observed the presence of fill material adjacent to the SFTC site that appeared to be preventing successful growth of the palustrine emergent wetland; the fill material raised the root zone of the plants above the saturated soils adjacent to the SFTC. To remedy this, LTE mobilized to the SFTC site with a small track hoe on September 23, 2011, and removed the excess soil thereby lowering the ground surface to a depth where the palustrine emergent vegetation should be successful. Additionally, LTE excavated soil to enlarge the creek bed slightly so that a total of 0.025 acres of water below the ordinary high water mark (OHWM) is present. Excavated soil was spread and compacted on bare ground in upland areas at the SFTC site with low to no erosion potential. Excavated plants with intact root balls were replanted in the disturbed area. Lastly, LTE removed the silt fencing and straw wattles utilized during the 2010 construction activities at the SFTC site since the vegetation in the area had become established and they were no longer necessary.

During June 2012, the vegetation appears to be doing well in spite of an extreme drought in the area. Considerable plant growth in the wetland area seems to be doing better than observed in 2011. The liner is visible in two small locations adjacent to the creek. The lack of moisture in the area has resulted in wind erosion of a sandy top layer. However, the integrity of the liner does not appear to be compromised.

Weather Data

The weather station currently in use was installed in June 2010. The weather station was installed to monitor conditions that may affect methane recovery and system operation. Currently, the system operation does not appear to be limited by the volume of methane recovered or affected by variable weather conditions. The daily maximum and minimum temperatures (Figure 7), monthly precipitation (Figure 8), and the daily barometric pressure values (Figure 9) are provided.

Planned Activities

The electrical generation results, along with visual observations of vegetation growth, suggest the methane mitigation system is operating successfully. During the next reporting period, the

SFTC system will continue operation to optimize electrical generation. Closer monitoring of moisture buildup within the system and monitoring of H_2S concentrations are planned.

Further investigation of ways to improve system performance will be accomplished. The Pine River system will be changed to a passive venting system. The blower will be shut down and valves adjusted to allow recovered methane within the subsurface piping to vent. The vegetation will be observed for negative effects from methane seepage. Field instrumentation will be used to monitor methane concentrations in the ventilation piping.

LTE appreciates the opportunity to provide these services to the COGCC and BP America. Please call us at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

Gavin Casson, EIT
Staff Engineer

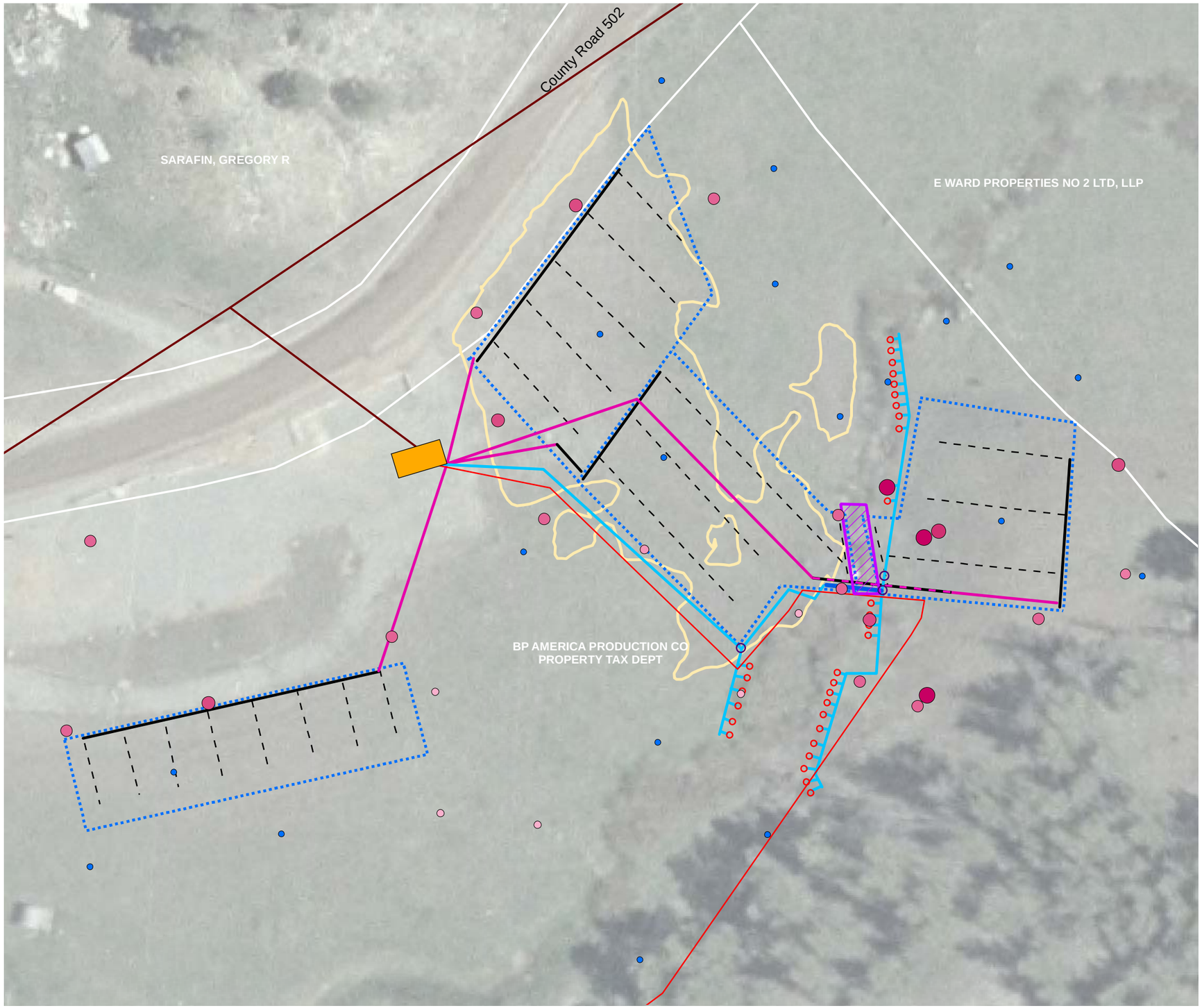
Christopher E. Shephard, P.E.
Project Manager

Attachments:

Figure 1 – Mitigation System Layout South Fork Texas Creek
Figure 2 – Mitigation System Layout Pine River
Figure 3 – South Fork Texas Creek Methane Concentrations
Figure 4 – Pine River Methane Concentrations
Figure 5 – South Fork Texas Creek Methane Gas Flow
Figure 6 – South Fork Texas Creek Surplus Electricity Generated
Figure 7 – Daily Minimum and Maximum Temperature
Figure 8 – Monthly Precipitation
Figure 9 – Daily Barometric Pressure

Table 1 – Operation and Maintenance Data South Fork Texas Creek
Table 2 – Operation and Maintenance Data Pine River

FIGURES



LEGEND

- DIAGONAL COLLECTION WELL
- VAULT
- Extended Methane Collection (20 mil barrier)
- Process Equipment Footprint
- Overhead Electrical Line

