



UTAH DEPARTMENT OF  
ENVIRONMENTAL QUALITY



## Alton Coal Development, LLC

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Cedar City, Utah 84720

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SEP - 7 2023

DIVISION OF AIR QUALITY

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August 31, 2023

Andrea Bartlett  
Engineer  
Major New Source Review Section  
Utah Division of Air Quality  
195 North 1950 West  
Salt Lake City, UT 84114

RE: 2nd QT 2023 Report - Coal Hollow Mine  
Project ID: N14047-0004

Dear Mrs. Bartlett,

Please find enclosed the Summary of PM<sub>10</sub> Data Collected at the Coal Hollow Mine, Utah during the Second Quarter, 2023 prepare by Alton Coal Development LLC.

Please do not hesitate to contact me if you have any questions. I can be reached at (435) 867-5331 or (435) 691-1551.

Sincerely,

B. Kirk Nicholes  
Environmental Specialist  
Alton Coal Development LLC

# Alton Coal Development LLC.

## Summary of PM<sub>10</sub> Data

Collected at Coal Hollow Mine, Utah

During the Second Quarter, 2023

UTAH DEPARTMENT OF  
ENVIRONMENTAL QUALITY

SEP - 7 2023

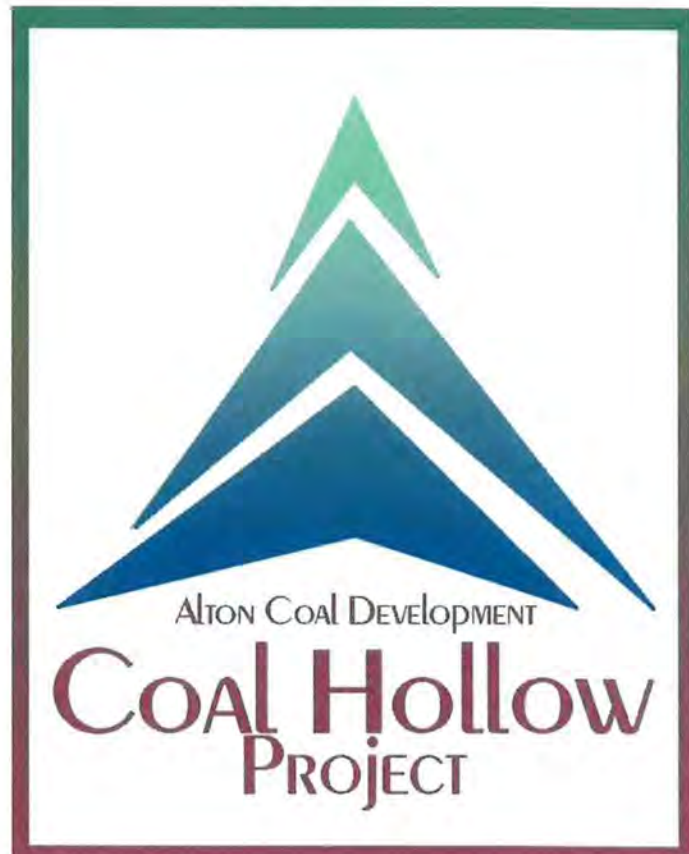
### Submitted to:

Utah Division of Environmental Quality  
Division of Air Quality  
195 North 1950 West  
Salt Lake City, Utah  
Contact: Andrea Bartlett

DIVISION OF AIR QUALITY

### Prepared by:

Alton Coal Development, LLC.  
463 N 100W, Suite 1  
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Contact: Kirk Nicholes  
435.867.5331



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## 1.0 INTRODUCTION

This report summarizes measurements of Particulate Matter less than 10 microns nominal aerodynamic diameter (PM<sub>10</sub>) collected and processed by Alton Coal Development LLC, (ACD) from the five monitoring stations located at the Coal Hollow Mine Facility in Alton, Utah. Monitoring for PM<sub>10</sub> is a condition of the mines operating permit.

PM<sub>10</sub> monitoring at the site consists of five BGI PQ200 PM<sub>10</sub> monitors run by solar power. Figure 2 of this report shows the approximate locations of the monitoring locations. The BGI PQ200 monitors are EPA Reference Method monitors and are operated on the National Particulate 1-in-6 Monitoring Schedule. The data summarized herein covers the data collected during the second quarter of 2023.

## 2.0 SITE LOCATION

The Coal Hollow Mine is located in Kane County, Utah, approximately three miles southeast of the town of Alton, Utah. Figure I on the following page gives an overview of the site location. Specifically, the Coal Hollow Mine is located in Sections 7, 18, 19, 20, 29, and 30 of Township 39S, Range 5W and Section 12 and 13 of Township 39S, Range 6W; with an approximate facility location of:

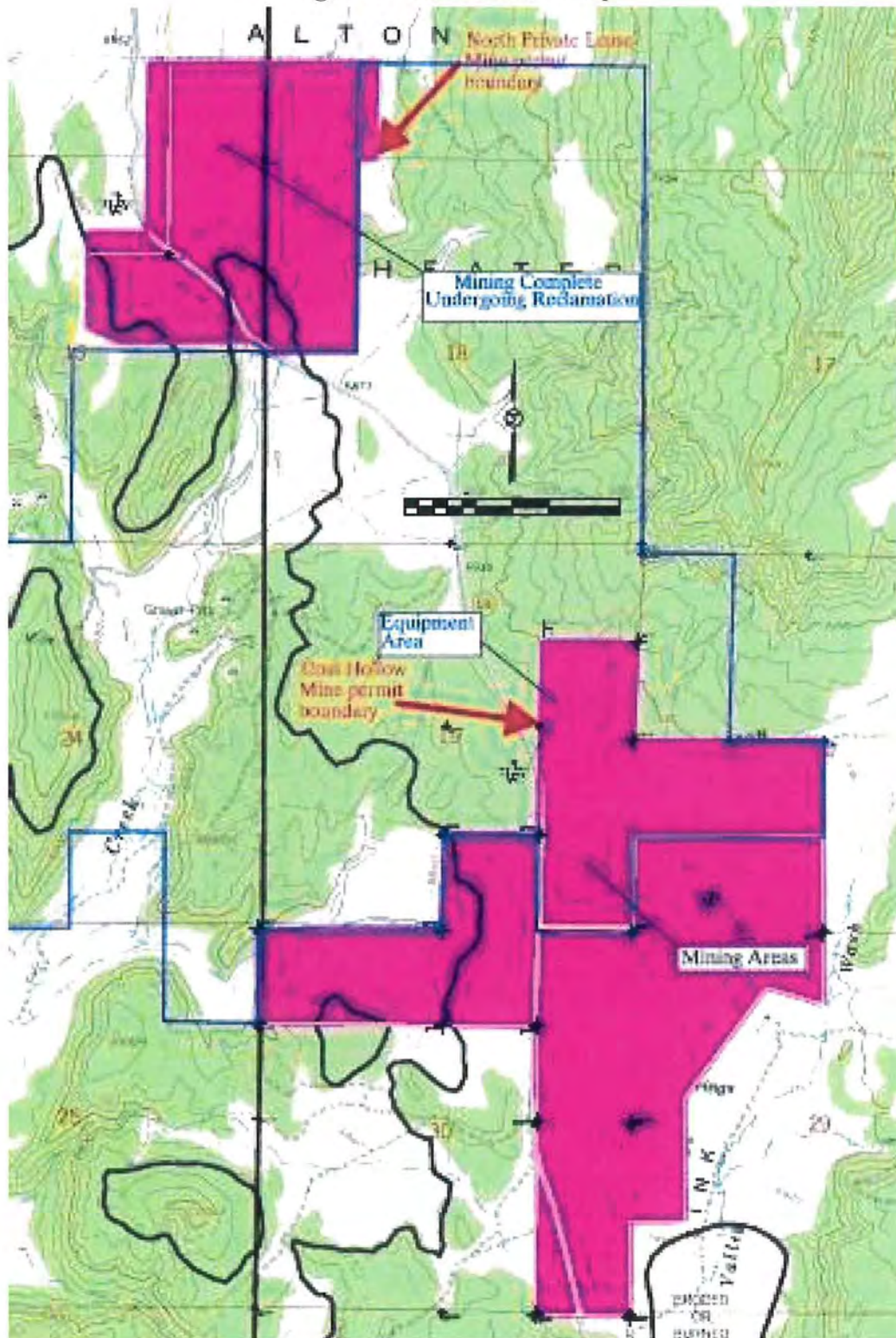
Northing: 41401699 meters

Easting: 371534 meters

Universal Transverse Mercator (UTM) Datum NAD27, Zone 12

The three monitoring locations as depicted in Figure 2, are located in positions to collect both background and maximum PM<sub>10</sub> concentrations. The background monitor has a manufactures serial #962, therefore this monitor will be referred as monitor 962A. The compliance monitor for the Coal Hollow Mine (CHM) has a manufactures serial #963, therefore this monitor will be referred as monitor 963B. The co-located monitor has a manufactures serial #964, therefore this monitor will be referred as monitor 964C. The background monitor coordinates are Northing: 4140856, Easting 373119, (UTM) Datum NAD27, Zone 12. In preparation for future mining at the South Private Lease (SPL), the CHM compliance monitor and the co-located monitor have been relocated to the coordinates: Northing: 4140833, Easting 371231, (UTM) Datum NAD27, Zone 12. The North Private Lease area of the CHM is located in Sections 12, 13 of Township 39S, Range 6W and Sections 7, 18 of Township 39S, Range 5W. The compliance monitor for the North Private Lease has a manufactures serial #2366, therefore this monitor will be referred as monitor 2366D. The co-located monitor has a manufactures serial #2398, therefore this monitor will be referred as monitor 2398E. The NPL compliance monitor and the co-located monitor coordinates are Northing: 4141570, Easting 370928, (UTM) Datum NAD27, Zone 12.

Figure 1 - Site Location Map



**Figure 2 - Satellite View of Monitoring Locations**



### **3.0 AIR QUALITY DATA SUMMARIES**

A listing of the measured PM<sub>10</sub> concentrations for the quarter are presented in Appendix B (individual data sheets are provided on the enclosed disk in the PDF version of Appendix B) and Field Data Sheets generated during the collection of each sample are presented in Appendix D. Measurements were collected during a 24-hour periods and represent the average PM<sub>10</sub> concentration during the midnight-to-midnight data collection cycle. As required by the operating permit for the CHM, duplicate measurements were made with Sampler #963B (designated as a compliance monitor) and Sampler #964C (designated as a co-located sampler) to the extent possible. The quarterly mean PM<sub>10</sub> concentration and the comparison of measured concentrations to standards are based on measurements from the primary Sampler #963B. If a measurement from Sampler #963B was missing or invalid, the measurement from the secondary Sampler #964C would be used. Also, required by the operating permit for the NPL, duplicate measurements were made with Sampler #2366D (designated as a compliance monitor) and Sampler #2398E (designated as a co-located sampler) to the extent possible. The quarterly mean PM<sub>10</sub> concentration and the comparison of measured concentrations to standards are based on measurements from the primary Sampler #2366D. If a measurement from Sampler #2366D was missing or invalid, the measurement from the secondary Sampler #2398E would be used.

The highest 24-hour mean PM<sub>10</sub> concentrations measured during the quarter from the three monitoring locations are summarized in Table I, Table II, Table III, Table IV and Table V. The three highest concentrations, # of valid samples, and the arithmetic mean concentrations from each of the sites are listed. All measured PM<sub>10</sub> concentrations were below the 24-hour National Ambient Air Quality Standard (NAAQS) of 150 µg/m<sup>3</sup>.

