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January 3, 2017

Air Monitoring Adjacent to the Common Completions Pad Reporting Period: November 1, 2017, to November 30, 2017

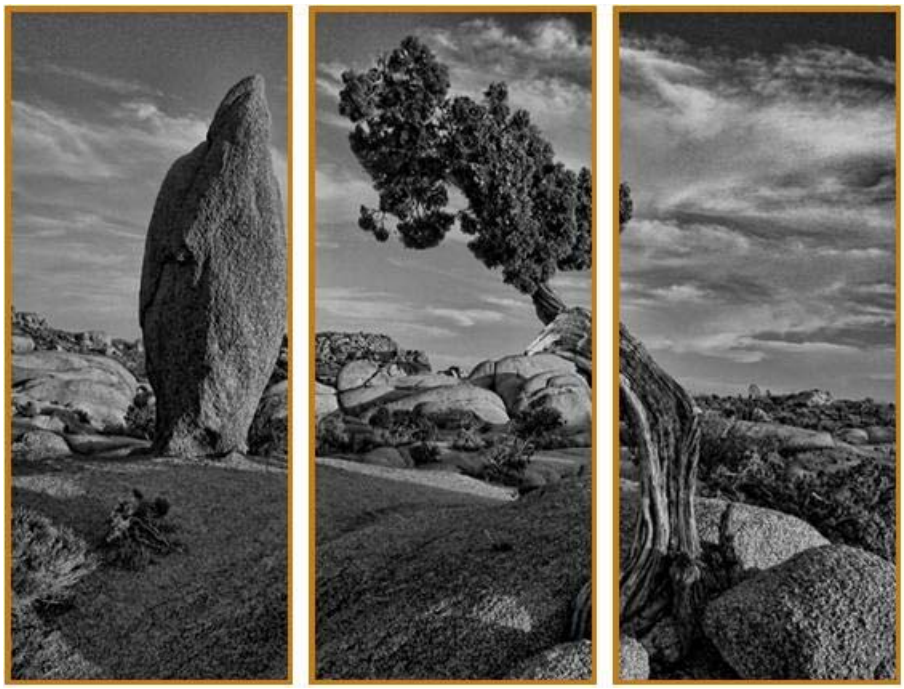
Air Monitoring of Crestone Peak Resources Operations
Erie, Colorado

Prepared For:

Town of Erie
64 Holbrook Street
Erie, Colorado 80516

Pinyon Project No.:

1/17-695-02.1300



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1. Introduction

1.1 Air Sampling for December Reporting Period

The Town of Erie (Town) has contracted with Pinyon Environmental, Inc. (Pinyon), to perform air quality monitoring near the Crestone Peak Resources (Crestone) Common Completions well site, hereafter referred to as the Completions Pad. Pinyon captured 24-hour air samples every five days at three sampling locations (Figure 1-1). Completions Site 1 is located 500 feet to the south of the Completions Pad. This location was selected by the Town to evaluate maximum concentrations near the Completions Pad. Completions Site 2 is located 2,430 feet to the south of the Completions Pad in a residential neighborhood. Waste Connections Site 2 is located 3,475 feet to the southwest of the Completions Pad in a residential neighborhood. Completions Site 2 and Waste Connections Site 2 were selected by the Town to evaluate potential exposures to residents located closest to the Completions Pad. This reporting period covers air samples collected from November 3, 2017, through November 29, 2017. Crestone began completion activities at the Completions Pad the week of September 11, 2017, and continued standard operations at this location throughout the reporting period.

A health screening evaluation of compounds detected in the samples collected from November 3, 2017, through November 29, 2017, was conducted to identify exposure for citizens in the area. A statistical analysis of trends in concentrations detected was also completed.

A summary of the data follows:

- From November 3, 2017, through November 29, 2017:
    - 19 of the 67 substances analyzed were detected at Completions Site 1
    - 16 of the 67 substances analyzed were detected at Completions Site 2
    - 18 of the 67 substances analyzed were detected at Waste Connections Site 2.
- Based on the sampling data, there is a very low potential for short- or long-term health effects due to exposure to these substances.

The conclusions of the health screening evaluation are based on six samples collected at each of the three sampling sites. Samples were collected for a short period of time. The samples may not have captured all the substances or concentrations of substances in the air during times when residents are experiencing exposures.

1.2 Statistical Analysis for all Collected Air Samples

In addition to the health screening evaluation for the six samples collected during this reporting period, Pinyon evaluated whether a statistically significant trend in detected substances over time could be demonstrated inclusive of all air sampling conducted through November 29, 2017. The statistical evaluation of potential trends, as detailed in Section 5, considered all substances detected at the three sites in all air samples collected by Pinyon. Sample collection at Completions Site 1 began on September 9, 2017, and has continued at this location for a total of 16 air samples. Sample collection at Completions Site 2 began on September 29, 2017, and has continued for a total of 12 samples. Samples collected at Completions Site 1 and 2 reflect well completion activities at the Completions Pad.