2010 Methane Flux Results (mole/m^2/day)

- 0.00000
- 0.00001 - 0.10000
- 0.10001 - 0.50000
- 0.50001 - 1.00000
- 1.00001 - 10.00000
- 10.00001 - 50.00000
- 50.00001 - 100.00000
- 100.00001 - 1175.00000
- 20 mil Impervious Membrane
- Parcel Boundary & Owner (white)
- Stressed Vegetation

Piping

- 2" SCH 40 PVC
- 2" SCH 80 PVC
- 3" SCH 40 PVC
- 3" SCH 80 PVC
- 4" ADS Corrugated Piping (Slotted)
- 4" ADS Corrugated Piping (Solid)
- 1" HDPE

0 50 100
Feet

N

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

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LEGEND

- Visible Methane Seeps in Surface Water
- Gas Monitoring Probes
- Power Pole
- Process Equipment Footprint
- Stressed Vegetation
- Parcel Boundary & Owner (white)
- Power Line

2010 Methane Flux Results (mole/m^2/day)

- 0.00000
- 0.00001 - 0.10000
- 0.10001 - 0.50000
- 0.50001 - 1.00000
- 1.00001 - 10.00000
- 10.00001 - 50.00000
- 50.00001 - 100.00000
- 100.00001 - 1175.00000

Piping

- 3" SCH 40 PVC
- 4" ADS Corrugated Piping (Slotted)
- 4" ADS Corrugated Piping (Solid)

0 60 120
Feet

N

FIGURE 2
MITIGATION SYSTEM LAYOUT
PINE RIVER
4M OUTCROP MITIGATION PROJECT
DURANGO, COLORADO
COLORADO OIL AND GAS CONSERVATION COMMISSION

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FIGURE 3
SOUTH FORK TEXAS CREEK METHANE CONCENTRATIONS
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