**Table I - Summary of Measured PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)  
Background Monitor - 962A**

RANK	DATE	PM <sub>10</sub> CONCENTRATION
Highest	6/29/23	22.2
2 <sup>nd</sup> Highest	5/12/23	12.4
Monthly Mean	4/1/23-4/30/23	3.4
Monthly Mean	5/1/23-5/31/23	8.2
Monthly Mean	6/1/23-3/30/23	11.8
Quarterly Mean	4/1/23-6/30/23 (8 valid samples)	8.9

**Table II - Summary of Measured PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)  
Compliance Monitor - 963B**

RANK	DATE	PM <sub>10</sub> CONCENTRATION
Highest	4/12/23	141.6
2 <sup>nd</sup> Highest	5/30/23	64.5
Monthly Mean	4/1/23-4/30/23	51.6
Monthly Mean	5/1/23-5/31/23	31.5
Monthly Mean	6/1/23-3/30/23	19.8
Quarterly Mean	4/1/23-6/30/23 (15 valid samples)	34.3

**Table III - Summary of Measured PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)  
Collocated Monitor – 964C**

RANK	DATE	PM <sub>10</sub> CONCENTRATION
Highest	4/12/23	122.7
2 <sup>nd</sup> Highest	4/18/23	81.3
Monthly Mean	4/1/23-4/30/23	49.0
Monthly Mean	5/1/23-5/31/23	30.7
Monthly Mean	6/1/23-3/30/23	56.0
Quarterly Mean	4/1/23-6/30/23 (10 valid samples)	39.9

**Table IV - Summary of Measured PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)  
Compliance Monitor – 2366D**

RANK	DATE	PM <sub>10</sub> CONCENTRATION
Highest	6/5/23	12.4
2 <sup>nd</sup> Highest	NA	NA
Monthly Mean	4/1/23-4/30/23	NA
Monthly Mean	5/1/23-5/31/23	NA
Monthly Mean	6/1/23-3/30/23	12.4
Quarterly Mean	4/1/23-6/30/23 (1 valid samples)	12.4



**Table V - Summary of Measured PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)  
Collocated Monitor – 2398E**

RANK	DATE	PM <sub>10</sub> CONCENTRATION
Highest	6/29/23	25.3
2 <sup>nd</sup> Highest	6/23/23	12
Monthly Mean	4/1/23-4/30/23	NA
Monthly Mean	5/1/23-5/31/23	NA
Monthly Mean	6/1/23-6/30/23	12.6
Quarterly Mean	4/1/23-6/30/23 (5 valid samples)	12.6

**Table VI – Mean Quarterly and Monthly Wind Speed**

	2nd Quarter 2023	Apr.	May	Jun.
Mean Wind Speed (m/s)	2.64	2.88	2.70	2.34

#### **4.0 DATA RECOVERY AND QUALITY ASSURANCE**

##### **4.1 Data Recovery**

###### Monitor 962A

Monitor 962A collected 8 of the 15 samples during the quarter. The percent recovery for this quarter is 53%. For the sample dates of Apr 6<sup>th</sup>, Apr 12<sup>th</sup>, and Apr 18<sup>th</sup>, the site was inaccessible due to snow/mud. For sample dates Apr 30<sup>th</sup>, May 24<sup>th</sup>, Jun 11<sup>th</sup>, and Jun 23<sup>rd</sup>, the current runs data would not download.

###### Monitor 963B

Monitor 963B collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

###### Monitor 964C

Monitor 964C collected 10 of the 15 samples during the quarter. The percent recovery for this quarter is 67%. For the sample dates Jun 5<sup>th</sup>, download data was missing. For the sample date Jun 11<sup>th</sup> was programed for the incorrect stop date. For the sample dates Jun 17<sup>th</sup>, Jun 23<sup>rd</sup> and Jun 29<sup>th</sup>, the pump motor was failing giving incomplete runs.

Monitor 2366D

Monitor 2366D collected 1 of the 15 samples during the quarter. The percent recovery for this quarter is 7%. For the sample dates of Apr 6<sup>th</sup> through May 30<sup>th</sup>, the machine malfunctioned and would begin to run when it was opened for data retrieval. For the sample dates of Jun 11<sup>th</sup> through Jun 29<sup>th</sup>, the machine continued to malfunction and various parts have been replaced that have not remedied the problem.

Monitor 2398E

Monitor 2398E collected 5 of the 15 samples during the quarter. The percent recovery for this quarter is 33%. For the sample dates Apr 6<sup>th</sup> through May 30<sup>th</sup>, the monitor would run but data would not download. For the Jun 5<sup>th</sup>, 11<sup>th</sup> and 17<sup>th</sup>, data still would not download but the information from the monitor screen was used. For Jun 23<sup>rd</sup> and 29<sup>th</sup> the data began to download again.

The PM<sub>10</sub> data recoveries for the five monitoring stations are presented below:

**Table VII - Summary of Data Recovery**

SAMPLER	POSSIBLE SAMPLES	VALID SAMPLES	PERCENT DATA RECOVERY
962A	15	8	53%
963B	15	15	100%
964C	15	10	67%
2366D	15	1	7%
2398E	15	5	33%

**4.2 Quality Assurance**

Quality assurance procedures utilized to verify the integrity of the measured PM<sub>10</sub> data included the following:

1. Review of PM<sub>10</sub> precision measurements based upon duplicate, collocated measurements.
2. Independent quarterly audits of the PM<sub>10</sub> samplers.
3. Monthly zero and single point flow rate checks of the PM<sub>10</sub> samplers.

**4.2.1 Precision of PM<sub>10</sub> Measurements**

The precision of the PM<sub>10</sub> measurements was determined from the duplicate samples collected from the collocated BGI PQ200 Monitors 963B and 964C at the Coal Hollow Mine and 2366D and 2398E at the North Private Lease. As recommended in *40 CFR, Part 58, Appendix A, Section 5.3.1*, PM<sub>10</sub> precision checks are reported for instances when the concentrations for duplicate samples both exceed 3 µg/m<sup>3</sup>. Duplicate samples that did not meet this condition were omitted for the purposes of the precision checks. Appendix C, of this report summarizes precision calculations between the compliance monitor and the co-located monitor. Monthly flow rate verification data is also summarized in Appendix C.

Precision calculations at the Coal Hollow Mine were developed based on 10 valid pairs of co-located monitoring data during the quarter. Single point precision based on *40 CFR, Part 58, Appendix A Equation 2* results were -19.2 to 15.0%. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58, Appendix A Equation 11* is 11.7%. This value is not within the 10% goal for aggregate CV.

Precision calculations at the North Private Lease were not developed due to the lack of operation of 2366D monitor except for 1 valid run.

**4.2.2 Audit Results**

The accuracy of the PM<sub>10</sub> sampler flows was verified by a performance audit conducted by Air Resource Specialist on December 6, 2022. A copy of the audit report is presented in Appendix E and is summarized in Table VI. The audit results indicate that all five samplers were operating properly.

**Table VIII- Audit Summary**

SAMPLER	AUDIT % DIFFERENCE	LIMIT*	DESIGN % DIFFERENCE	LIMIT*

962A	-0.9	±10%	0.9	±10%
963B	-0.5	±10%	0.5	±10%
964C	1.8	±10%	-1.8	±10%
2366D	3.8	±10%	-3.8	±10%
2398E	-0.9	±10%	1.0	±10%
*Values between ± 7% and ± 10% require recalibration but no data are invalidated.				

#### 4.2.3 Zero and Single Point Flow Rate Checks

Zero and single-point flow rate verifications were performed by a site technician at the time of the audit. The data was then input into a statistical calculator to calculate percent difference and bias between each of the monitors and the monthly single point flow rate measured by a NIST traceable calibration orifice. The calculator used is called the “Data Assessment Statistical Calculator” DASC Tool. DASC was developed for the data user community and can be found in the Precision and Accuracy Reporting System within the Quality Assurance section of EPA’s Ambient Monitoring Technology Information System. This data is presented in Appendix C of this report.

## **APPENDIX A**

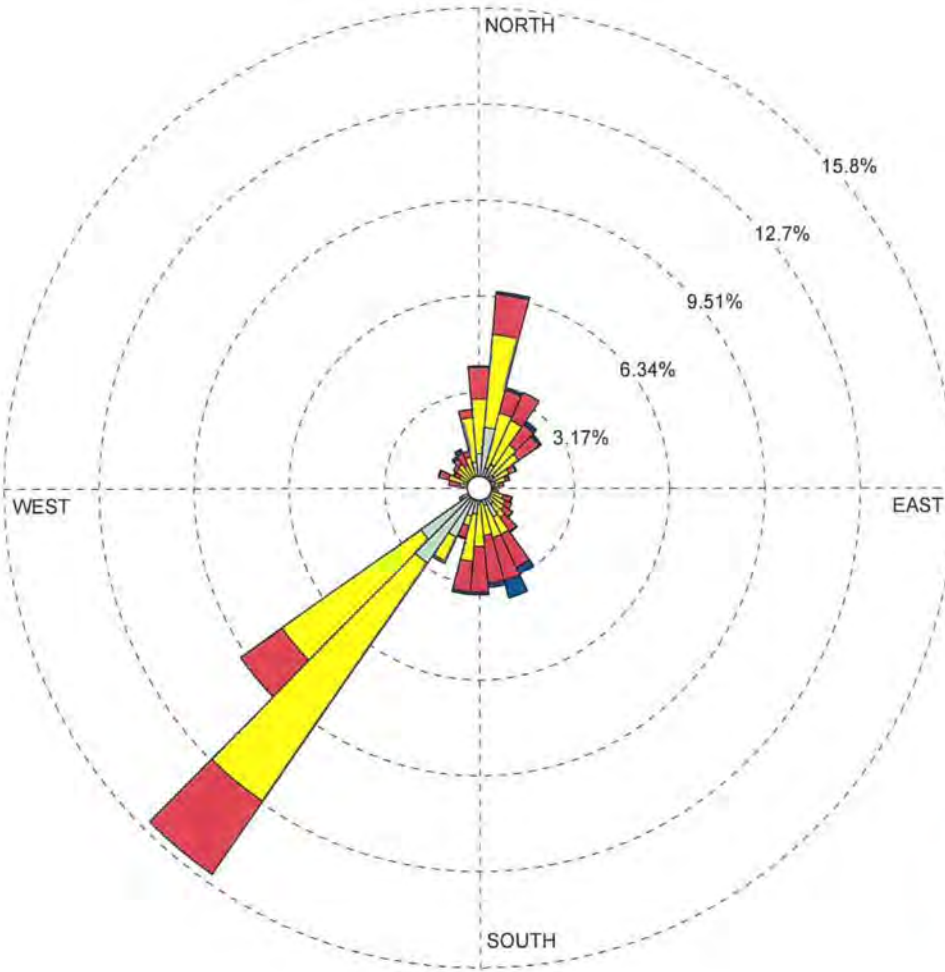
### **Windrose**

WIND ROSE PLOT:

**Alton Coal Development LLC**  
**June\_2023**

DISPLAY:


**Wind Speed**  
**Flow Vector (blowing to)**



**WIND SPEED (m/s)**

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 7.69%

COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 4/1/2023 - 00:00 End Date: 6/30/2023 - 23:00	Alton Coal Development LLC - Coal Hollow Mine	
	CALM WINDS:	MODELER:	
7.69%	Kirk Nicholes		
AVG. WIND SPEED:	TOTAL COUNT:	DATE:	PROJECT NO.:
2.64 m/s	2184 hrs.	7/17/2023	

Station ID: 1  
 Start Date: 4/1/2023 - 00:00  
 End Date: 6/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Count)