Air sample collection at Waste Connections Site 2 began on April 15, 2017, and has continued at this location through this reporting period. Air samples at Waste Connections Site 2 include two baseline samples collected

on April 16, 2017, and April 21, 2017, prior to Crestone beginning operations in the Town. To reflect drilling operations at the Waste Connections well site, air sampling was conducted at Waste Connections Site 2 from April 26, 2017 through July 20, 2017. Subsequently, further air sampling was conducted at this location from July 30, 2017 through September 5, 2017, during drilling operations at the Pratt well site. Finally, air sampling at Waste Connections Site 2 was conducted from September 9, 2017, through the end of this reporting period and reflect Crestone's completion activities at the Completions Pad. A total of 46 air samples have been collected at Waste Connections Site 2 since sampling began at this location.

These conclusions are therefore based on limited sampling, conducted during a limited investigation. Concentrations of constituents can be highly variable, and detections may be dependent on a variety of environmental conditions (e.g., date, operations, wind bearings, actual emissions from operations, changing emissions from operations, or other undetermined emission sources). This sampling may, therefore, not be representative of, or account for, all variables that could be present during all phases of oil and gas operations within the Town.

Figure 1-1 Air Monitoring Locations

2. Methodology

2.1 24-hour Summa Canister Air Samples

Pinyon utilized 6-liter Summa canisters to collect the air quality samples. A Summa canister is a spherical stainless-steel container that has had the internal surfaces specially passivated using a "Summa" process. The canister is prepared for sampling by evacuating the contents to a vacuum of approximately 29.9 inches of mercury (in Hg). Opening the stainless-steel bellows valve allows the air sample to enter the canister. A 24-hour flow controller was utilized to restrict the flow and to allow for collection at the desired flow rate over a period of 24 hours. After a 24-hour sample collection period, the valves were closed and Pinyon returned the canisters to the laboratory for analysis. Summa canister analysis was conducted by ESC Lab Sciences in accordance with EPA method TO-15 (EPA, 1999). EPA method TO-15 (TO-15) is appropriate for use when sampling a subset of 67 Volatile Organic Compounds (VOCs) which constitute the target analyte list (Table 2-1). Typical situations involve ambient air testing associated with potential exposures from emission sources, including oil and gas operations. In this case sampling and analysis of VOCs was performed to evaluate the potential exposure of dispersing source emissions in the surrounding area.

Table 2-1 EPA Method TO-15 Target Analyte List

Analyte	Reported Detection Limit (ppb)
Acetone	1.25
Allyl Chloride	0.200
Benzene	0.200
Benzyl Chloride	0.200
Bromodichloromethane	0.200
Bromoform	0.200
Bromomethane	0.200
1,3-Butadiene	2.00
Carbon disulfide	0.200
Carbon tetrachloride	0.200
Chlorobenzene	0.200
Chloroethane	0.200
Chloroform	0.200
Chloromethane	0.200
2-Chlorotoluene	0.200
Cyclohexane	0.200
Dibromochloromethane	0.200
1,2-Dibromomethane	0.200
1,2-Dichlorobenzene	0.200
1,3-Dichlorobenzene	0.200
1,4-Dichlorobenzene	0.200
1,2-Dichloroethane	0.200
1,1-Dichloroethane	0.200
1,1-Dichloroethene	0.200
cis-1,2-Dichloroethene	0.200
trans-1,2-Dichloroethene	0.200
1,4-Dioxane	0.200
Ethanol	0.200

Analyte	Reported Detection Limit (ppb)
Ethylbenzene	0.200
4-Ethyltoluene	0.200
Trichlorofluoromethane	0.200
Dichlorodifluoromethane	0.200
1,1,2-Trichlorotrifluoromethane	0.200
1,2-Dichlorotetrafluoroethane	0.200
Heptane	0.200
Hexachloro-1,3-butadiene	0.630
n-Hexane	0.200
Isopropylbezene	0.200
Methylene Chloride	0.200
Methyl Butyl Ketone	1.25
2-Butanone (MEK)	1.25
4-Methyl-2-pentanone (MBK)	1.25
Methyl methacrylate	0.200
MTBE	0.200
Naphthalene	0.630
2-Propanol	1.25
Propene	0.400
Styrene	0.200
1,1,2,2-Tetrachloroethane	0.200
Tetrachloroethylene	0.200
Tetrahydrofuran	0.200
Toluene	0.200
1,2,4-Trichlorobenzene	0.630
1,1,1-Trichloroethane	0.200
1,1,2-Trichloroethylene	0.200
Trichloroethylene	0.200
1,2,4-Trimethylbenzene	0.200
1,3,5-Trimethylbenzene	0.200
2,2,4-Trimethylpentane	0.200
Vinyl Chloride	0.200
Vinyl Bromide	0.200
Vinyl Acetate	0.200
m&p-Xylene	0.400
o-Xylene	0.200

During this reporting period, Pinyon collected one 24-hour sample every five days (Tables 2-2, 2-3 and 2-4).