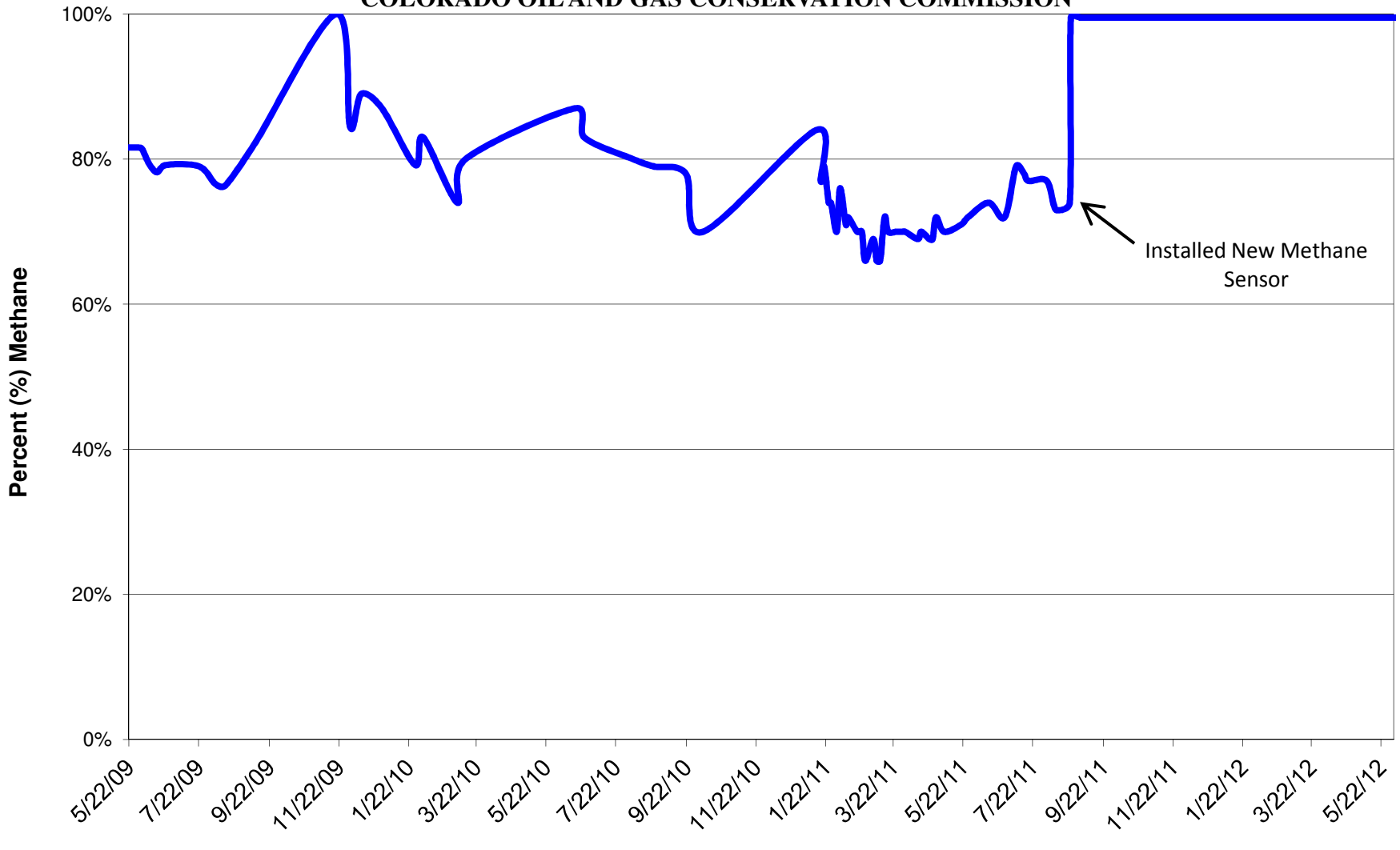


FIGURE 4
PINE RIVER METHANE CONCENTRATIONS
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

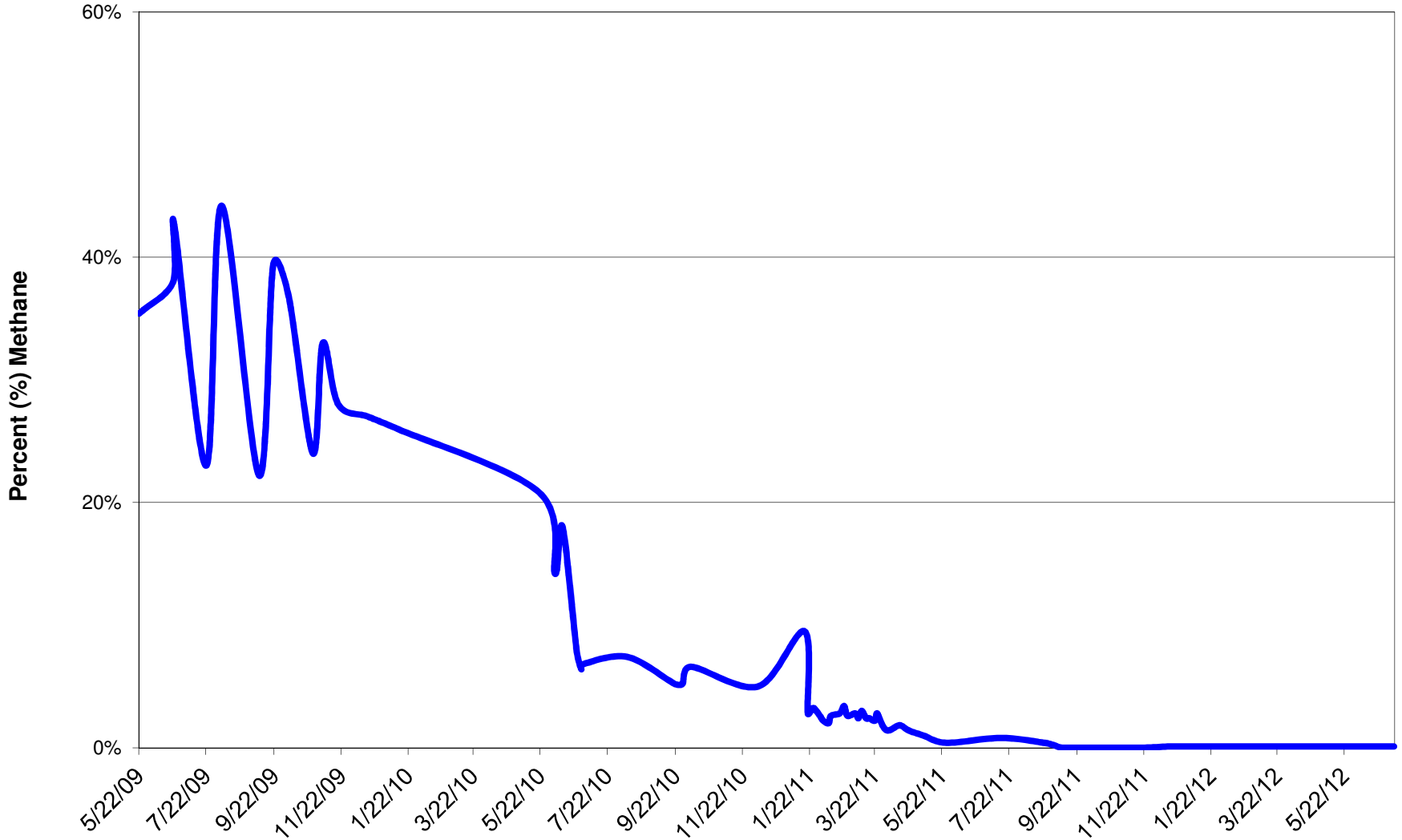
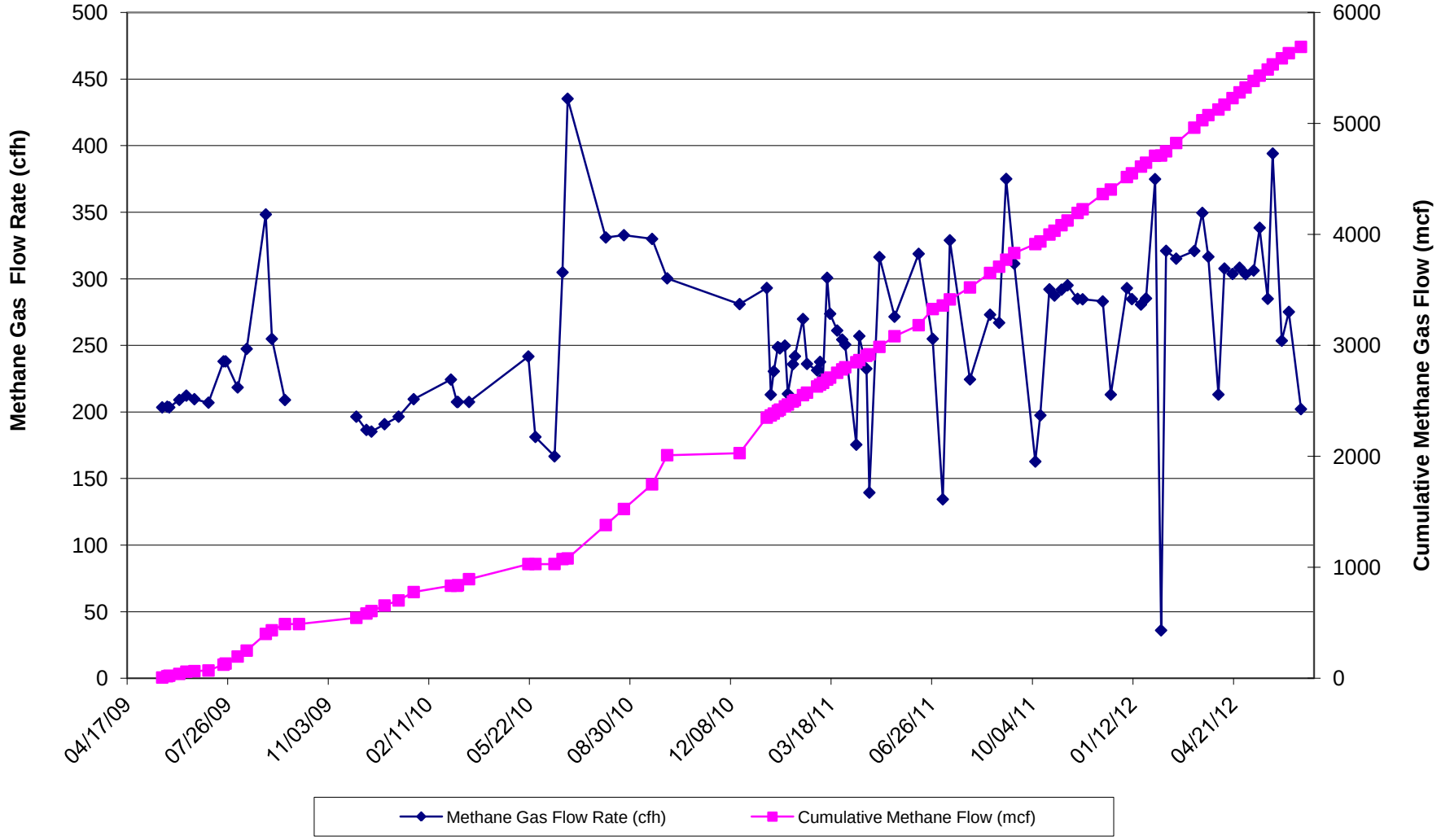