	Flow Vector (Blowing To) / Wind Speed (m/s)						Total
	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	
355-5	25	39	23	1	0	0	88
5-15	44	67	29	2	0	0	142
15-25	15	41	17	2	0	0	75
25-35	19	35	22	0	0	0	76
35-45	11	27	18	3	0	0	59
45-55	13	22	18	2	0	0	55
55-65	10	14	5	1	0	0	30
65-75	12	8	2	1	0	0	23
75-85	11	3	4	0	0	0	18
85-95	4	3	2	1	0	0	10
95-105	3	2	9	0	0	0	14
105-115	6	12	6	1	0	0	25
115-125	9	12	5	0	0	0	26
125-135	8	14	7	1	0	0	30
135-145	14	12	12	1	0	0	39
145-155	23	14	26	5	0	0	68
155-165	13	24	32	13	0	0	82
165-175	10	24	35	3	0	0	72
175-185	12	30	33	2	0	0	77
185-195	19	34	22	2	0	0	77
195-205	21	7	9	1	0	0	38
205-215	39	19	2	0	0	0	60
215-225	66	209	64	0	0	0	339
225-235	52	123	37	0	0	0	212
235-245	8	6	2	0	0	0	16
245-255	5	2	0	0	0	0	7
255-265	5	2	1	0	0	0	8
265-275	4	5	0	0	0	0	9
275-285	5	9	8	0	0	0	22
285-295	12	11	7	1	0	0	31
295-305	4	12	4	1	0	0	21
305-315	8	12	3	0	0	0	23
315-325	8	13	5	2	0	0	28
325-335	7	11	10	3	0	0	31
335-345	9	14	5	0	0	0	28
345-355	19	32	6	0	0	0	57
Total	553	924	490	49	0	0	2184

Frequency of Calm Winds: 168  
 Average Wind Speed: 2.64 m/s

Station ID: 1  
 Start Date: 4/1/2023 - 00:00  
 End Date: 6/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.011447	0.017857	0.010531	0.000458	0.000000	0.000000	0.040293
5-15	0.020147	0.030678	0.013278	0.000916	0.000000	0.000000	0.065018
15-25	0.006868	0.018773	0.007784	0.000916	0.000000	0.000000	0.034341
25-35	0.008700	0.016026	0.010073	0.000000	0.000000	0.000000	0.034799
35-45	0.005037	0.012363	0.008242	0.001374	0.000000	0.000000	0.027015
45-55	0.005952	0.010073	0.008242	0.000916	0.000000	0.000000	0.025183
55-65	0.004579	0.006410	0.002289	0.000458	0.000000	0.000000	0.013736
65-75	0.005495	0.003663	0.000916	0.000458	0.000000	0.000000	0.010531
75-85	0.005037	0.001374	0.001832	0.000000	0.000000	0.000000	0.008242
85-95	0.001832	0.001374	0.000916	0.000458	0.000000	0.000000	0.004579
95-105	0.001374	0.000916	0.004121	0.000000	0.000000	0.000000	0.006410
105-115	0.002747	0.005495	0.002747	0.000458	0.000000	0.000000	0.011447
115-125	0.004121	0.005495	0.002289	0.000000	0.000000	0.000000	0.011905
125-135	0.003663	0.006410	0.003205	0.000458	0.000000	0.000000	0.013736
135-145	0.006410	0.005495	0.005495	0.000458	0.000000	0.000000	0.017857
145-155	0.010531	0.006410	0.011905	0.002289	0.000000	0.000000	0.031136
155-165	0.005952	0.010989	0.014652	0.005952	0.000000	0.000000	0.037546
165-175	0.004579	0.010989	0.016026	0.001374	0.000000	0.000000	0.032967
175-185	0.005495	0.013736	0.015110	0.000916	0.000000	0.000000	0.035256
185-195	0.008700	0.015568	0.010073	0.000916	0.000000	0.000000	0.035256
195-205	0.009615	0.003205	0.004121	0.000458	0.000000	0.000000	0.017399
205-215	0.017857	0.008700	0.000916	0.000000	0.000000	0.000000	0.027473
215-225	0.030220	0.095696	0.029304	0.000000	0.000000	0.000000	0.155220
225-235	0.023810	0.056319	0.016941	0.000000	0.000000	0.000000	0.097070
235-245	0.003663	0.002747	0.000916	0.000000	0.000000	0.000000	0.007326
245-255	0.002289	0.000916	0.000000	0.000000	0.000000	0.000000	0.003205
255-265	0.002289	0.000916	0.000458	0.000000	0.000000	0.000000	0.003663
265-275	0.001832	0.002289	0.000000	0.000000	0.000000	0.000000	0.004121
275-285	0.002289	0.004121	0.003663	0.000000	0.000000	0.000000	0.010073
285-295	0.005495	0.005037	0.003205	0.000458	0.000000	0.000000	0.014194
295-305	0.001832	0.005495	0.001832	0.000458	0.000000	0.000000	0.009615
305-315	0.003663	0.005495	0.001374	0.000000	0.000000	0.000000	0.010531
315-325	0.003663	0.005952	0.002289	0.000916	0.000000	0.000000	0.012821
325-335	0.003205	0.005037	0.004579	0.001374	0.000000	0.000000	0.014194
335-345	0.004121	0.006410	0.002289	0.000000	0.000000	0.000000	0.012821
345-355	0.008700	0.014652	0.002747	0.000000	0.000000	0.000000	0.026099
Total	0.253205	0.423077	0.224359	0.022436	0.000000	0.000000	0.923077

Frequency of Calm Winds: 7.69%  
 Average Wind Speed: 2.64 m/s

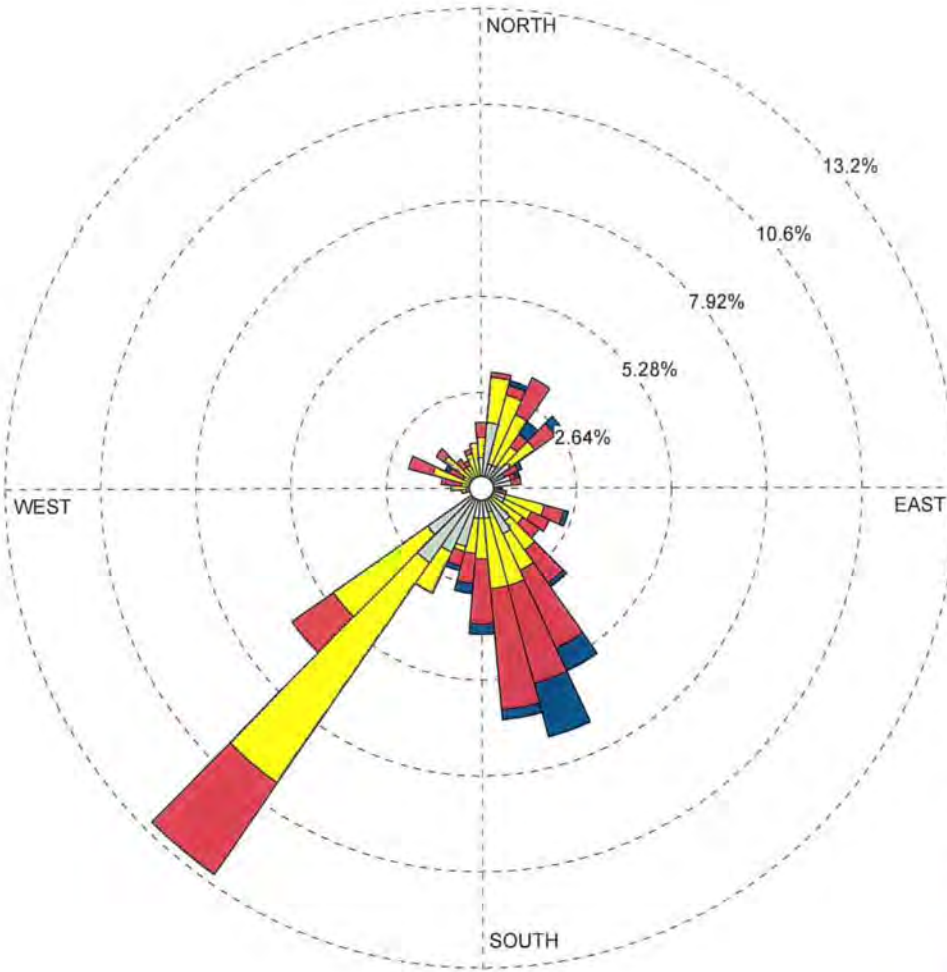


WIND ROSE PLOT:

Alton Coal Development LLC  
April\_2023

DISPLAY:

Wind Speed  
Flow Vector (blowing to)



WIND SPEED  
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 6.25%

COMMENTS:

DATA PERIOD:

Start Date: 4/1/2023 - 00:00  
End Date: 4/30/2023 - 23:00

COMPANY NAME:

Alton Coal Development LLC - Coal Hollow Mine

MODELER:

Kirk Nicholes

CALM WINDS:

6.25%

TOTAL COUNT:

720 hrs.

AVG. WIND SPEED:

2.88 m/s

DATE:

7/17/2023

PROJECT NO.:



Station ID: 1  
 Start Date: 4/1/2023 - 00:00  
 End Date: 4/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Count)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	6	4	3	0	0	0	13
5-15	13	9	1	0	0	0	23
15-25	5	14	2	1	0	0	22
25-35	5	11	8	0	0	0	24
35-45	2	8	3	3	0	0	16
45-55	7	6	5	2	0	0	20
55-65	1	4	3	1	0	0	9
65-75	6	0	1	1	0	0	8
75-85	6	0	2	0	0	0	8
85-95	1	1	1	1	0	0	4
95-105	0	1	4	0	0	0	5
105-115	5	8	4	1	0	0	18
115-125	5	6	4	0	0	0	15
125-135	1	9	4	0	0	0	14
135-145	8	7	8	1	0	0	24
145-155	10	8	17	5	0	0	40
155-165	5	15	20	11	0	0	51
165-175	6	14	24	2	0	0	46
175-185	6	8	13	2	0	0	29
185-195	6	7	6	2	0	0	21
195-205	12	1	3	1	0	0	17
205-215	14	9	0	0	0	0	23
215-225	18	53	22	0	0	0	93
225-235	13	23	10	0	0	0	46
235-245	1	1	0	0	0	0	2
245-255	1	1	0	0	0	0	2
255-265	3	1	0	0	0	0	4
265-275	3	3	0	0	0	0	6
275-285	1	3	4	0	0	0	8
285-295	2	8	5	0	0	0	15
295-305	0	4	3	1	0	0	8
305-315	1	8	2	0	0	0	11
315-325	2	3	2	0	0	0	7
325-335	1	4	1	0	0	0	6
335-345	2	5	1	0	0	0	8
345-355	2	7	0	0	0	0	9
Total	180	274	186	35	0	0	720