Table 2-2 November 3, 2017, through November 29, 2017 Completions Site 1 Collection Dates

Sample Start Date	Sample Start Time	Sample End Date	Sample End Time
11/3/2017	8:15 AM	11/4/2017	8:00 AM
11/8/2017	10:45 AM	11/9/2017	10:30 AM
11/13/2017	11:25 AM	11/14/2017	11:15 AM
11/18/2017	3:15 PM	11/19/2017	3:00 PM
11/23/2017	8:40 AM	11/24/2017	8:15 AM
11/28/2017	12:08 PM	11/29/2017	12:00 PM

Table 2-3 November 3, 2017, through November 29, 2017 Completions Site 2 Collection Dates

Sample Start Date	Sample Start Time	Sample End Date	Sample End Time
11/3/2017	8:10 AM	11/4/2017	8:10 AM
11/8/2017	10:30 AM	11/9/2017	10:15 AM
11/13/2017	11:15 AM	11/14/2017	11:00 AM
11/18/2017	3:01 PM	11/19/2017	2:55 PM
11/23/2017	8:25 AM	11/24/2017	8:30 AM
11/28/2017	11:50 AM	11/29/2017	11:45 AM

Table 2-4 November 3, 2017, through November 29, 2017 Waste Connections Site 2 Collection Dates

Sample Start Date	Sample Start Time	Sample End Date	Sample End Time
11/3/2017	7:55 AM	11/4/2017	7:30 AM
11/8/2017	10:20 AM	11/9/2017	10:00 AM
11/13/2017	11:00 AM	11/14/2017	10:30 AM
11/18/2017	2:23 PM	11/19/2017	2:30 PM
11/23/2017	8:15 AM	11/24/2017	8:00 AM
11/28/2017	11:24 AM	11/29/2017	11:15 AM

2.2 Meteorology

Meteorological data is collected by the National Weather Service (NWS) at the Erie Municipal Airport in 20-minute intervals. The NWS data coinciding with the sampling periods were used to evaluate prevailing wind speed and wind direction during collection. Using the NWS data, a wind rose plot for the Erie Municipal Airport, corresponding to this reporting period, was generated by Pinyon. A wind rose plot is a graphical display of the frequency of wind direction and intensity of wind speed, and can be used to identify whether the sample was collected downwind of the well site, and how wind conditions during the sample collection period may affect sample results. A wind rose plot demonstrates the fraction of the observation period where wind

speeds are greater than zero and does not illustrate to what extent calm winds are observed during the sampling period. The wind rose plot was used to evaluate the frequency at which the sampling sites were downwind of the Completions Pad and to assess whether periods of high winds were observed. Calm winds and low wind speeds are ideal for the collection of ambient air samples, as under these conditions substances will not rapidly disperse from the sampling location. During periods of recorded high wind speeds or periods when the sampling location is not downwind of the well, the sample may underestimate ambient concentrations

2.3 Screening Level Health Evaluation

A screening level health evaluation was performed by comparing the concentrations of detectable substances in the air sample with short-term and long-term health limit levels established by federal and state agencies for each detected substance. The health limit levels represent the concentrations at or below which no appreciable health effects are likely to occur to individuals (including sensitive individuals) for a certain exposure period. Concentrations at or below this level can be considered a "safe" level of exposure. The sampling completed for this investigation represents a "snapshot" of the air concentrations in the area during the time of collection, and may not be representative of the potential exposures over a longer period. A generally accepted method for conducting this type of health evaluation is to conduct a two-step screening process:

1. Compare the results of the short-term sample with long-term health screening levels.
   a) If the substance result is below the long-term health screening level, it is very unlikely that short-term exposure will result in short or long-term negative health consequences. A short-term exposure is considered exposure of 24 hours a day, for up to one year, to that pollutant.
   b) If the sample result is above the long-term health screening level, then move on to step two. A long-term exposure is considered a minimum of one year of exposure.

2. Compare the results of the short-term sample (substance identified in step one) with short-term health screening levels.
   a) If the sample result is below the short-term health screening level, it is unlikely that short-term exposure to this substance will result in negative health consequences.

Pinyon utilized health screening levels established by the following agencies in the evaluation:

- Environmental Protection Administration Integrated Risk Information System (IRIS)
- ATSDR MRL (US Agency for Toxic Substances and Disease Registry Minimal Risk Level)
- TCEQ AMCV (Texas Commission on Environmental Quality Air Monitoring Comparison Values)