FIGURE 5
SOUTH FORK TEXAS CREEK METHANE GAS FLOW
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION



cfh - cubic feet per hour
mcf - 1,000 cubic feet

FIGURE 6
SOUTH FORK TEXAS CREEK
SURPLUS ELECTRICITY GENERATED
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

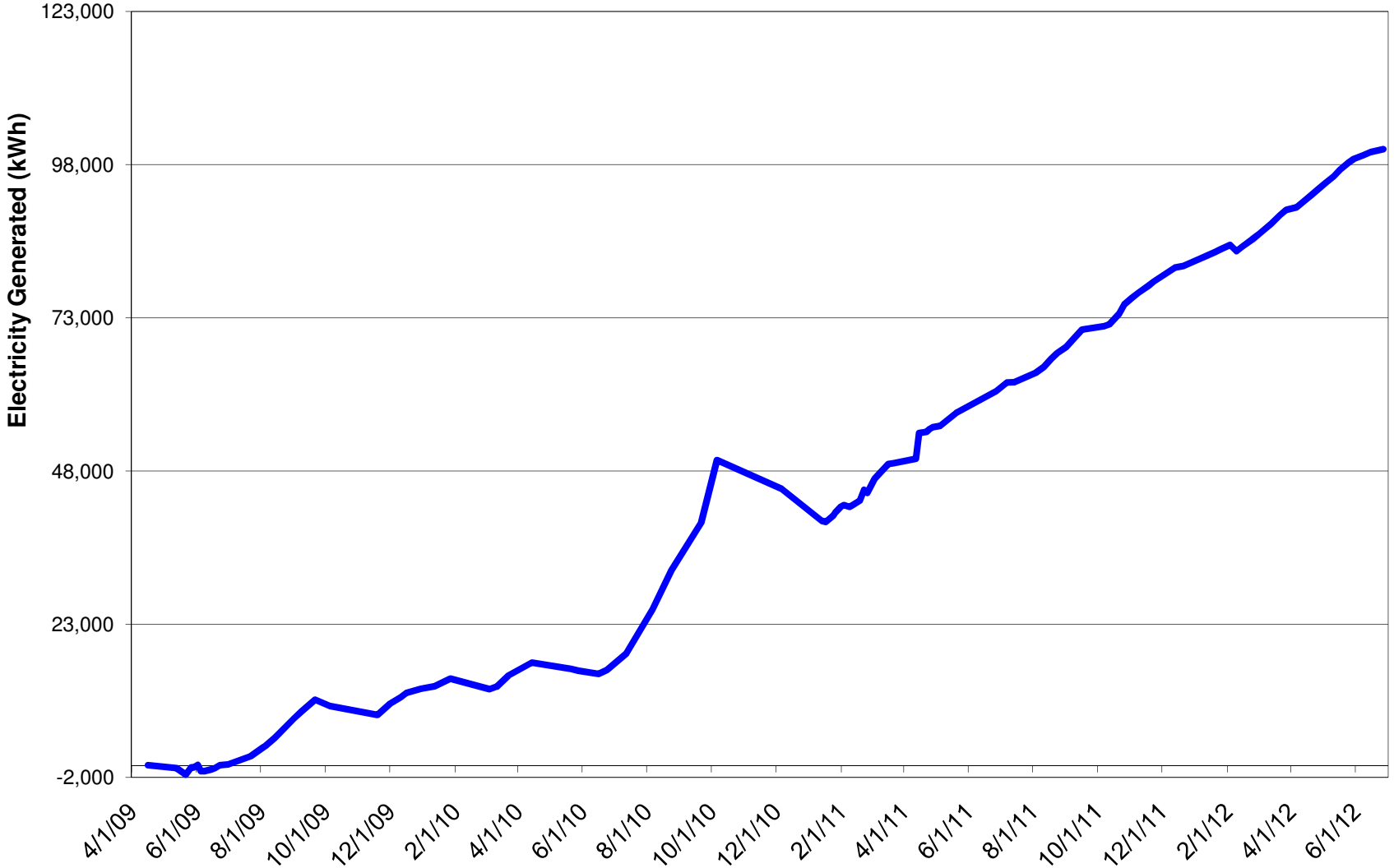


FIGURE 7
DAILY MINIMUM AND MAXIMUM TEMPERATURE
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

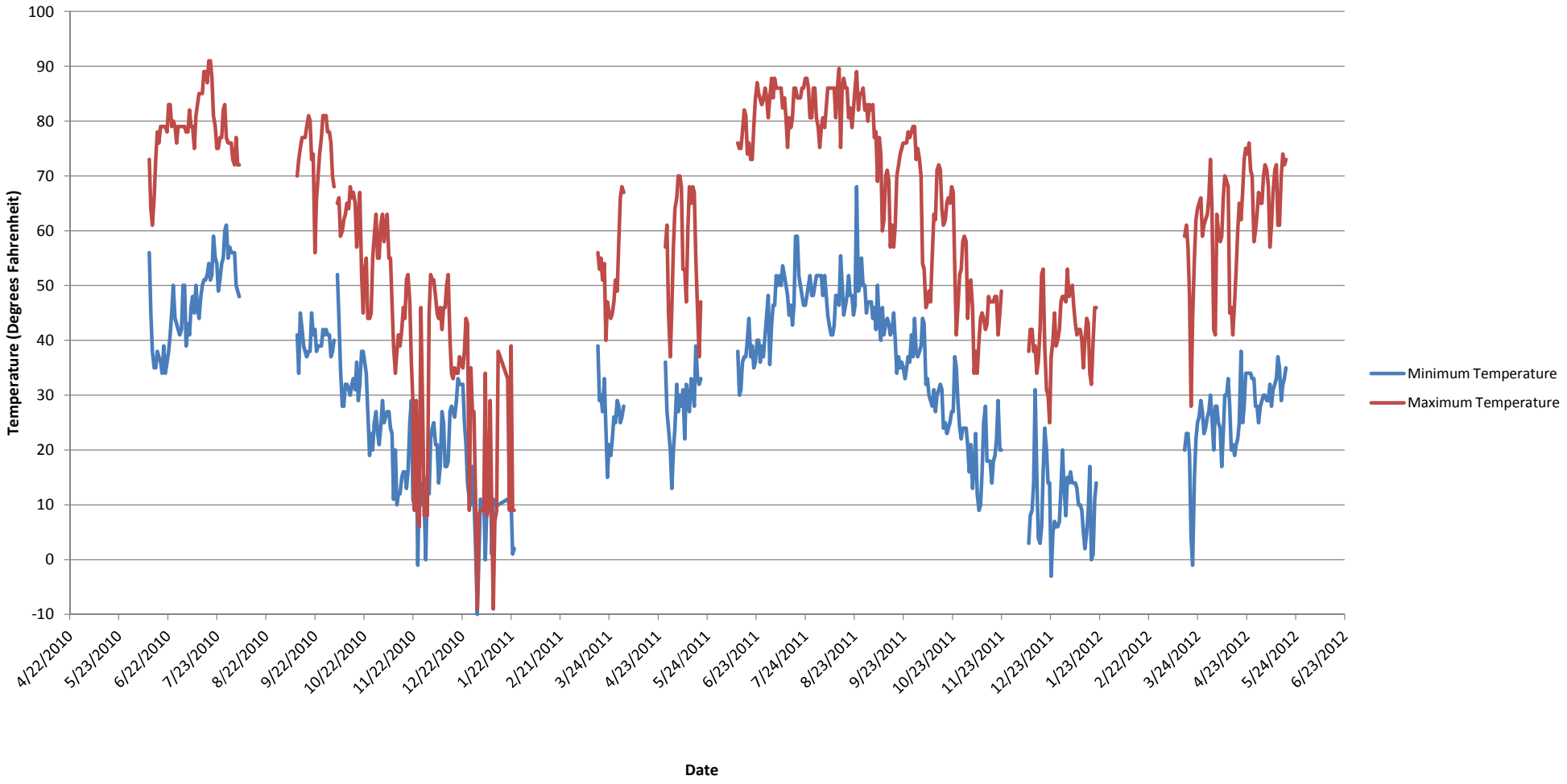


FIGURE 8
MONTHLY PRECIPITATION
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