Frequency of Calm Winds: 45  
 Average Wind Speed: 2.88 m/s

Station ID: 1  
 Start Date: 4/1/2023 - 00:00  
 End Date: 4/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.008333	0.005556	0.004167	0.000000	0.000000	0.000000	0.018056
5-15	0.018056	0.012500	0.001389	0.000000	0.000000	0.000000	0.031944
15-25	0.006944	0.019444	0.002778	0.001389	0.000000	0.000000	0.030556
25-35	0.006944	0.015278	0.011111	0.000000	0.000000	0.000000	0.033333
35-45	0.002778	0.011111	0.004167	0.004167	0.000000	0.000000	0.022222
45-55	0.009722	0.008333	0.006944	0.002778	0.000000	0.000000	0.027778
55-65	0.001389	0.005556	0.004167	0.001389	0.000000	0.000000	0.012500
65-75	0.008333	0.000000	0.001389	0.001389	0.000000	0.000000	0.011111
75-85	0.008333	0.000000	0.002778	0.000000	0.000000	0.000000	0.011111
85-95	0.001389	0.001389	0.001389	0.001389	0.000000	0.000000	0.005556
95-105	0.000000	0.001389	0.005556	0.000000	0.000000	0.000000	0.006944
105-115	0.006944	0.011111	0.005556	0.001389	0.000000	0.000000	0.025000
115-125	0.006944	0.008333	0.005556	0.000000	0.000000	0.000000	0.020833
125-135	0.001389	0.012500	0.005556	0.000000	0.000000	0.000000	0.019444
135-145	0.011111	0.009722	0.011111	0.001389	0.000000	0.000000	0.033333
145-155	0.013889	0.011111	0.023611	0.006944	0.000000	0.000000	0.055556
155-165	0.006944	0.020833	0.027778	0.015278	0.000000	0.000000	0.070833
165-175	0.008333	0.019444	0.033333	0.002778	0.000000	0.000000	0.063889
175-185	0.008333	0.011111	0.018056	0.002778	0.000000	0.000000	0.040278
185-195	0.008333	0.009722	0.008333	0.002778	0.000000	0.000000	0.029167
195-205	0.016667	0.001389	0.004167	0.001389	0.000000	0.000000	0.023611
205-215	0.019444	0.012500	0.000000	0.000000	0.000000	0.000000	0.031944
215-225	0.025000	0.073611	0.030556	0.000000	0.000000	0.000000	0.129167
225-235	0.018056	0.031944	0.013889	0.000000	0.000000	0.000000	0.063889
235-245	0.001389	0.001389	0.000000	0.000000	0.000000	0.000000	0.002778
245-255	0.001389	0.001389	0.000000	0.000000	0.000000	0.000000	0.002778
255-265	0.004167	0.001389	0.000000	0.000000	0.000000	0.000000	0.005556
265-275	0.004167	0.004167	0.000000	0.000000	0.000000	0.000000	0.008333
275-285	0.001389	0.004167	0.005556	0.000000	0.000000	0.000000	0.011111
285-295	0.002778	0.011111	0.006944	0.000000	0.000000	0.000000	0.020833
295-305	0.000000	0.005556	0.004167	0.001389	0.000000	0.000000	0.011111
305-315	0.001389	0.011111	0.002778	0.000000	0.000000	0.000000	0.015278
315-325	0.002778	0.004167	0.002778	0.000000	0.000000	0.000000	0.009722
325-335	0.001389	0.005556	0.001389	0.000000	0.000000	0.000000	0.008333
335-345	0.002778	0.006944	0.001389	0.000000	0.000000	0.000000	0.011111
345-355	0.002778	0.009722	0.000000	0.000000	0.000000	0.000000	0.012500
Total	0.250000	0.380556	0.258333	0.048611	0.000000	0.000000	0.937500

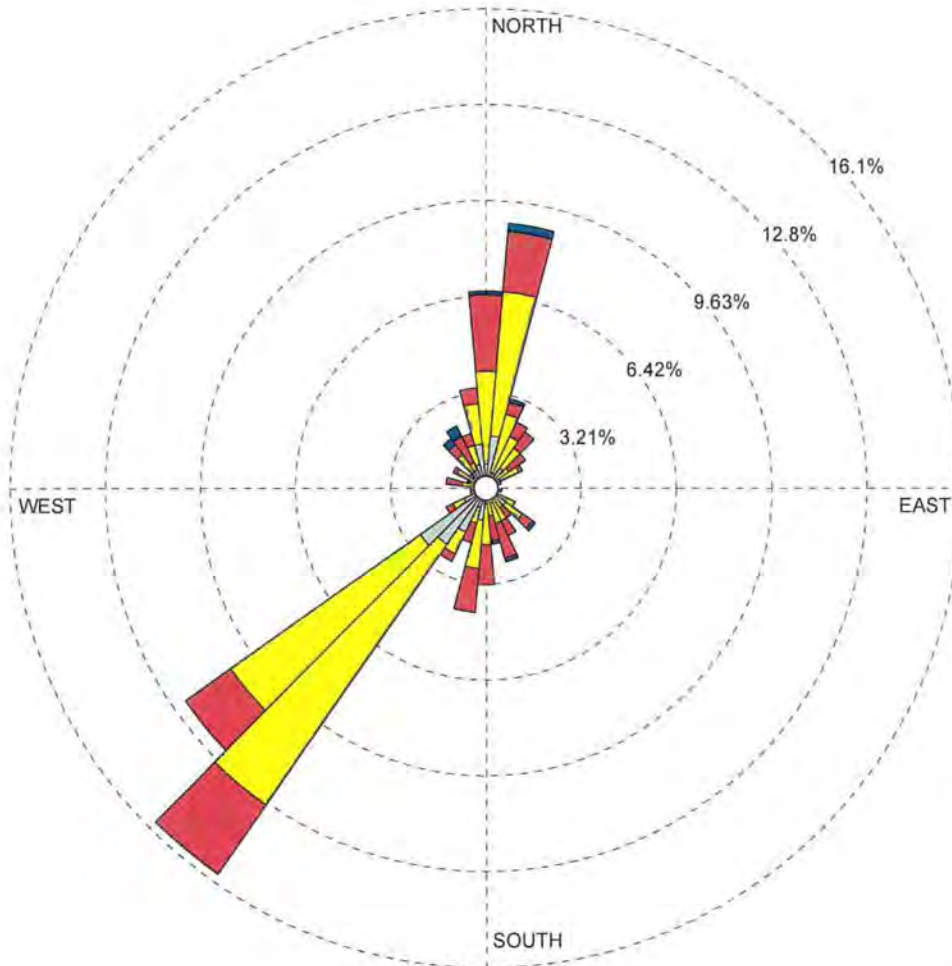
Frequency of Calm Winds: 6.25%  
 Average Wind Speed: 2.88 m/s

WIND ROSE PLOT:

**Alton Coal Development LLC  
May\_2023**

DISPLAY:

**Wind Speed  
Flow Vector (blowing to)**



WIND SPEED  
(m/s)

- $\geq 11.10$
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 5.38%

COMMENTS:

DATA PERIOD:

**Start Date: 5/1/2023 - 00:00  
End Date: 5/31/2023 - 23:00**

COMPANY NAME:

**Alton Coal Development LLC - Coal Hollow Mine**

MODELER:

**Kirk Nicholes**



CALM WINDS:

**5.38%**

TOTAL COUNT:

**744 hrs.**

AVG. WIND SPEED:

**2.70 m/s**

DATE:

**7/17/2023**

PROJECT NO.:

Station ID: 1  
 Start Date: 5/1/2023 - 00:00  
 End Date: 5/31/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Count)

	Flow Vector (Blowing To) / Wind Speed (m/s)						Total
	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	
355-5	6	23	19	1	0	0	49
5-15	13	36	15	2	0	0	66
15-25	4	15	3	1	0	0	23
25-35	4	10	4	0	0	0	18
35-45	6	6	5	0	0	0	17
45-55	2	5	5	0	0	0	12
55-65	4	5	1	0	0	0	10
65-75	0	3	1	0	0	0	4
75-85	2	0	0	0	0	0	2
85-95	1	2	0	0	0	0	3
95-105	2	1	1	0	0	0	4
105-115	0	1	0	0	0	0	1
115-125	3	5	0	0	0	0	8
125-135	6	5	3	1	0	0	15
135-145	3	3	3	0	0	0	9
145-155	3	6	4	0	0	0	13
155-165	4	5	9	1	0	0	19
165-175	1	6	6	1	0	0	14
175-185	4	10	10	0	0	0	24
185-195	8	12	11	0	0	0	31
195-205	5	4	5	0	0	0	14
205-215	12	6	2	0	0	0	20
215-225	17	79	21	0	0	0	117
225-235	20	58	14	0	0	0	92
235-245	6	3	2	0	0	0	11
245-255	3	1	0	0	0	0	4
255-265	2	1	1	0	0	0	4
265-275	0	0	0	0	0	0	0
275-285	2	4	4	0	0	0	10
285-295	3	1	0	1	0	0	5
295-305	2	6	1	0	0	0	9
305-315	2	2	1	0	0	0	5
315-325	5	5	3	2	0	0	15
325-335	5	2	7	3	0	0	17
335-345	6	5	3	0	0	0	14
345-355	11	10	4	0	0	0	25
Total	177	346	168	13	0	0	744

Frequency of Calm Winds: 40  
 Average Wind Speed: 2.70 m/s

Station ID: 1  
 Start Date: 5/1/2023 - 00:00  
 End Date: 5/31/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.008065	0.030914	0.025538	0.001344	0.000000	0.000000	0.065860
5-15	0.017473	0.048387	0.020161	0.002688	0.000000	0.000000	0.088710
15-25	0.005376	0.020161	0.004032	0.001344	0.000000	0.000000	0.030914
25-35	0.005376	0.013441	0.005376	0.000000	0.000000	0.000000	0.024194
35-45	0.008065	0.008065	0.006720	0.000000	0.000000	0.000000	0.022849
45-55	0.002688	0.006720	0.006720	0.000000	0.000000	0.000000	0.016129
55-65	0.005376	0.006720	0.001344	0.000000	0.000000	0.000000	0.013441
65-75	0.000000	0.004032	0.001344	0.000000	0.000000	0.000000	0.005376
75-85	0.002688	0.000000	0.000000	0.000000	0.000000	0.000000	0.002688
85-95	0.001344	0.002688	0.000000	0.000000	0.000000	0.000000	0.004032
95-105	0.002688	0.001344	0.001344	0.000000	0.000000	0.000000	0.005376
105-115	0.000000	0.001344	0.000000	0.000000	0.000000	0.000000	0.001344
115-125	0.004032	0.006720	0.000000	0.000000	0.000000	0.000000	0.010753
125-135	0.008065	0.006720	0.004032	0.001344	0.000000	0.000000	0.020161
135-145	0.004032	0.004032	0.004032	0.000000	0.000000	0.000000	0.012097
145-155	0.004032	0.008065	0.005376	0.000000	0.000000	0.000000	0.017473
155-165	0.005376	0.006720	0.012097	0.001344	0.000000	0.000000	0.025538
165-175	0.001344	0.008065	0.008065	0.001344	0.000000	0.000000	0.018817
175-185	0.005376	0.013441	0.013441	0.000000	0.000000	0.000000	0.032258
185-195	0.010753	0.016129	0.014785	0.000000	0.000000	0.000000	0.041667
195-205	0.006720	0.005376	0.006720	0.000000	0.000000	0.000000	0.018817
205-215	0.016129	0.008065	0.002688	0.000000	0.000000	0.000000	0.026882
215-225	0.022849	0.106183	0.028226	0.000000	0.000000	0.000000	0.157258
225-235	0.026882	0.077957	0.018817	0.000000	0.000000	0.000000	0.123656
235-245	0.008065	0.004032	0.002688	0.000000	0.000000	0.000000	0.014785
245-255	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
255-265	0.002688	0.001344	0.001344	0.000000	0.000000	0.000000	0.005376
265-275	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
275-285	0.002688	0.005376	0.005376	0.000000	0.000000	0.000000	0.013441
285-295	0.004032	0.001344	0.000000	0.001344	0.000000	0.000000	0.006720
295-305	0.002688	0.008065	0.001344	0.000000	0.000000	0.000000	0.012097
305-315	0.002688	0.002688	0.001344	0.000000	0.000000	0.000000	0.006720
315-325	0.006720	0.006720	0.004032	0.002688	0.000000	0.000000	0.020161
325-335	0.006720	0.002688	0.009409	0.004032	0.000000	0.000000	0.022849
335-345	0.008065	0.006720	0.004032	0.000000	0.000000	0.000000	0.018817
345-355	0.014785	0.013441	0.005376	0.000000	0.000000	0.000000	0.033602
Total	0.237903	0.465054	0.225806	0.017473	0.000000	0.000000	0.946237