2.4 Trends in Detected Substances

If a substance was detected above the reporting detection limit (RDL) in one or more samples, Pinyon performed statistical analysis of the data to evaluate trends in concentrations over time, using all of the data collected at each sampling site (not just the data collected during this reporting period). If the substance was not detected by the lab on a specific sampling date, for the statistical analysis Pinyon used a concentration of one-half of the RDL in the graphical display. This approach is supported by the Environmental Protection Agency (EPA) for risk assessments and recognizes that values between the RDL and zero could be present, and that the average value could be as high as half of the RDL (EPA, 1991). Pinyon calculated the Pearson correlation coefficient (R-value) for each detected substance and then determined the p-value to assess whether the trend was statistically significant. The R-value is a statistical variable that is commonly utilized to assess trends in concentrations over time (Davis, 2002). The R-value ranges from -1.0 to 1.0 with an R-value

of 1.0 representing a linear increase in measured concentration levels over time and -1.0 representing a linear decrease in measured concentration levels over the reporting period. The closer the R-value is to zero, the less linear the trend in concentration levels over the reporting period. To assess the level of confidence in the calculated R-value, a p-value is calculated. The p-value is based on the magnitude of the R-value and the total number of samples (n) collected in the reporting period. A p-value of less than or equal to 0.05 means that there is a 95% confidence level that the calculated trend is statistically significant.

3. Meteorology

Pinyon utilized the meteorological data as measured in 20-minute intervals from the Erie Municipal Airport to assess the prevailing wind direction and the percent of time the sampling sites were downwind of the well site and the percent of time calm winds were recorded during the sample collection periods (Table 3-1, Figure 3-1). An explanation of the data is also provided in the following narrative:

- During the November 3, 2017, to November 4, 2017, and November 28, 2017, to November 29, 2017, sample collection periods, Completions Site 1, Completions Site 2, and Waste Connections Site 2 were rarely downwind of the Completions pad. However, calm winds were recorded for the majority of the sample collection period (Table 3-1). The significant presence of calm winds indicates that during these sample collection periods, the meteorological conditions were likely to be adequate in representing ambient conditions at the three sampling locations.

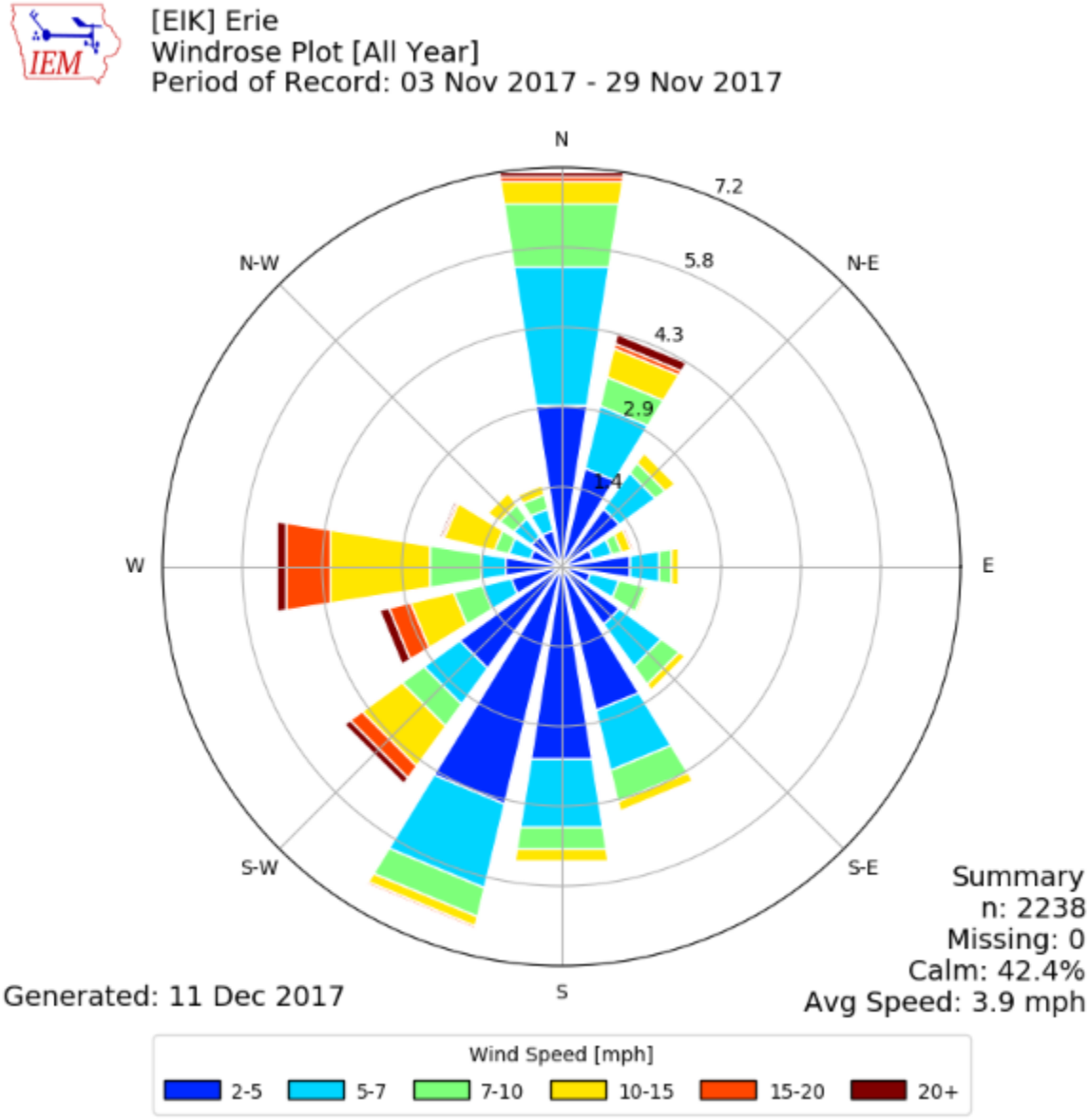
- During the November 8, 2017, to November 9, 2017; November 13, 2017 to November 14, 2017; and November 18, 2017, to November 19, 2017, sample collection periods, Completions Site 1, Completions Site 2, and Waste Connections Site 2 were rarely downwind of the Completions pad. Calm winds were recorded for a moderate (40.96 - 46.25%) portion of the sample collection periods (Table 3-1). The significant presence of calm winds indicates that during these sample collection periods, the meteorological conditions were likely to be adequate in representing ambient conditions at the three sampling locations.