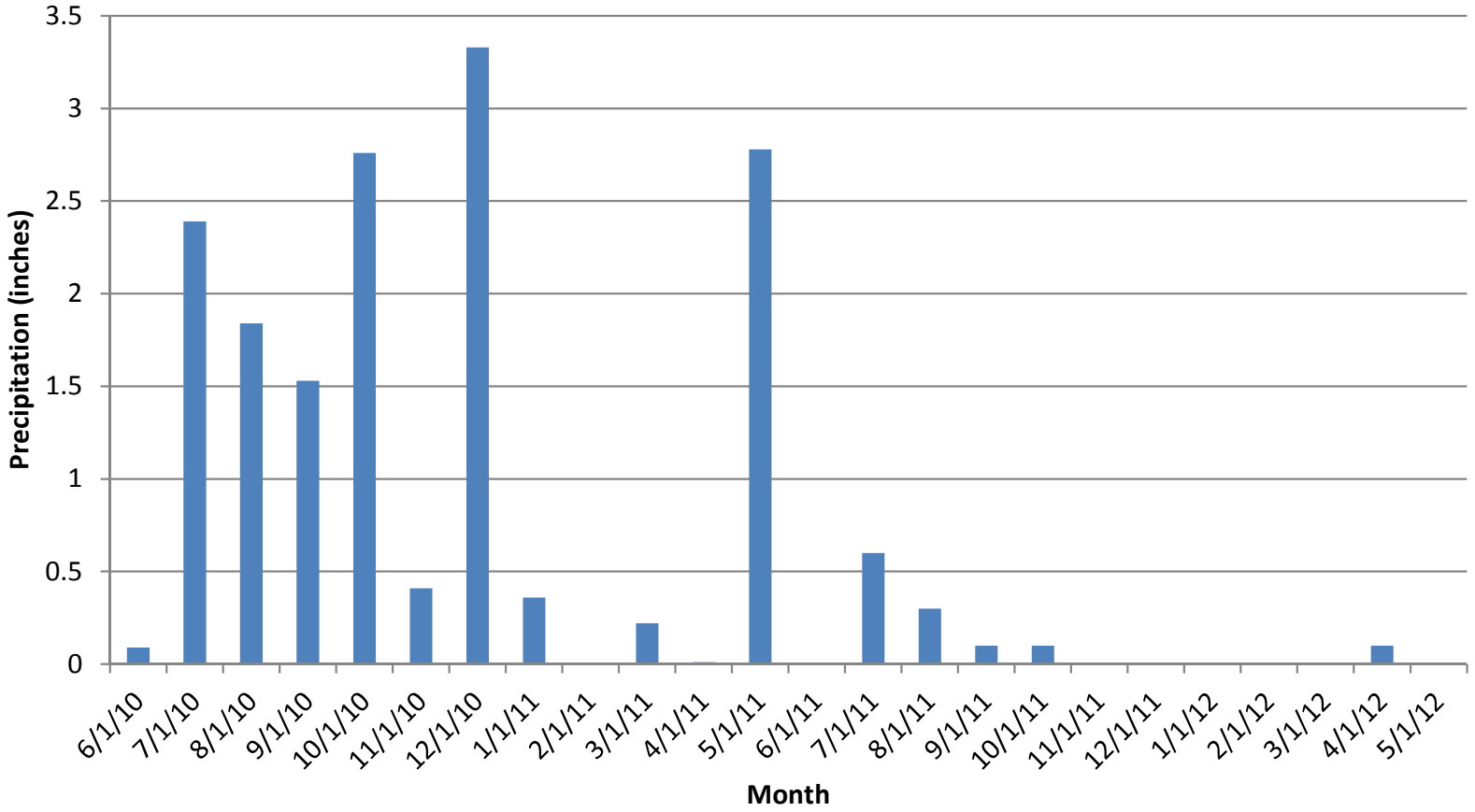
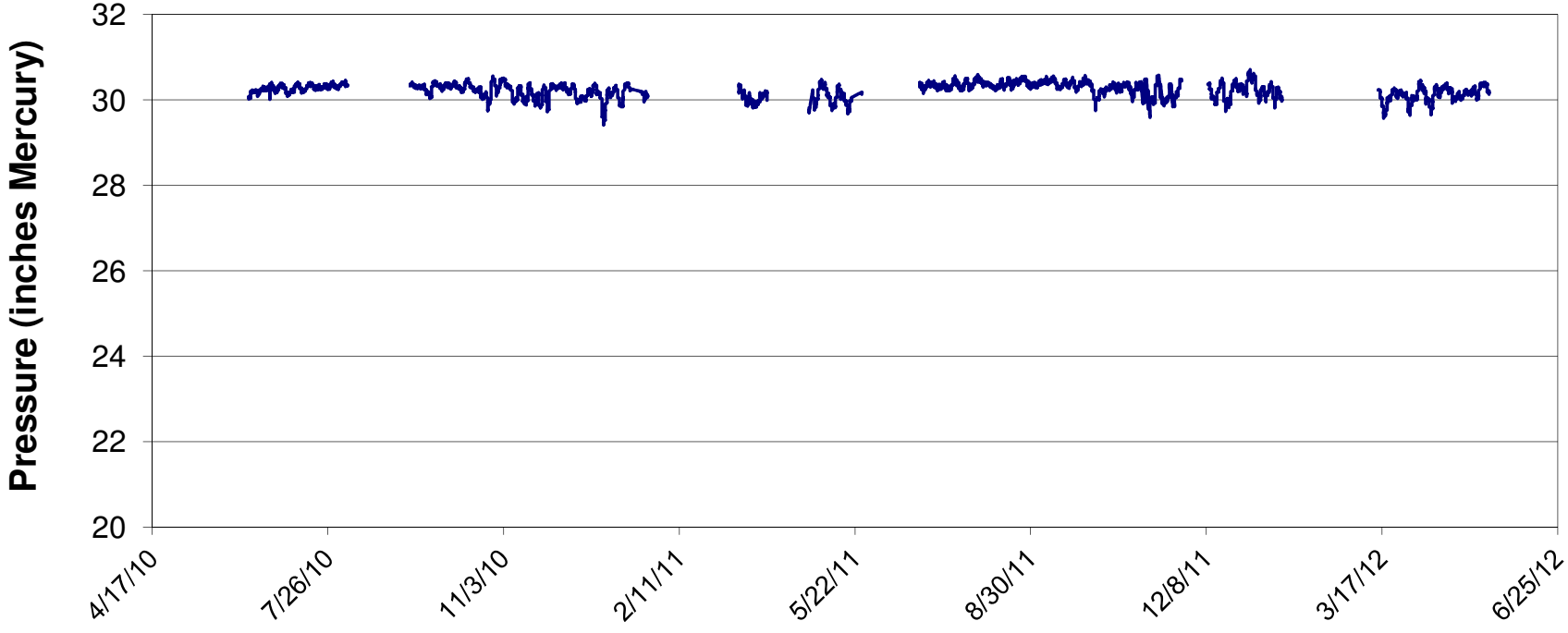