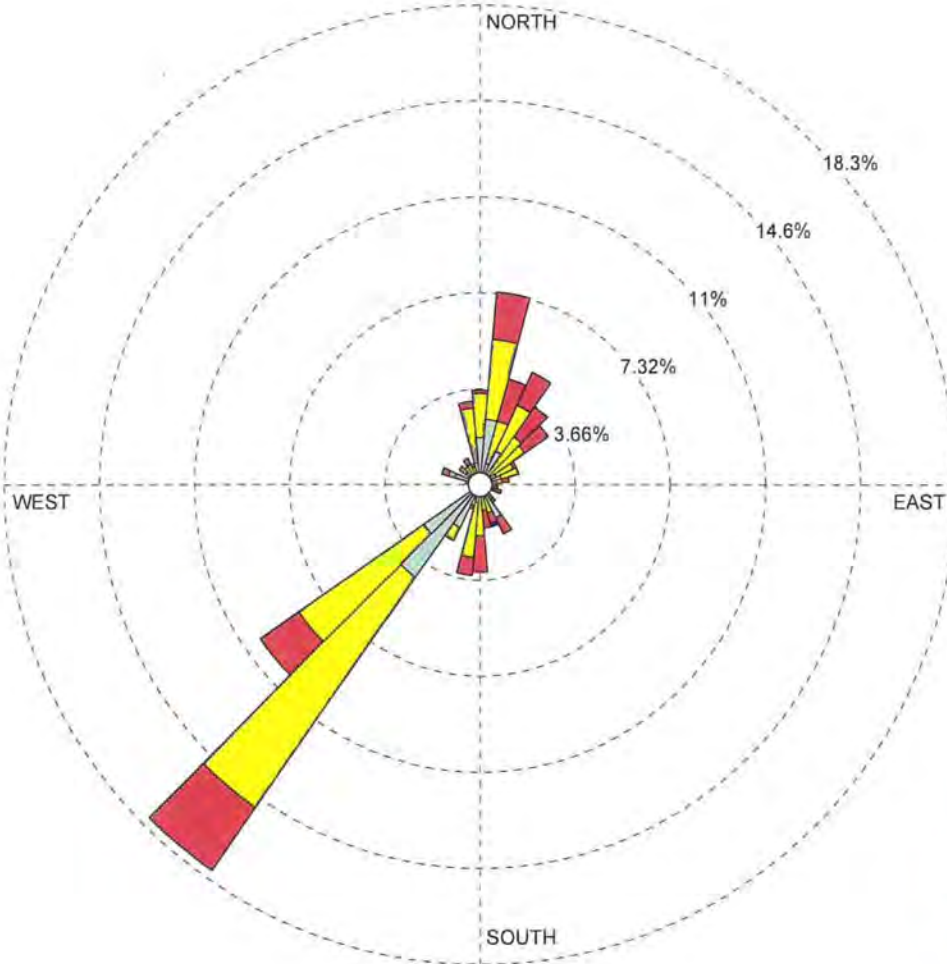
Frequency of Calm Winds: 5.38%  
 Average Wind Speed: 2.70 m/s

WIND ROSE PLOT:

**Alton Coal Development LLC**  
**June\_2023**

DISPLAY:

**Wind Speed**  
**Flow Vector (blowing to)**



WIND SPEED  
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 11.53%

COMMENTS:

DATA PERIOD:

**Start Date: 6/1/2023 - 00:00**  
**End Date: 6/30/2023 - 23:00**

COMPANY NAME:

**Alton Coal Development LLC - Coal Hollow Mine**

MODELER:

**Kirk Nicholes**



CALM WINDS:

**11.53%**

TOTAL COUNT:

**720 hrs.**

AVG. WIND SPEED:

**2.34 m/s**

DATE:

**7/17/2023**

PROJECT NO.:

Station ID: 1  
 Start Date: 6/1/2023 - 00:00  
 End Date: 6/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Count)

	Flow Vector (Blowing To) / Wind Speed (m/s)						
	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	13	12	1	0	0	0	26
5-15	18	22	13	0	0	0	53
15-25	6	12	12	0	0	0	30
25-35	10	14	10	0	0	0	34
35-45	3	13	10	0	0	0	26
45-55	4	11	8	0	0	0	23
55-65	5	5	1	0	0	0	11
65-75	6	5	0	0	0	0	11
75-85	3	3	2	0	0	0	8
85-95	2	0	1	0	0	0	3
95-105	1	0	4	0	0	0	5
105-115	1	3	2	0	0	0	6
115-125	1	1	1	0	0	0	3
125-135	1	0	0	0	0	0	1
135-145	3	2	1	0	0	0	6
145-155	10	0	5	0	0	0	15
155-165	4	4	3	1	0	0	12
165-175	3	4	5	0	0	0	12
175-185	2	12	10	0	0	0	24
185-195	5	15	5	0	0	0	25
195-205	4	2	1	0	0	0	7
205-215	13	4	0	0	0	0	17
215-225	31	77	21	0	0	0	129
225-235	19	42	13	0	0	0	74
235-245	1	2	0	0	0	0	3
245-255	1	0	0	0	0	0	1
255-265	0	0	0	0	0	0	0
265-275	1	2	0	0	0	0	3
275-285	2	2	0	0	0	0	4
285-295	7	2	2	0	0	0	11
295-305	2	2	0	0	0	0	4
305-315	5	2	0	0	0	0	7
315-325	1	5	0	0	0	0	6
325-335	1	5	2	0	0	0	8
335-345	1	4	1	0	0	0	6
345-355	6	15	2	0	0	0	23
Total	196	304	136	1	0	0	720

Frequency of Calm Winds: 83  
 Average Wind Speed: 2.34 m/s



Station ID: 1  
 Start Date: 6/1/2023 - 00:00  
 End Date: 6/30/2023 - 23:00

Run ID: ACD-CHM

Frequency Distribution  
 (Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.018056	0.016667	0.001389	0.000000	0.000000	0.000000	0.036111
5-15	0.025000	0.030556	0.018056	0.000000	0.000000	0.000000	0.073611
15-25	0.008333	0.016667	0.016667	0.000000	0.000000	0.000000	0.041667
25-35	0.013889	0.019444	0.013889	0.000000	0.000000	0.000000	0.047222
35-45	0.004167	0.018056	0.013889	0.000000	0.000000	0.000000	0.036111
45-55	0.005556	0.015278	0.011111	0.000000	0.000000	0.000000	0.031944
55-65	0.006944	0.006944	0.001389	0.000000	0.000000	0.000000	0.015278
65-75	0.008333	0.006944	0.000000	0.000000	0.000000	0.000000	0.015278
75-85	0.004167	0.004167	0.002778	0.000000	0.000000	0.000000	0.011111
85-95	0.002778	0.000000	0.001389	0.000000	0.000000	0.000000	0.004167
95-105	0.001389	0.000000	0.005556	0.000000	0.000000	0.000000	0.006944
105-115	0.001389	0.004167	0.002778	0.000000	0.000000	0.000000	0.008333
115-125	0.001389	0.001389	0.001389	0.000000	0.000000	0.000000	0.004167
125-135	0.001389	0.000000	0.000000	0.000000	0.000000	0.000000	0.001389
135-145	0.004167	0.002778	0.001389	0.000000	0.000000	0.000000	0.008333
145-155	0.013889	0.000000	0.006944	0.000000	0.000000	0.000000	0.020833
155-165	0.005556	0.005556	0.004167	0.001389	0.000000	0.000000	0.016667
165-175	0.004167	0.005556	0.006944	0.000000	0.000000	0.000000	0.016667
175-185	0.002778	0.016667	0.013889	0.000000	0.000000	0.000000	0.033333
185-195	0.006944	0.020833	0.006944	0.000000	0.000000	0.000000	0.034722
195-205	0.005556	0.002778	0.001389	0.000000	0.000000	0.000000	0.009722
205-215	0.018056	0.005556	0.000000	0.000000	0.000000	0.000000	0.023611
215-225	0.043056	0.106944	0.029167	0.000000	0.000000	0.000000	0.179167
225-235	0.026389	0.058333	0.018056	0.000000	0.000000	0.000000	0.102778
235-245	0.001389	0.002778	0.000000	0.000000	0.000000	0.000000	0.004167
245-255	0.001389	0.000000	0.000000	0.000000	0.000000	0.000000	0.001389
255-265	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
265-275	0.001389	0.002778	0.000000	0.000000	0.000000	0.000000	0.004167
275-285	0.002778	0.002778	0.000000	0.000000	0.000000	0.000000	0.005556
285-295	0.009722	0.002778	0.002778	0.000000	0.000000	0.000000	0.015278
295-305	0.002778	0.002778	0.000000	0.000000	0.000000	0.000000	0.005556
305-315	0.006944	0.002778	0.000000	0.000000	0.000000	0.000000	0.009722
315-325	0.001389	0.006944	0.000000	0.000000	0.000000	0.000000	0.008333
325-335	0.001389	0.006944	0.002778	0.000000	0.000000	0.000000	0.011111
335-345	0.001389	0.005556	0.001389	0.000000	0.000000	0.000000	0.008333
345-355	0.008333	0.020833	0.002778	0.000000	0.000000	0.000000	0.031944
Total	0.272222	0.422222	0.188889	0.001389	0.000000	0.000000	0.884722

Frequency of Calm Winds: 11.53%  
 Average Wind Speed: 2.34 m/s

## **APPENDIX B**

### **Listing of PM<sub>10</sub> Concentrations**

**Individual Data Sheets provided on CD**

## **Background Monitor 962A**

# PM<sub>10</sub> Sampler Summary

April 1, 2023 - June 30, 2023

Network: Alton Coal Development

Site: Coal Hollow

Sampler ID: Coal Hollow-A

Sampler Type: BGI PQ200

AQS ID:

Date	Filter ID	Concentration (µg/m <sup>3</sup> )		Concentration (µg/m <sup>3</sup> ) STP	Sample Period (hr:min)	Sample Volume (m <sup>3</sup> )	Std Volume (m <sup>3</sup> )	Tare (mg)	Mass (mg)		Net (mg)	Flag	Comments
		LTP	AF						Gross	Net			
04/06/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/12/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/18/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/24/23	P2982902	2.8	3.4	3.4	24:00	24.0	19.4	400.4282	400.4958	0.0676			
04/30/23	P2982908	Invalid - AN	Invalid - AN	Invalid - AN				403.6360	403.6441	0.0081	SP,MD	No data	
05/06/23	P2983269	3.4	4.2	4.2	24:00	24.0	19.6	389.5505	389.6340	0.0835			
05/12/23	P2983274	9.9	12.4	12.4	24:00	24.0	19.3	389.4938	389.7339	0.2401			
05/18/23	P2983555	6.9	8.7	8.7	24:00	24.0	19.1	400.3516	400.5188	0.1672			
05/24/23	P2983560	Invalid - AN	Invalid - AN	Invalid - AN				392.4016	392.5538	0.1522	SP,MD	No data	
05/30/23	P2983855	5.9	7.4	7.4	24:00	24.0	19.2	393.2113	393.3547	0.1434			
06/05/23	P2984242	6.3	8.0	8.0	24:00	24.0	19.0	384.8762	385.0298	0.1536			
06/11/23	P2984247	Invalid - AN	Invalid - AN	Invalid - AN				390.4172	390.4270	0.0098	SP,MD	No data	
06/17/23	P2984252	4.1	5.2	5.2	24:00	24.0	19.2	402.7121	402.8130	0.1009			
06/23/23	P2984257	Invalid - AN	Invalid - AN	Invalid - AN				404.7069	404.7182	0.0113	SP,MD	No data	
06/29/23	P2984468	17.6	22.2	22.2	24:00	24.0	19.1	393.1639	393.5876	0.4237			

# Valid	Recovery	Average	St. Dev.	Max	Min
8	53%	8.9	6.1	22.2	3.4

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services, Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