- During the November 23, 2017, to November 24, 2017, sample collection period, Completions Site 1, Completions Site 2, and Waste Connections Site 2 were rarely downwind of the Completions pad. Additionally, calm winds were only recorded for 19.54% of the sample collection period (Table 3-1). As the sampling locations were not downwind of the Completions Pad for a significant portion the sampling period, and calm winds were not observed for a majority of the sampling period, the samples collected from November 23, 2017, to November 24, 2017, may underestimate ambient conditions in the areas adjacent to the three sampling locations. However, this sample is still representative of conditions in the sampling locations.

Table 3-1 Meteorological Data as Measured from the Erie Municipal Airport

Sample Start Date	Prevailing Wind Direction	Completions Site 1 Downwind (%)	Completions Site 2 Downwind (%)	Waste Connections Site 2 Downwind (%)	Calm Winds (%)
11/3/2017	North	1.16	1.16	2.33	58.14
11/8/2017	North	5.00	5.00	1.25	46.25
11/13/2017	South	2.38	2.38	2.38	45.24
11/18/2017	Southwest	0.00	0.00	0.00	40.96
11/23/2017	West	0.00	0.00	1.15	19.54
11/28/2017	South southwest	0.00	0.00	0.00	57.14

Figure 3-1 Wind Rose for November 3, 2017, to November 29, 2017



4. Air Sampling Results

As detailed in Section 2.1, the air samples were analyzed for 67 compounds (Table 2-1). Nineteen of the 67 compounds analyzed by the lab were detected in the six air samples collected by Pinyon at Completions Site 1 (Table 4-1). Sixteen of the 67 compounds analyzed by the lab were detected in the six air samples collected by Pinyon at Completions Site 2 (Table 4-1). Eighteen of the 67 compounds analyzed by the lab were detected in the six air samples collected by Pinyon at Waste Connections Site 2 (Table 4-3). The concentrations of all detected substances were below short- and long-term health screening levels (Tables 4-1, 4-2 and 4-3).

Table 4-1 Air Sampling Results November 3, 2017, to November 29, 2017, Completions Site 1

Analyte	Sample Concentration (ppb)						Health Screening Level (ppb)	
	11/3/2017	11/8/2017	11/13/2017	11/18/2017	11/23/2017	11/28/2017	Short Term	Long Term
Acetone	2.91	2.27	2.60	2.01	1.30	1.66	26,000[A]	13,000[A]
Benzene	1.01	0.703	0.795	0.396	0.494	0.675	9,000[I]	9[I]
Chloromethane	0.361	0.320	0.486	0.494	0.529	0.533	200[A]	50[A]
Cyclohexane	2.21	1.18	1.32	0.458	1.06	1.26	1,000[I]	1,743[I]
Ethanol	4.70	2.88	5.02	3.47	1.59	2.21	NA	NA
Ethylbenzene	0.219	0.238	<0.200	<0.200	<0.200	<0.200	33,000[I]	2301[I]
4-Ethyltoluene	0.262	<0.200	<0.200	<0.200	<0.200	<0.200	250T	25T
Trichlorofluoromethane	0.255	0.242	0.238	0.209	0.217	0.239	10,000[T]	1,000[T]
Dichlorodifluoromethane	0.308	0.302	0.301	0.384	0.229	0.268	10,000[T]	1,000[T]
Heptane	3.19	1.66	2.02	0.611	1.55	1.51	850[I]	85[I]
n-Hexane	5.74	3.01	3.78	1.25	2.95	4.01	1,800[I]	198[I]
Methylene Chloride	<0.200	<0.200	<0.200	0.600	<0.200	<0.200	600[A]	100[T]
Naphthalene	<0.630	1.59	<0.630	<0.630	<0.630	<0.630	1891	7A
Propene	<0.400	<0.400	<0.400	1.84	1.63	2.31	NA	NA
Tetrahydrofuran	<0.200	<0.200	<0.200	0.251	<0.200	<0.200	680[I]	680[I]
Toluene	2.53	1.65	2.05	0.683	1.00	1.17	2,000[A]	1,327[I]
1,2,4-Trimethylbenzene	0.367	0.207	<0.200	<0.200	<0.200	<0.200	250T	25T
m&p-Xylene	1.72	1.33	1.35	<0.400	0.535	0.552	2,000[A]	23[I]
o-Xylene	0.476	0.378	0.394	<0.200	<0.200	<0.200	2,000[A]	23[I]