FIGURE 9
DAILY BAROMETRIC PRESSURE
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION



TABLES

TABLE 1

OPERATIONS AND MAINTENANCE DATA
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Electric Meter (kW)	Turbine (hours)	Turbine Demand (kW)	From Chart, Btu/hr needed	Compressor (hours)	Methane (%)	Oxygen (% or ppm)	Calculated Methane Flow (scfh)	Cumulative Calculated Methane Recovered (mcf)
5/22/2009	OFF	51,540	34	10	166,000	--	81.6	130	203	7
5/27/2009	OFF	50,355	90	10	166,000	--	81.4	33	204	18
5/29/2009	OFF	50,368	113	10	166,000	--	81.6	15.2	203	23
6/8/2009	OFF	50,967	192	10	166,000	--	79.4	14.9	209	40
6/15/2009	OFF	50,683	286	10	166,000	289	78.2	83	212	59
6/19/2009	OFF	50,510	305	10	166,000	308	79	19.8	210	63
6/23/2009	OFF	50,004	310	10	166,000	402	79.2	0.16	210	65
6/25/2009	OFF	--	318	10	166,000	411	--	--	--	--
7/7/2009	OFF	50,983	338	10	166,000	431	80.2	51.2	207	69
7/15/2009	ON	--	523	10 to 12	188,000	620	--	--	--	--
7/22/2009	OFF	50,519	558	12	188,000	659	79	48	238	121
7/24/2009	OFF	50,365	600	12	188,000	700	--	--	--	--
8/5/2009	ON	46,840	891	10	166,000	993	76	5.25	218	185
8/14/2009	ON	45,536	1,106	12	188,000	1,208	76	3.25	247	238
8/20/2009	ON	44,501	1,251	12	188,000	1,353	80	4.25	235	272
9/2/2009	OFF	42,246	1,538	14	209,000	1,602	60	0.39	348	372
9/8/2009	ON	41,236	1,666	14	209,000	1,779	82	0.1	255	404
9/21/2009	ON	39,298	1,934	14 to 16	209,000	2,101	104	0.1	201	458
10/5/2009	OFF	40,322	2,009	OFF	166,000	2,332	--	3	--	--
10/5/2009	SYSTEM OFF FOR REPAIRS		Reset	--	166,000	--	--	--	--	--
11/19/2009	ON	41,776	1	12	166,000	--	100	93 ppm	166	458
12/1/2009	ON	39,960	286	12	166,000	2,623	84.5	1.9 ppm	196	514
12/11/2009	OFF	38,941	495	12	166,000	2,866	89	2.0 ppm	187	553
12/16/2009	ON	38,235	615	12	166,000	2,986	89.6	1.8 ppm	185	576
12/29/2009	OFF	37,548	876	12	166,000	3,321	87	3.0 ppm	191	625
1/12/2010	OFF	37,127	1,109	12	166,000	3,632	84.5	3.25 ppm	196	671
1/27/2010	ON	35,875	1,469	12	166,000	3,993	79.2	0.1	210	747
3/5/2010	OFF	37,586	1,722	12	166,000	4,246	74	0.16	224	803
3/11/2010	OFF	37,217	1,723	12	166,000	4,247	64	130 ppm	259	804
3/12/2010	ON	37,172	1,747	12	166,000	4,271	80	23.2 ppm	208	809
3/23/2010	ON	35,364	2,009	12	166,000	4,533	59	0.1	281	882

TABLE 1

OPERATIONS AND MAINTENANCE DATA
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Electric Meter (kW)	Turbine (hours)	Turbine Demand (kW)	From Chart, Btu/hr needed	Compressor (hours)	Methane (%)	Oxygen (% or ppm)	Calculated Methane Flow (scfh)	Cumulative Calculated Methane Recovered (mcf)
4/14/2010		33,275	2,379	12	166,000	4,900	51	52 ppm	325	1,003
5/21/2010	OFF	34,290	2,573	8	145,000	5,099	60	--	242	1,050
5/28/2010	OFF	34,589	2,573	8	145,000	5,099	80	--	181	1,050
6/16/2010	ON	35,119	2,574	8	145,000	5,101	87	0.1	167	1,050
6/24/2010	OFF *	34,436	2,720	18	253,000	5,249	83	0.1	305	1,094
6/29/2010	ON	34,412	2,733	20	274,000	5,262	82	0.1	450	1,100
7/12/2010	ON	31,780	3,035	20	274,000	5,576	80	0.1	349	1,205
8/6/2010	ON	24,587	3,613	19.2	265,000	6,171	79	0.1	341	1,402
8/24/2010	ON	18,172	4,035	19	265,000	6,605	79	0.1	342	1,547
9/21/2010	ON	10,437	4,690	18.1	253,000	7,279	78	0.1	340	1,769
10/1/2010	ON	8,260	4,900	18.0	253,000	8,154	70	0.1	1251	2,032
12/2/2010		3,290								
12/17/2010	OFF	4,901	5,246	12.0	166,000	8,364	70	0.1	281	2,129
1/3/2011		7,820								
1/13/2011	OFF	10,209	5,592	8.0	145,000	8,574	84	0.1	235	2,195
1/17/2011	ON	10,102	5,684	8.0	145,000	8,668	77	0.1	218	2,215
1/20/2011	ON	9,869	5,758	9.9	166,000	8,741	79	0.1	227	2,231
1/24/2011	ON	9,269	5,854	13.0	199,000	8,838	74	0.1	251	2,255
1/26/2011	ON	8,856	5,898	14.9	220,000	8,884	74	0.1	259	2,267
1/31/2011	ON	7,872	6,013	14.5	209,000	9,000	70	0.1	252	2,296
2/3/2011	OFF	7,549	6,075	12.9	199,000	9,079	76	0.1	272	2,313
2/8/2011	ON	6,846	6,191	12.9	199,000	9,194	71	0.1	234	2,340
2/10/2011	OFF	6,694	6,240	13.9	209,000	9,247	72	0.1	262	2,353
2/18/2011	OFF	5,712	6,386	13.9	209,000	9,412	70	0.1	305	2,397
2/22/2011	ON	5,157	6,476	14.0	209,000	9,506	70	0.1	247	2,419
2/25/2011	ON	4,581	6,550	13.0	199,000	9,580	66	0.1	216	2,435
3/4/2011	ON	3,243	6,707	13.0	199,000	9,747	66	0.1	238	2,473
3/7/2011	ON	--	6,776	13.0	199,000	9,817	66	0.1	241	2,489
3/10/2011	ON	2,138	6,846	12.3	188,000	9,888	66	0.1	229	2,505
3/14/2011	ON	1,397	6,941	13.0	199,000	9,984	72	0.1	304	2,534
3/17/2011	ON	873	7,008	12.9	199,000	10,051	70	0.1	274	2,553