## **Compliance Monitor 963B**

# PM<sub>10</sub> Sampler Summary

April 1, 2023 - June 30, 2023

**Network:** Alton Coal Development

**Site:** Coal Hollow

**Sampler ID:** Coal Hollow-B

**Sampler Type:** BGI PQ200

**AQS ID:**

Date	Filter ID	Concentration (µg/m <sup>3</sup> )		Sample Period (hr:min)	Sample Volume (m <sup>3</sup> )	Std Volume (m <sup>3</sup> )	Mass (mg)		Net (mg)	Flag	Comments
		LTP	STP				Tare	Gross			
04/06/23	P2982534	13.5	15.7	24:00	24.0	20.6	388.2364	388.5624	0.3260		
04/12/23	P2982537	115.0	141.6	24:00	24.0	19.5	388.1042	390.8697	2.7655		
04/18/23	P2982899	63.9	78.7	24:00	24.0	19.5	387.4182	388.9559	1.5377	HT	
04/24/23	P2982903	7.6	9.3	24:00	24.0	19.7	401.4396	401.6247	0.1851		
04/30/23	P2982906	10.2	12.7	24:00	24.0	19.4	400.1973	400.4438	0.2465		
05/06/23	P2983270	7.1	8.6	24:00	24.0	19.9	388.7960	388.9685	0.1725		
05/12/23	P2983275	19.5	23.9	24:00	24.0	19.6	391.3607	391.8300	0.4693		
05/18/23	P2983556	7.4	9.2	24:00	24.0	19.4	393.5444	393.7245	0.1801		
05/24/23	P2983561	41.5	51.4	24:00	24.0	19.4	403.4137	404.4132	0.9995		
05/30/23	P2983856	52.2	64.5	24:00	24.0	19.4	396.5226	397.7778	1.2552		
06/05/23	P2984243	26.7	33.4	24:00	24.0	19.3	390.9603	391.6045	0.6442		
06/11/23	P2984248	16.5	20.5	24:00	24.0	19.3	383.6409	384.0389	0.3980		
06/17/23	P2984253	4.8	5.9	24:00	24.0	19.5	400.9146	401.0311	0.1165		
06/23/23	P2984258	9.4	11.7	24:00	24.0	19.4	405.1802	405.4081	0.2279		
06/29/23	P2984469	21.9	27.3	24:00	24.0	19.3	399.4181	399.9457	0.5276		

# Valid	Recovery	Average	St. Dev.	Max	Min
15	100%	34.3	36.9	141.6	5.9

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services, Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

## **Collocated Monitor 964C**



# PM<sub>10</sub> Sampler Summary

April 1, 2023 - June 30, 2023

Network: Alton Coal Development

Site: Coal Hollow

Sampler ID: Coal Hollow-C

Sampler Type: BGI PQ200

AQS ID:

Date	Filter ID	Concentration (µg/m <sup>3</sup> )		Concentration (µg/m <sup>3</sup> ) STP	Sample Period (hr:min)	Sample Volume (m <sup>3</sup> )	Std Volume (m <sup>3</sup> )	Tare (mg)	Mass (mg)		Net (mg)	Flag	Comments
		LTP	STP						Gross	Net			
04/06/23	P2982535	14.1	16.5	16.5	23:59	24.0	20.5	386.2786	386.6184	0.3398			
04/12/23	P2982538	99.1	122.7	122.7	23:59	24.0	19.4	384.5418	386.9241	2.3823			
04/18/23	P2982900	65.7	81.3	81.3	23:59	24.0	19.4	385.7845	387.3656	1.5811			HT
04/24/23	P2982904	7.6	9.3	9.3	23:59	24.0	19.6	402.0618	402.2444	0.1826			
04/30/23	P2982907	12.3	15.4	15.4	23:59	24.0	19.3	398.9931	399.2903	0.2972			
05/06/23	P2983271	6.1	7.4	7.4	23:59	24.0	19.8	392.1902	392.3387	0.1485			
05/12/23	P2983552	19.8	24.4	24.4	23:59	24.0	19.5	400.3404	400.8169	0.4765			
05/18/23	P2983557	7.7	9.7	9.7	23:59	24.0	19.3	397.0230	397.2104	0.1874			
05/24/23	P2983852	45.2	56.2	56.2	23:59	24.0	19.3	398.4960	399.5833	1.0873			
05/30/23	P2983857	45.0	56.0	56.0	23:59	24.0	19.3	395.7414	396.8248	1.0834			
06/05/23	P2984244	Invalid - AN	Invalid - AN	Invalid - AN	0:00			390.0575	390.0648	0.0073			SP,MD
06/11/23	P2984249	Invalid - AG	Invalid - AG	Invalid - AG	79:13	79.3	64.3	396.5270	398.0650	1.5380			SP,CI
06/17/23	P2984254	Invalid - AG	Invalid - AG	Invalid - AG	8:18	8.3	6.9	407.3031	407.3350	0.0319			SP
06/23/23	P2984259	Invalid - AG	Invalid - AG	Invalid - AG	0:48	0.8	0.7	391.8633	391.8743	0.0110			SP
06/29/23	P2984470	Invalid - AG	Invalid - AG	Invalid - AG	0:35	0.6	0.5	403.7405	403.7833	0.0428			SP

# Valid	Recovery	Average	St. Dev.	Max	Min
10	67%	39.9	38.6	122.7	7.4

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services, Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

**Compliance Monitor 2366D**

# PM<sub>10</sub> Sampler Summary

April 1, 2023 - June 30, 2023

Network: Alton Coal Development

Site: Coal Hollow

Sampler ID: Coal Hollow-D

Sampler Type: BGI PQ200

AQS ID:

Date	Filter ID	Concentration (µg/m <sup>3</sup> )		Concentration (µg/m <sup>3</sup> ) STP	Sample Period (hr:min)	Sample Volume (m <sup>3</sup> )	Std Volume (m <sup>3</sup> )	Tare (mg)	Mass (mg)		Net (mg)	Flag	Comments
		LTP	AF						Gross	Net			
04/06/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/12/23	P2982536	Invalid - AG	Invalid - AG	Invalid - AG	0:00	8.8	7.8	390.0134	390.0978	0.0844		SP,HT	
04/18/23	P2982901	Invalid - AG	Invalid - AG	Invalid - AG	4:12	4.2	3.4	400.5931	400.6528	0.0597		SP,HT	
04/24/23	P2982905	Invalid - AN	Invalid - AN	Invalid - AN	8:16	8.2	6.8	399.1743	399.1810	0.0067		SP,MD	No data
04/30/23	P2983268	Invalid - AG	Invalid - AG	Invalid - AG	0:00	0.0	0.0	391.3575	391.4138	0.0563		SP	
05/06/23	P2983272	Invalid - AG	Invalid - AG	Invalid - AG	10:28	10.5	8.5	390.7926	390.8259	0.0333		SP	
05/12/23	P2983553	Invalid - AG	Invalid - AG	Invalid - AG	10:38	10.6	8.7	400.4362	400.5470	0.1108		SP	
05/18/23	P2983558	Invalid - AG	Invalid - AG	Invalid - AG	11:27	11.4	9.3	398.7869	398.8434	0.0565		SP	
05/24/23	P2983853	Invalid - AG	Invalid - AG	Invalid - AG	24:00	23.8	18.9	399.0643	399.2827	0.2184		SP	
05/30/23		Invalid - AF	Invalid - AF	Invalid - AF									
06/05/23	P2984245	9.9	12.4	12.4	10:12	10.2	8.2	381.3490	381.5845	0.2355		SP	
06/11/23	P2984250	Invalid - AG	Invalid - AG	Invalid - AG	8:50	8.8	7.2	401.5070	401.5839	0.0769		SP	
06/17/23	P2984255	Invalid - AG	Invalid - AG	Invalid - AG	7:01	6.9	5.7	402.5753	402.6289	0.0536		SP	
06/23/23	P2984260	Invalid - AG	Invalid - AG	Invalid - AG	1:06	1.1	0.9	399.8095	399.8740	0.0645		SP	
06/29/23	P2984471	Invalid - AG	Invalid - AG	Invalid - AG				401.2871	401.3549	0.0678		SP	

# Valid	Recovery	Average	St. Dev.	Max	Min
1	7%	12.4	#DIV/0!	12.4	12.4

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services, Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

**Collocated Monitor 2398E**

# PM<sub>10</sub> Sampler Summary

April 1, 2023 - June 30, 2023

Network: Alton Coal Development

Site: Coal Hollow

Sampler ID: Coal Hollow-E

Sampler Type: BGI PQ200

AQS ID:

Date	Filter ID	Concentration (µg/m <sup>3</sup> )		Concentration (µg/m <sup>3</sup> ) STP	Sample Period (hr:min)	Sample Volume (m <sup>3</sup> )	Std Volume (m <sup>3</sup> )	Tare (mg)	Mass (mg)		Net (mg)	Flag	Comments
		LTP	AF						Gross	SP,MD			
04/06/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/12/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/18/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/24/23		Invalid - AF	Invalid - AF	Invalid - AF									
04/30/23		Invalid - AF	Invalid - AF	Invalid - AF									
05/06/23	P2983273	Invalid - AN	Invalid - AN	Invalid - AN				395.4335	396.1090	0.6755	SP,MD		No data
05/12/23	P2983554	Invalid - AN	Invalid - AN	Invalid - AN				398.7452	398.9906	0.2454	SP,MD		No data
05/18/23	P2983559	Invalid - AN	Invalid - AN	Invalid - AN				397.1623	397.3326	0.1703	SP,MD		No data
05/24/23		Invalid - AF	Invalid - AF	Invalid - AF									
05/30/23	P2983854	Invalid - AN	Invalid - AN	Invalid - AN				398.7005	399.1059	0.4054	SP,MD		No data
06/05/23	P2984246	8.4		10.4	24:00	24.1	19.6	386.5251	386.7294	0.2043	BL		
06/11/23	P2984251	7.8		9.6	24:00	24.1	19.6	402.6790	402.8685	0.1895	BL		
06/17/23	P2984256	4.6		5.6	24:00	24.1	19.7	399.3633	399.4751	0.1118	BL		
06/23/23	P2984467	9.7		12.0	24:00	24.0	19.4	392.7792	393.0139	0.2347			
06/29/23	P2984473	20.1		25.3	24:00	24.0	19.2	408.3730	408.8580	0.4850			

# Valid	Recovery	Average	St. Dev.	Max	Min
5	33%	12.6	7.5	25.3	5.6

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services, Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