1 IRIS (Environmental Protection Agency Integrated Risk Information System)
A ATDSR MRL (US Agency for Toxic Substances and Disease Registry Minimal Risk Level)
T TCEQ AMCV (Texas Commission on Environmental Quality Air Monitoring Comparison Value)
NA no health value available
ppb parts per billion

Table 4-2 Air Sampling Results November 3, 2017, to November 29, 2017, Completions Site 2

Analyte	Sample Concentration (ppb)						Health Screening Level (ppb)	
	11/3/2017	11/8/2017	11/13/2017	11/18/2017	11/23/2017	11/28/2017	Short Term	Long Term
Acetone	4.01	2.43	4.14	2.01	1.62	1.95	26,000[A]	13,000[A]
Benzene	0.580	<0.200	0.474	0.396	0.226	<0.200	9,000I	9I
Chloromethane	0.383	0.254	0.464	0.494	0.565	0.525	200[A]	50[A]
Cyclohexane	1.03	<0.200	0.660	0.458	0.347	<0.200	1,000I	1,743I
Ethanol	5.03	3.90	10.4	3.47	4.01	2.86	NA	NA
Trichlorofluoromethane	0.297	<0.200	0.257	0.209	0.248	0.240	10,000[T]	1,000[T]
Dichlorodifluoromethane	0.309	0.277	0.381	0.384	0.286	0.246	10,000[T]	1,000[T]
Heptane	1.36	<0.200	0.809	0.611	0.481	<0.200	850[I]	85[I]
n-Hexane	2.88	0.356	1.92	1.25	1.01	0.318	1,800[I]	198[I]
Methylene Chloride	<0.200	<0.200	0.341	0.600	<0.200	<0.200	600[A]	100[T]
Propene	<0.400	<0.400	4.94	1.84	0.984	0.651	NA	NA
Tetrahydrofuran	<0.200	<0.200	<0.200	0.251	<0.200	<0.200	680[I]	680[I]
Toluene	1.37	0.259	1.32	0.683	0.469	0.265	2,000[A]	1,327[I]
1,2,4-Trimethylbenzene	0.211	<0.200	<0.200	<0.200	<0.200	<0.200	250T	25T
m&p-Xylene	0.827	<0.400	0.581	<0.400	<0.400	<0.400	2,000[A]	23[I]
o-Xylene	0.250	<0.200	<0.200	<0.200	<0.200	<0.200	2,000[A]	23[I]

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T TCEQ AMCV (Texas Commission on Environmental Quality Air Monitoring Comparison Value)
NA no health value available
ppb parts per billion

Table 4-3 Air Sampling Results November 3, 2017, to November 29, 2017, Waste Connections Site 2

Analyte	Sample Concentration (ppb)						Health Screening Level (ppb)	
	11/3/2017	11/8/2017	11/13/2017	11/18/2017	11/23/2017	11/28/2017	Short Term	Long Term
Acetone	17.0	1.92	3.05	2.01	1.82	1.61	26,000[A]	13,000[A]
Benzene	0.489	0.482	0.539	0.396	0.399	<0.200	9,000[I]	9[I]
Chloromethane	0.532	0.326	0.468	0.494	0.545	0.518	200[A]	50[A]
Cyclohexane	0.826	0.697	0.786	0.458	0.661	<0.200	1,000[I]	1,743[I]
Ethanol	22.7	2.69	7.17	3.47	3.67	1.91	NA	NA
Trichlorofluoromethane	0.291	0.219	0.256	0.209	0.233	0.235	10,000[T]	1,000[T]
Dichlorodifluoromethane	0.313	0.312	0.427	0.384	0.332	0.237	10,000[T]	1,000[T]
Heptane	0.954	0.796	0.982	0.611	1.12	0.1	850[I]	85[I]
n-Hexane	2.54	1.92	2.27	1.25	1.80	0.313	1,800[I]	198[I]
Methylene Chloride	<0.200	<0.200	0.564	0.600	<0.200	<0.200	600[A]	100[T]
2-Butanone (MEK)	6.62	<1.25	<1.25	<1.25	<1.25	<1.25	200,000[A]	200,000[A]
2-Propanol	8.99	<1.25	<1.25	<1.25	<1.25	<1.25	NA	NA
Propene	<0.400	<0.400	6.09	1.84	1.45	0.629	NA	NA
Tetrahydrofuran	<0.200	<0.200	0.489	0.251	<0.200	<0.200	680[I]	680[I]
Toluene	1.23	0.929	1.38	0.683	0.813	0.248	2,000[A]	1,327[I]
1,2,4-Trimethylbenzene	0.290	<0.200	<0.200	<0.200	<0.200	<0.200	250[T]	25[T]
m&p-Xylene	0.706	0.483	0.705	<0.400	0.480	<0.400	2,000[A]	23[I]
o-Xylene	0.210	<0.200	<0.200	<0.200	<0.200	<0.200	2,000A	231