TABLE 1

OPERATIONS AND MAINTENANCE DATA
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Electric Meter (kW)	Turbine (hours)	Turbine Demand (kW)	From Chart, Btu/hr needed	Compressor (hours)	Methane (%)	Oxygen (% or ppm)	Calculated Methane Flow (scfh)	Cumulative Calculated Methane Recovered (mcf)
3/24/2011	ON	99,288	7,170	12.9	199,000	10,218	70	0.1	269	2,596
3/29/2011	ON	98,294	7,288	12.9	199,000	10,338	70	0.1	259	2,627
4/1/2011	ON	97,517	7,362	9.9	166,000	10,414	70	0.1	257	2,646
4/12/2011	ON	96,305	7,553	10.9	177,000	10,674	69	0.1	239	2,691
4/15/2011	ON	95,767	7,626	10.9	177,000	10,747	70	0.1	257	2,710
4/22/2011	ON	95,629	7,740	8.0	145,000	10,915	69	0.1	343	2,749
4/25/2011	ON	95,164	7,797	8.0	145,000	11,012	69	0.1	237	2,763
4/28/2011	ON	94,834	7,844	10.9	177,000	11,058	72	0.1	591	2,790
5/5/2011	ON	94,642	8,009	11.0	177,000	11,224	70	0.1	243	2,831
5/20/2011	ON	92,515	8,251	10.9	177,000	11,577	71	0.1	396	2,926
6/13/2011	ON	90,313	8,551	20.0	209,000	11,889	74	0.1	332	3,026
6/27/2011	ON	88,943	8,864	11.9	188,000	12,459	72	0.1	464	3,171
7/14/2011	ON	87502	9,148	13.0	199,000	12,866	78	0.1	305	3,258
8/3/2011	ON	86014	9,459	12.9	199,000	13,347	73	0.1	329	3,360
8/23/2011	ON	82,879	9,892	13.0	199,000	13,824	74	0.1	301	3,490
8/24/2011	ON	82753	9,908	12.9	199,000	13,831	99.5	0.1	429	3,497
9/1/2011	OFF	81745	10,062	13.0	199,000	14,036	99.5	0.1	321	3,547
9/8/2011	ON	80440	10,228	13.0	199,000	14,204	99.5	0.1	378	3,609
9/16/2011	ON	78926	10,419	13.0	199,000	14,396	99.5	0.1	312	3,669
10/7/2011	OFF	78343	10,646	13.0	199,000	14,893	99.5	0.1	355	3,749
10/12/2011	OFF	78065	10,713	10.0	166,000	15,012	99.5	0.1	349	3,773
10/21/2011	ON	77901	10,927	10.0	166,000	15,227	99.5	0.1	292	3,835
10/26/2011	ON	76,338	11,045	20.0	274,000	15,346	99.5	0.1	288	3,869
11/2/2011	ON	75,330	11,215	11.0	177,000	15,517	99.5	0.1	292	3,919
11/8/2012	ON	74,515	11,359	11.0	177,000	15,660	99.5	0.1	292	3,961
11/18/2012	ON	73,275	11,598	11.0	177,000	15,899	99.5	0.1	284	4,029
11/23/2011	ON	72,623	11,715	11.0	177,000	16,016	99.5	0.1	283	4,062

TABLE 1

OPERATIONS AND MAINTENANCE DATA
SOUTH FORK TEXAS CREEK
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Electric Meter (kW)	Turbine (hours)	Turbine Demand (kW)	From Chart, Btu/hr needed	Compressor (hours)	Methane (%)	Oxygen (% or ppm)	Calculated Methane Flow (scfh)	Cumulative Calculated Methane Recovered (mcf)
12/13/11	ON	70,334	12,198	11.0	177,000	16,499	99.5	0.1	282	4,198
12/21/11	OFF	70,062	12,338	11.0	177,000	16,691	99.5	0.1	291	4,239
01/06/12	ON	68,872	12,721	11.0	177,000	17,075	99.5	0.1	292	4,350
01/11/12	ON	68,481	12,840	11.0	177,000	17,193	99.5	0.1	281	4,384
01/20/12	ON	67,814	13,057	11.0	177,000	17,410	99.5	0.1	279	4,445
01/25/12	ON	67,382	13,179	11.0	177,000	17,532	99.5	0.1	284	4,479
02/03/12	ON	66,646	13,391	11.0	177,000	17,744	99.5	0.1	294	4,541
02/09/12	OFF	67,672	13,394	11.0	177,000	17,749	99.5	0.1	332	4,542
02/14/12	ON	66,993	13,513	11.0	177,000	17,868	99.5	0.1	326	4,581
02/24/12	ON	65,738	13,751	11.0	177,000	18,106	99.5	0.1	314	4,656
3/13/2012	ON	63,190	14,178	12.0	166,000	18,537	99.5	0.1	322	4,793
3/21/2012	ON	61,775	14,364	20.0	274,000	18,729	99.5	0.1	359	4,860
3/27/2012	ON	60,912	14,509	12.0	166,000	18,874	99.5	0.1	315	4,906
4/6/2012	OFF	60,519	14,657	11.0	177,000	19,111	99.5	0.1	340	4,956
4/12/2012	ON	59,661	14,800	11.0	177,000	19,254	99.5	0.1	306	5,000
4/20/2012	ON	58,486	14,993	11.0	177,000	19,447	99.5	0.1	302	5,058
4/27/2012	ON	57,475	15,161	11.0	177,000	19,615	99.5	0.1	307	5,110
5/3/2012	ON	56,611	15,306	11.0	177,000	19,760	99.5	0.1	302	5,154
5/11/2012	ON	55,460	15,499	11.0	177,000	19,953	99.5	0.1	305	5,212
5/17/2012	ON	54,358	15,634	11.0	177,000	20,094	99.5	0.1	352	5,260
5/25/2012	ON	53,228	15,826	11.0	177,000	20,287	99.5	0.1	285	5,315
5/30/2012	ON	52,627	15,945	11.0	177,000	20,405	99.5	0.1	389	5,361
6/8/2012	OFF	52,020	16,087	11.0	177,000	20,620	99.5	0.1	382	5,415
6/15/2012	OFF	51,512	16,210	11.0	177,000	20,789	99.5	0.1	376	5,461
6/27/2012	ON	51,039	16,392	10.0	166,000	21,070	99.5	0.1	311	5,518

Notes:

kW - kilowatts
Btu/hr - British thermal units per hour
% - percent
mcf - 1,000 cubic feet
ppm - parts per million
scfh - standard cubic feet per hour
-- reading not collected/not applicable
* - new flow meter was installed