## **APPENDIX C**

### **Precision and Single-Point Flow Rate Checks**

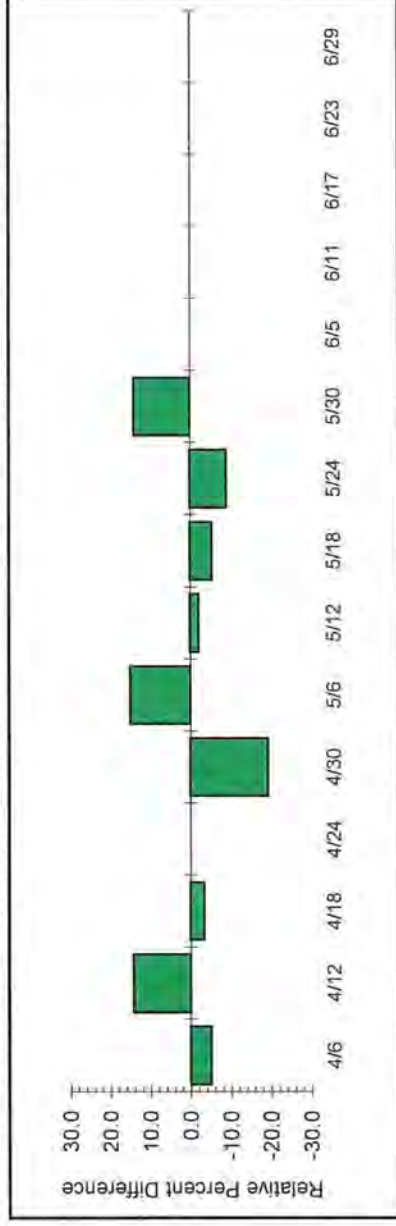
# Alton Coal Development Coal Hollow

## Precision Report For Collocated Samplers

### STP PM10 Concentrations( $\mu\text{g}/\text{m}^3$ ) April 1, 2023 - June 30, 2023

Date	4/6	4/12	4/18	4/24	4/30	5/6	5/12	5/18	5/24	5/30	6/5	6/11	6/17	6/23	6/29
Coal Hollow-B	15.7	141.6	78.7	9.3	12.7	8.6	23.9	9.2	51.4	64.5	33.4	20.5	5.9	11.7	27.3
Coal Hollow-C	16.5	122.7	81.3	9.3	15.4	7.4	24.4	9.7	56.2	56.0					
Rel. %Diff.	-5.0	14.3	-3.2	0.0	-19.2	15.0	-2.1	-5.3	-8.9	14.1	*	*	*	*	*

Relative Percent Difference =  $(X - Y) / ((X + Y) / 2) * 100$       X=Coal Hollow-B      Y =Coal Hollow-C



Statistical Calculations:			
n=	10.0	S Dev=	11.3 %
Mean=	0.0	** CV=	11.7 %

\* Both sample concentrations must be greater than or equal to  $3 \mu\text{g}/\text{m}^3$  to be used for these precision calculations. For a detailed discussion of these precision calculations, refer to 40 CFR 58, Appendix A.

\*\* CV - Upper 90% Confidence bound for Coefficient of Variation

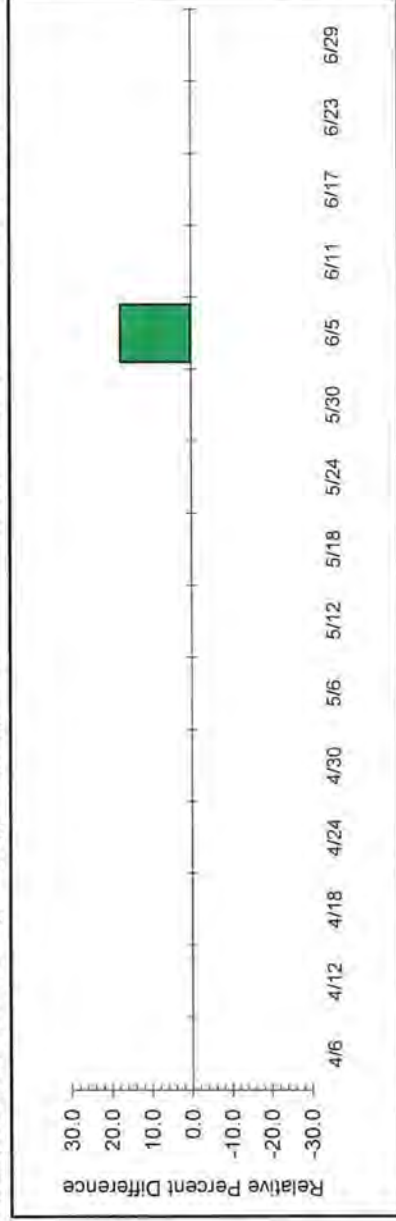
# Alton Coal Development Coal Hollow

## Precision Report For Collocated Samplers

STP PM10 Concentrations( $\mu\text{g}/\text{m}^3$ )  
April 1, 2023 - June 30, 2023

Date	4/6	4/12	4/18	4/24	4/30	5/6	5/12	5/18	5/24	5/30	6/5	6/11	6/17	6/23	6/29
Coal Hollow-D											12.4				
Coal Hollow-E											10.4	9.6	5.6	12.0	25.3
Rel. %Diff.	*	*	*	*	*	*	*	*	*	*	17.5	*	*	*	*

Relative Percent Difference =  $\frac{(X - Y)}{(X + Y) / 2} * 100$       X=Coal Hollow-D      Y =Coal Hollow-E



Statistical Calculations:			
n=	1.0	S Dev=	N/A %
Mean=	17.5	** CV=	N/A %

\* Both sample concentrations must be greater than or equal to  $3 \mu\text{g}/\text{m}^3$  to be used for these precision calculations. For a detailed discussion of these precision calculations, refer to 40 CFR 58, Appendix A.

\*\* CV - Upper 90% Confidence bound for Coefficient of Variation



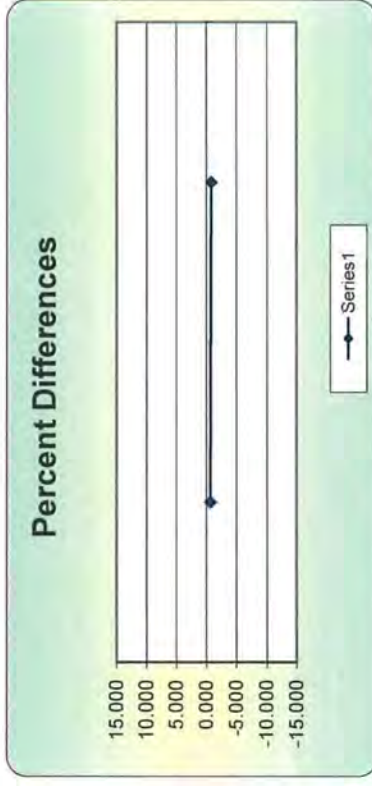
Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 962A		Pollutant type:		Bias (%)	
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d <sup>2</sup>	d
16.7	16.82	-0.713	-0.846	0.509	0.713
16.7	16.85	-0.890	75th Percentile	0.792	0.890
			-0.758		
n	Σ d	"AB" (Eqn 4)			
2	1.604	0.802			
n-1	Σ d  <sup>2</sup>	"AS" (Eqn 5)			
1	1.301	0.125			

Bias (%) (Eqn 3) Both Signs Positive  
1.36  
FALSE

Signed Bias (%) Both Signs Negative  
-1.36  
TRUE



Alton Coal Development, LLC - Coal Hollow Mine

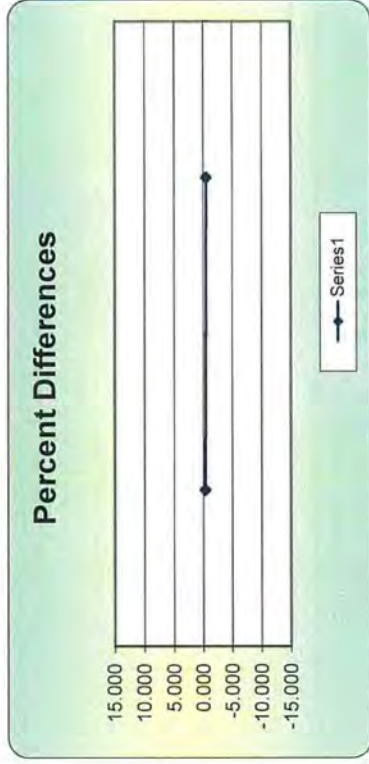
One-Point Flow Rate Bias Estimate

Site ID: Monitor 963B		Pollutant type:		Bias (%)	
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d <sup>2</sup>	d
16.7	16.76	-0.358	-0.492	0.128	0.358
16.7	16.79	-0.536	75th Percentile	0.287	0.536
			-0.403		
n		$\sum  d $		$ d ^2$	
2		0.894		0.128	
n-1		$\sum  d ^2$			
1		0.415			

	"AB" (Eqn 4)
	0.447
	"AS" (Eqn 5)
	0.126

Bias (%) (Eqn 3) Both Signs Positive  
1.01 FALSE

Signed Bias (%) Both Signs Negative  
-1.01 TRUE



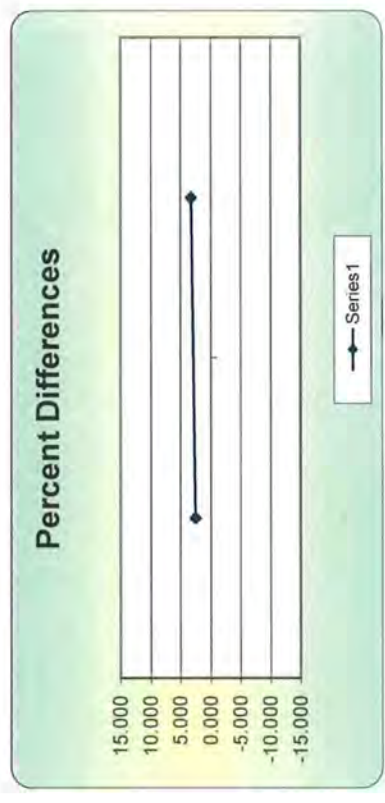


Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 2366D		Pollutant type:		Bias (%)	
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	$d^2$	$ d $
16.7	16.29	2.517	2.691	6.335	2.517
16.7	16.18	3.214	75th Percentile	10.329	3.214
			3.040	10.329	3.214
n		$\sum d $	"AB" (Eqn 4)		
2		5.731	2.865		
n-1		$\sum d ^2$	"AS" (Eqn 5)		
1		16.663	0.493		

Bias (%) (Eqn 3)	Both Signs Positive
5.07	TRUE
Signed Bias (%)	Both Signs Negative
+5.07	FALSE

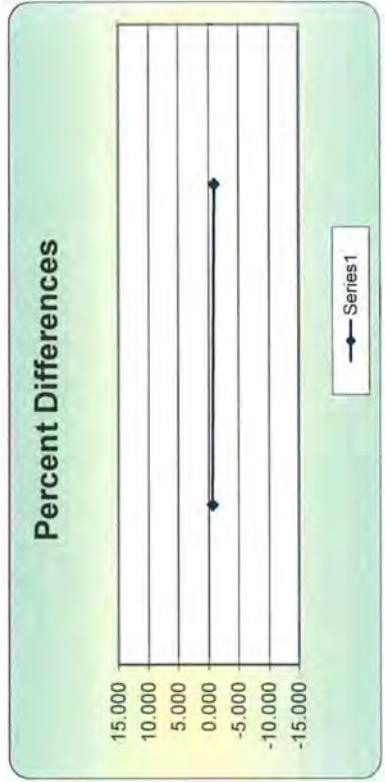


Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 2398E		Pollutant type:		Bias (%)	
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d	d  <sup>2</sup>
16.7	16.81	-0.654	-0.875	0.654	0.428
16.7	16.86	-0.949	75th Percentile	0.949	0.901
			-0.728		
n		$\sum  d $	"AB" (Eqn 4)		
2		1.603	0.802		
n-1		$\sum  d ^2$	"AS" (Eqn 5)		
1		1.329	0.208		

Bias (%) (Eqn 3)	Both Signs Positive
1.73	FALSE
Signed Bias (%)	Both Signs Negative
-1.73	TRUE