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T TCEQ AMCV (Texas Commission on Environmental Quality Air Monitoring Comparison Value)
NA no health value available
ppb parts per billion

5. Trends in Detected Substances

As detailed in Section 1.2, Pinyon evaluated whether a statistically significant trend in detected substances over time could be demonstrated inclusive of all air sampling conducted through November 29, 2017, at Completions Site 1, Completions Site 2 and Waste Connections Site 2. The statistical evaluation of potential trends, as detailed below, considered all substances detected at the three sites in all air samples collected by Pinyon.

5.1 Completions Site 1

Pinyon calculated the R-value and p-value for all substances detected from the sample collection start date of September 9, 2017, though November 29, 2017, at Completions Site 1 (Table 5-1). The p-value was greater than 0.05 for most substances, which indicates that trends are not statistically significant during this reporting period. The exceptions to this were benzene, cyclohexane, heptane, n-hexane, and propene. The magnitudes of the calculated R-values for these substances are greater than 0.50, and p-values are less than 0.05, indicating that measured concentrations of these substances are increasing over time at greater than the 95% confidence level. Furthermore, the calculated R-value for acetone is -0.53 and the p-value is less than 0.05, which indicates that concentrations of this substance are decreasing from the inception of the sampling period. Although measured levels of these substances are increasing over time (with the exception of acetone which is decreasing), their detected concentrations have remained significantly below short-term and long-term health screening levels indicating that there is a large factor of safety in potential exposures adjacent to this sampling location (Section 4). This reporting period constituted a relatively small sample size (n=16), and it is possible that if additional samples had been collected at Completions Site 2, additional statistically significant trends in detected substances over time could be inferred.

Table 5-1 R-value and p-value of Detected Substances at Completions Site 1

Substance	R-value	p-value
Acetone	**-0.53**	**0.03**
Benzene	**0.68**	**0.004**
Chloromethane	0.01	0.958
Cyclohexane	**0.63**	**0.01**
Ethanol	-0.30	0.26
Ethylbenzene	0.03	0.91
4-Ethyltoluene	-0.19	0.47
Trichlorofluoromethane	-0.05	0.87
Dichlorodifluoromethane	-0.13	0.64
Heptane	**0.64**	**0.01**
n-Hexane	**0.69**	**0.003**
Methylene Chloride	0.03	0.91
2-Butanone (MEK)	-0.23	0.39
Naphthalene	0.23	0.39
2-Propanol	-0.21	0.45
Propene	**0.54**	**0.03**
Styrene	-0.11	0.70
Tetrachloroethylene	-0.24	0.38
Tetrahydrofuran	-0.21	0.43
Substance	**R-value**	**p-value**
Toluene	0.27	0.31

1,1,1-Trichloroethane	-0.07	0.79
Trichloroethylene	-0.15	0.57
1,2,4-Trimethylbenzene	0.26	0.34
2,2,4 - Trimethylpentane	0.01	0.98
m&p-Xylene	0.40	0.12
o-Xylene	0.29	0.27

5.2 Completions Site 2

Pinyon calculated the R-value and p-value for all substances detected from the sample collection start date of September 29, 2017, though November 29, 2017, at Completions Site 2 (Table 5-2). The p-value was generally greater than 0.05 for all substances, which indicates that trends are not statistically significant during this reporting period. The exception to this was acetone; the calculated R-value for acetone is -0.61 and the p-value was 0.04. This implies that measured concentrations of acetone are decreasing over time at greater than the 95% confidence level. The detected concentrations of acetone have remained significantly below short-term and long-term health screening levels indicating that there is a large factor of safety in potential exposures adjacent to this sampling location (Section 4). This reporting period constituted a relatively small sample size (n=12), and it is possible that if additional samples had been collected at Completions Site 2, additional statistically significant trends in detected substances over time could be inferred.

Table 5-2 R-value and p-value of Detected Substances at Completions Site 2

Substance	R-value	p-value
Acetone	**-0.61**	**0.04**
Benzene	0.23	0.47
Chloromethane	0.08	0.81
Cyclohexane	0.30	0.34
Ethanol	-0.38	0.22
Ethylbenzene	-0.16	0.61
4-Ethyltoluene	-0.16	0.61
Trichlorofluoromethane	-0.10	0.76
Dichlorodifluoromethane	0.17	0.61
Heptane	-0.17	0.60
n-Hexane	0.28	0.37
Methylene Chloride	0.21	0.50
Propene	0.24	0.45
Naphthalene	-0.01	0.98
2-Butanone (MEK)	-0.47	0.12
2-Propanol	-0.01	0.98
Tetrachloroethylene	-0.04	0.91
Tetrahydrofuran	-0.50	0.10
Toluene	-0.06	0.86
Trichloroethylene	-0.01	0.98
1,2,4-Trimethylbenzene	-0.16	0.62
1,3,5 - Trimethylbenzene	-0.16	0.62