TABLE 2

OPERATIONS AND MAINTENANCE DATA
PINE RIVER
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Blower (hours)	Differential (hours)	Blower Inlet Vacuum (" wc)	Calculated Methane Flow Rate (cfh)	Calculated Cumulative Methane Recovered (mcf)	Electric Meter (kW-h)	Methane (%)	Oxygen (%)
5/22/2009	OFF	--	0	1	807	--	16	35	OFF
5/27/2009	OFF	11.2	11	1	1,015	11	17	44	OFF
5/29/2009	ON	60.0	49	1	600	40	39	26	OFF
6/15/2009	OFF	440.0	380	1	807	347	293	35	3.21
6/23/2009	ON	627.0	187	1	992	533	372	43	5.67
7/7/2009	ON	963.0	336	1	969	858	425	42	3.86
7/22/2009	OFF	1,306.0	343	1	530	1,040	662	23	2.76
8/5/2009	OFF	1,363.0	9	1	1,015	1,049	686	44	7.57
8/14/2009	OFF	1,368.0	5	1	738	1,053	698	32	3.98
9/2/2009	OFF	1,500.0	132	1	258	1,087	1,056	11.2	3.35
9/8/2009	ON	1,539.9	40	1	512	1,107	1,064	22.2	2.81
9/21/2009	OFF	1,556.0	16	1	909	1,122	1,071	39.4	3.52
10/5/2009	OFF	1,567.2	11	1	849	1,131	1,092	36.8	4
10/23/2009	--	1,568.0	1	1	567	1,132	--	24.6	6.18
10/27/2009	OFF	--	0	1	553	1,132	--	24	5.8
11/5/2009	ON	1,775.0	207	1	392	1,213	--	17	6.54
11/5/2009	ON	1,777.0	2	7	700	1,214	--	33	11
11/6/2009	ON	1,797.0	20	7	603	1,226	--	28.4	4
11/12/2009	ON	1,941.6	145	7	577	1,310	1,142	27.2	2.42
11/19/2009	ON	1,988.3	47	7	594	1,338	1,188	28	3.56
12/1/2009	OFF	2,167.3	179	7	441	1,417	1,522	20.8	5.61
12/16/2009	OFF	2,223.7	56	7	815	1,463	2,104	38.4	4.6
12/29/2009	OFF	2,245.0	21	1	--	--	2,641	--	--
1/12/2010	OFF	2,245.0	0	8	986	1,463	3,120	48.6	4.3
1/27/2010	OFF	2,267.3	22	1	--	--	3,610	--	--
5/21/2010	RESTART	2,375.3	108	30	20	1,465	3,701	20.8	7.06
5/28/2010	ON	2,648.3	273	26	8	1,467	3,768	10	10.4
6/4/2010	ON	2,816.0	168	27	11	1,469	3,836	14.2	4.35
6/11/2010	ON	3,504.4	688	25	26	1,487	3,904	18	1.67
6/24/2010	ON	4,425.9	922	25	3	1,489	--	7.8	2.01
6/28/2010	ON	5,445.4	1,020	25	11	1,500	4,073	6.4	1.82
6/29/2010	ON	5,863.9	419	25	3	1,501	--	6.8	1.8
8/9/2010	ON	6,373.9	510	25	11	1,507	4,455	7.4	1.12

TABLE 2

OPERATIONS AND MAINTENANCE DATA
PINE RIVER
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Blower (hours)	Differential (hours)	Blower Inlet Vacuum (" wc)	Calculated Methane Flow Rate (cfh)	Calculated Cumulative Methane Recovered (mcf)	Electric Meter (kW-h)	Methane (%)	Oxygen (%)
9/21/2010	OFF	6,619.9	246	20	82	1,527	--	5.2	--
9/28/2010	ON	2,218.4	2,218	20	82	1,707	--	5.2	--
10/1/2010	OFF	2218.7	0	25	91	1,708	--	6.6	--
1/17/2011	OFF	3,577.2	1,359	20	149	1,910	7,585	9.5	--
1/20/2011	ON	3,647.4	70	20	44	1,913	7,616	2.8	4.44
1/24/2011	ON	3,729.9	83	20	50	1,917	7,809	3.2	5.12
1/26/2011	ON	3,776.2	46	20	50	1,919	7,901	3.2	4.95
1/31/2011	ON	3,887.0	111	20	41	1,924	8,216	2.6	4.82
2/3/2011	ON	3934.1	47	20	34	1,926	8,444	2.2	5.15
2/8/2011	ON	4029.2	95	20	31	1,929	8,682	2	4.61
2/10/2011	ON	4065.6	36	20	41	1,930	8,797	2.6	5.53
2/15/2011	OFF	4107.5	42	20	0	1,930	8,876	0	3.78
2/18/2011	ON	4,180	73	20	44	1,933	9,091	2.8	5.32
2/22/2011	ON	4260.6	81	20	53	1,938	9,277	3.4	5.77
2/25/2011	ON	4,328.5	68	20	41	1,940	9,395	2.6	4.87
2/28/2011	ON	4,396.3	68	20	44	1,943	9,431	2.8	5.78
3/4/2011	ON	4,488.5	92	20	38	1,947	9,678	2.4	5.67
3/10/2011	ON	4,606.3	118	20	47	1,952	9,813	3.0	5.44
3/14/2011	ON	4,696.0	90	20	38	1,956	9,939	2.4	5.61
3/17/2011	ON	4,739.3	133	20	38	1,961	10,028	2.4	4.67
3/22/2011	ON	4,806.3	67	20	34	1,963	10,139	2.2	4.05
3/24/2011	ON	4,827.9	22	20	44	1,964	10,217	2.8	3.95
3/29/2011	ON	4,941.0	113	20	28	1,967	10,491	1.8	4.82
4/3/2011	ON	5,088.8	148	20	22	1,970	10,535	1.4	4.71
4/12/2011	ON	5,265.4	177	20	28	1,975	10,783	1.8	4.31
4/15/2011	ON	5,337.9	73	20	28	1,977	10,858	1.8	4.30
4/22/2011	ON	5,503.1	165	20	22	1,981	11,092	1.4	3.82
5/5/2011	ON	5,799.5	296	20	16	1,986	11,371	1.0	3.43
5/26/2011	ON	6,269.6	470	20	6	1,989	11,768	0.4	-
7/14/2011	OFF	6,504.0	234	15	13	1,992	11,902	0.8	0.83
8/23/2011	OFF	7,063.2	559	20	6	1,995	12,088	0.4	1.17
9/1/2011	ON	7279.0	216	20	3	1,996	12,163	0.2	1.36
9/8/2011	ON	7447.9	169	20	0	1,996	12,237	0.0	0.87

TABLE 2

OPERATIONS AND MAINTENANCE DATA
PINE RIVER
4M OUTCROP MITIGATION PROJECT
COLORADO OIL AND GAS CONSERVATION COMMISSION

Date	System Status Upon Arrival	Blower (hours)	Differential (hours)	Blower Inlet Vacuum (" wc)	Calculated Methane Flow Rate (cfh)	Calculated Cumulative Methane Recovered (mcf)	Electric Meter (kW-h)	Methane (%)	Oxygen (%)
9/23/2011	ON	7807.9	360	20	0	1,996	12,386	0.0	0.8
11/18/2011	ON	9151.7	1,344	20	0	1,996	13,880	0.0	0.64
12/13/2011	ON	9751.4	600	20	0	1,996	14,080	0.0	0.72
2/9/2012	ON	11143.2	1,392	20	0	1,996	17,689	0.0	0.79
4/20/2012	ON	12847.2	1,704	20	0	1,996	20,203	0.0	0.83
7/6/2012	ON	14695.1	1,848	20	0	1,996	21,136	0.0	0.89

Notes:

" wc - inches water column
cfh - cubic feet per hour
mcf - 1,000 cubic feet
kW-h - kilowatt-hours
% - percent
< - less than