2,2,4-Trimethylpentane	-0.01	0.98
m&p-Xylene	-0.11	0.74
o-Xylene	-0.15	0.63

5.3 Waste Connections Site 2

Pinyon calculated the R-value and p-value for all substances detected from the sample collection start date of April 15, 2017, though November 29, 2017, at Waste Connections Site 2 (Table 5-3). The p-value was generally greater than 0.05 for all substances, which indicates that any trends are not statistically significant during this reporting period. The exception to this was propene; the calculated R-value for propene was 0.37 and the p-value was 0.011. This indicates that measured concentrations of propene were increasing over time at greater than the 95% confidence level. There are no short-term and long-term health screening levels for propene (Section 4). The sampling period at Waste Connections Site 2 represents a fairly robust sample size (n=46), and it is likely that this is adequate for evaluating statistically significant trends in detected substances over time at this location. However, the samples collected at Waste Connections Site 2 represent numerous phases of Crestone's well development activities at two distinct wells, as well as the Completions Pad.

Table 5-3 R-value and p-value of Detected Substances at Waste Connections Site 2

Substance	R-value	p-value
Acetone	0.08	0.61
Benzene	0.29	0.05
Carbon disulfide	0.18	0.23
Carbon tetrachloride	0.22	0.14
Chloroethane	0.08	0.60
Chloromethane	0.13	0.37
Cyclohexane	0.23	0.12
cis-1,2-Dichloroethane	0.14	0.37
1,4-Dioxane	0.01	0.94
Ethanol	0.03	0.83
Ethylbenzene	0.13	0.40
4-Ethyltoluene	0.09	0.55
Trichlorofluoromethane	0.20	0.17
Dichlorodifluoromethane	0.24	0.10
Heptane	0.24	0.10
n-Hexane	0.23	0.12
Isopropylbenzene	0.08	0.61
Methylene Chloride	0.19	0.21
2-Butanone (MEK)	0.00	0.99
Naphthalene	0.03	0.86
Methyl methacrylate	0.11	0.47
2-Propanol	0.01	0.97
Propene	**0.37**	**0.011**
Styrene	0.02	0.91
Tetrachloroethylene	0.24	0.11
Tetrahydrofuran	0.04	0.77
Toluene	0.07	0.66

Trichloroethylene	0.01	0.96
1,1,2-Trichloroethane	0.11	0.49
1,2,4-Trimethylbenzene	0.09	0.54
1,3,5-Trimethylbenzene	0.09	0.54
2,2,4-Trimethylpentane	0.14	0.35
Substance	**R-value**	**p-value**
m&p-Xylene	0.09	0.55
o-Xylene	0.09	0.56

6. Conclusions

Pinyon collected 24-hour air samples every five days at Completions Site 1, Completions Site 2, and Waste Connections Site 2 from November 3, 2017, to November 29, 2017. This reporting period presented the results of the air samples collected from November 3, 2017, to November 29, 2017, as well as calculated trends in detected substances from the sampling locations start date through November 29, 2017. The air sample measurements collected reflect well completion activities at a unique site in Erie, Colorado. The following limitations must be considered before definitive conclusions can be made:

- Samples collected for a short amount of time may not accurately represent continuous exposure or the ranges of potential exposures.
- These samples reflect exposures in that area for a period of time, and are not intended to identify the source of exposures. The substances identified in the sample could come from multiple sources.
- Samples collected during other phases of Crestone's operations and different weather conditions may have very different results.
- The samples were analyzed for a limited set of substances that could be present in the air.

Based on the results from the air sampling data collected adjacent to the Completions Pad, it is unlikely that short-term or long-term exposures would result in negative health effects. There were no exceedances of short-term or long-term health screening levels at any sampling location during this reporting period.

The air monitoring data provided in this report provides a general understanding of ambient concentrations of select pollutants adjacent to the Completions well site during the drilling phase of Crestone's activities. Based on meteorology data collected at the Erie Municipal Airport, the air sampling locations were generally representative of ambient conditions during five of the six sample collection periods. During one of the sample collection periods, none of the three sampling locations were downwind of the Completions Pad for a significant period of time and calm winds only prevailed 19.54% of the time meteorological measurements collected at the Erie Municipal Airport. Thus, the air samples collected during the November 23, 2017 to November 24, 2017 sampling periods could underrepresent concentrations that citizens would be exposed to at other locations which were downwind of the Completions Pad.

These conclusions are based on limited sampling, conducted during a limited investigation. Concentrations of constituents can be highly variable, and detections may be dependent on a variety of environmental conditions (e.g., date, operations, wind bearings, actual emissions from operations). This sampling may, therefore, not be representative of, or account for all variables that could be present during oil and gas operations within Erie and should not be considered conclusive of future operations.

7. References

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