## **APPENDIX D**

### **Field Data Sheets**

## Background Monitor 962A

**Table I - Every 6th Day Sampling**

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials
04-03-23								
04-07-23								
04-14-23								
04-19-23	1415	04-19-23	1311	16	9	M-M	4-24-23	KAI
04-25-23	1155	04-25-23	1050	9	90	M-M	04-30-23	KN
05-01-23	0914	05-01-23	0809	20	73	M-M	05-06-23	KAI
05-09-23	1150	05-09-23	1050	23	40	M-M	05-12-23	KN
05-15-23	0948	05-15-23	0848	40	52	M-M	05-18-23	KN
05-19-23	0954	05-19-23	0854	53	58	M-M	05-24-23	KN
05-26-23	1034	05-26-23	0933	58	7	M-M	05-30-23	KN
05-31-23	0810	05-31-23	0710	7	10	M-M	06-05-23	KN
06-06-23	1134	06-06-23	1035	10	15	M-M	06-11-23	KN
06-14-23	0833	06-14-23	0732	15	21	M-M	06-17-23	KN
06-20-23	1607	06-20-23	0906	21	28	M-M	06-23-23	KAI
06-26-23	0909	06-26-23	0808	28	31	M-M	06-29-23	KN
06-30-23	0820	06-30-23	0719	31	37	M-M	07-05-23	KN
07-06-23	0902	07-06-23	0802	37	46	M-M	07-11-23	KN
07-13-23	0949	07-13-23	0847	46	51	M-M	07-17-23	KN
07-18-23	1113	07-18-23	1011	51	4	M-M	07-21-23	KN

**Table II - Monthly Leak Test**

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
05-01-23	0929	155	154	Pass	KN	

**Table III - Monthly Flow Rate Verification**

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials
05-01-23	0933	16.7	580	581.5	17.0°E	16.9°C	13.22	16.82		KN

Done  
3500-41000











## **APPENDIX E**

### **Independent PM<sub>10</sub> Sampler Performance Audit Report**

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**AUDIT REPORT  
FOR**

**ALTON COAL DEVELOPMENT, LLC  
COAL HOLLOW MINE  
ALTON, UTAH  
SECOND QUARTER 2023**

Prepared for

Kirk Nicholes  
Alton Coal Development, LLC  
463 N 100 W  
Cedar City, Utah, 84721

Prepared by



1901 Sharp Point Drive, Suite F  
Fort Collins, CO 80525  
970-484-7941

Site Audited: May 31, 2023

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A decorative graphic in the bottom left corner consisting of three stylized mountain peaks in shades of green and blue, mirroring the logo's design.

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## 1.0 INTRODUCTION

Air Resource Specialists, Inc. (ARS) conducted a performance audit of Alton Coal Development, LLC ambient air quality monitoring systems on May 31, 2023. The monitoring sites are located at the Coal Hollow Mine near Alton, Utah.

Table 1-1

Site Location Information

	Primary CHM	Background	Primary NPL
Latitude	37° 24' 21.4" N	37° 24' 20.9" N	37° 24' 43" N
Longitude	112° 27' 17.1" W	112° 26' 1.1" W	112° 27' 30.6" W
UTM	12S 371254 4140899	12S 373119 4140856	12S 370928 4141570
Elevation	6,966 feet MSL	7,158 feet MSL	6,959 feet MSL

Audit results for the particulate samplers are summarized in Table 1-2. Audit results for the meteorological measurements are summarized in Table 1-3. Detailed discussions of performance audit findings and other findings can be found in Section 3.0.

Table 1-2

Summary of Particulate Sampler Audit Results

	Parameter	Instrument	Within Accuracy Goal
Primary CHM	PM <sub>10</sub>	BGI PQ200S	Yes
	PM <sub>10</sub> (collocated)	BGI PQ200S	Yes
Background #1	PM <sub>10</sub>	BGI PQ200S	Yes
Primary NPL	PM <sub>10</sub>	BGI PQ200	Yes
	PM <sub>10</sub> (collocated)	BGI PQ200	Yes

Details of the audit are presented in the following sections:

Section 2.0	Audit Methods and Equipment
Section 3.0	Audit Results
Appendix A	Audit Data Forms
Appendix B	Audit Standards Certifications

Any questions related to this audit or audit report should be addressed to:

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Quality Assurance Officer / Lead Auditor  
**Air Resource Specialists, Inc.**  
1901 Sharp Point Drive, Suite F  
Fort Collins, Colorado 80525  
Telephone: 970-484-7941  
E-mail: [ckirk@air-resource.com](mailto:ckirk@air-resource.com)



## 2.0 AUDIT METHODS

Audit procedures, audit challenge ranges, and acceptance criteria are described below. These ranges and limits conform to EPA's PSD guidelines. Audit results were verbally communicated to the site operator prior to departure from the site. A follow-up e-mail summarizing audit findings was also sent to Alton Coal Development, LLC personnel. Audit details are provided in Appendix A.

Guidance from the following EPA documents was used to establish the audit procedures:

- 40 CFR 58, Appendix B. *Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring*
- EPA *Quality Assurance Handbook for Air Pollution Measurement Systems*:
  - *Volume I. A Field Guide to Environmental Quality Assurance*
  - *Volume II. Ambient Air Quality Monitoring Program*
  - *Volume IV. Meteorological Measurements*
- EPA *Meteorological Monitoring Guidance for Regulatory Modeling Applications*

### 2.1 PARTICULATE SAMPLERS (FRM PM<sub>10</sub>)

The filter-based FRM PM<sub>10</sub> particulate samplers are audited in their normal operating mode. ARS audits the samplers with a BGI deltaCal audit standard which measures flow, temperature, and barometric pressure. Prior to conducting the flow audit, a system leak check is performed in accordance with the manufacturer's specifications. The observed volumetric operational flow and design flow of the sampler are compared to the audit flows measured by the audit standard. Differences between the operational sampler flow and audit flow that are greater than ±10% are considered out of tolerance. Differences between the designated design flow and the audit flow greater than ±10% are considered out of tolerance. In addition to the flow audits, observed ambient temperature, filter temperature, and barometric pressure measurements of the particulate samplers are also audited by comparison to the audit standard. A temperature difference greater than ±2°C and a barometric pressure difference greater than ±10mm Hg are considered out of tolerance. Audit methods and acceptable criteria for the particulate samplers are summarized in Table 2-1.

Table 2-1

Particulate Samplers  
Audit Acceptance Criteria

Parameter	Audit Method	Acceptance Criteria
FRM PM <sub>10</sub>	Leak Check	Manufacturer specs
	Audit flow to actual sampler flow	≤ ± 10%
	Design criteria flow to audit flow	≤ ± 10%
	Audit temperature to sampler temperature	≤ ± 2 °C
	Audit temperature to sampler filter temperature	≤ ± 2 °C
	Audit barometric pressure to sampler pressure	≤ ±10mm Hg

Table 2-2

Particulate Samplers  
Audit Equipment

<b>References</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Expiration Date</b>
FRM Flow	BGI	DeltaCal	1237	11/2/2023

### 3.0 AUDIT RESULTS

Audit findings and recommendations are discussed below. Detailed audit results are provided in Appendix A.

#### Performance Audit Results

All parameters were within acceptance.

**APPENDIX A**  
**AUDIT DATA FORMS**



ABBR.	N/A	
CLIENT	Alton Coal Development	FIELD SPECIALIST M. Abrahamson
SITE NAME	Coal Hollow Mine	
		DATE 5/31/2023

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	A962

<b>Date and Time correct?</b>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>If no, time off by:</b>
0 min

<b>SETTINGS</b>	
Total Flow	16.70

<b>Automated LEAK CHECK</b>	
Vacuum Loss Rate	Pass/Fail
-1.0	<b>PASS</b>

<b>FLOW VERIFICATION</b>					
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.85	16.70	-0.9%	0.9%	<b>PASS</b>

<b>AUDIT CRITERIA (&lt;=)</b>	
Actual Flow % Diff	10%
Design Flow % Diff	10%

<b>AMBIENT TEMPERATURE SENSOR (°C)</b>			
	Reference	Instrument	Difference
	14.3	14.9	0.6 <b>PASS</b>

<b>AUDIT CRITERIA (&lt;=)</b>	
Temperature Difference (°C)	2

<b>FILTER TEMPERATURE SENSOR (°C)</b>			
	Reference	Instrument	Difference
	11.2	10.6	-0.6 <b>PASS</b>

<b>AUDIT CRITERIA (&lt;=)</b>	
Temperature Difference (°C)	2

<b>PRESSURE SENSOR (mmHg)</b>			
	Reference	Instrument	Difference
	584.5	580.0	-4.5 <b>PASS</b>

<b>AUDIT CRITERIA (&lt;=)</b>	
Pressure Difference (mmHg)	10

NOTES:



ABBR.	N/A	
CLIENT	Alton Coal Development	FIELD SPECIALIST M. Abrahamson
SITE NAME	Coal Hollow Mine	
		DATE 5/31/2023

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	N963B

Date and Time correct?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If no, time off by:
0 min

SETTINGS	
Total Flow	16.70

Automated LEAK CHECK	
Vacuum Loss Rate	Pass/Fail
-2.0	PASS

FLOW VERIFICATION					
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.79	16.70	-0.5%	0.5%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

AMBIENT TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
15.8	15.2	-0.6	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

FILTER TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
14.0	13.2	-0.8	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

PRESSURE SENSOR (mmHg)			
Reference	Instrument	Difference	
589.0	588.0	-1.0	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:



ABBR.	N/A	
CLIENT	Alton Coal Development	FIELD SPECIALIST M. Abrahamson
SITE NAME	Coal Hollow Mine	
DATE	5/31/2023	

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	N964C

Date and Time correct?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If no, time off by:
-1 minutes

SETTINGS	
Total Flow	16.70

Automated LEAK CHECK	
Vacuum Loss Rate	Pass/Fail
-3.0	PASS

FLOW VERIFICATION					
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.40	16.70	1.8%	-1.8%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

AMBIENT TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
17.8	17.9	0.1	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

FILTER TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
15.7	14.6	-1.1	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

PRESSURE SENSOR (mmHg)			
Reference	Instrument	Difference	
589.0	587.0	-2.0	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:



ABBR.	N/A	
CLIENT	Alton Coal Development	FIELD SPECIALIST M. Abrahamson
SITE NAME	Coal Hollow Mine	
		DATE 5/31/2023

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2398

Date and Time correct?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If no, time off by:
-2 minutes

SETTINGS	
Total Flow	16.70

Automated LEAK CHECK	
Vacuum Loss Rate	Pass/Fail
-2.0	PASS

FLOW VERIFICATION					
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.86	16.70	-0.9%	1.0%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

AMBIENT TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
19.0	19.4	0.4	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

FILTER TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
18.6	18.5	-0.1	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

PRESSURE SENSOR (mmHg)			
Reference	Instrument	Difference	
589.5	585.0	-4.5	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:





ABBR.	N/A	
CLIENT	Alton Coal Development	FIELD SPECIALIST M. Abrahamson
SITE NAME	Coal Hollow Mine	
		DATE 5/31/2023

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2367

Date and Time correct?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If no, time off by:
0 min

SETTINGS	
Total Flow	16.70

Automated LEAK CHECK	
Vacuum Loss Rate	Pass/Fail
-1.0	<b>PASS</b>

FLOW VERIFICATION					
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.18	16.80	3.8%	-3.1%	<b>PASS</b>

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

AMBIENT TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
17.6	17.8	0.2	<b>PASS</b>

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

FILTER TEMPERATURE SENSOR (°C)			
Reference	Instrument	Difference	
17.2	18.4	1.2	<b>PASS</b>

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

PRESSURE SENSOR (mmHg)			
Reference	Instrument	Difference	
589.5	585.0	-4.5	<b>PASS</b>

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:



**Air Resource**  
SPECIALISTS

### SITE INFORMATION

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	M. Abrahamson	DATE	5/31/2023
SITE NAME	Coal Hollow Mine				

		Deg	Min	Sec
LATITUDE	North	37	24	22
LONGITUDE	West	112	27	16

--CALCULATE-->

Decimal
37.4061
112.4544

NOTES:

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ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	M. Abrahamson	DATE	5/31/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL #	Calibration Expiration Date
Ozone Transfer Standard				
Gas Dilution Transfer Standard				
MFC High Flow Reference				
MFC Low Flow Reference				
Temperature Reference				
AT/RH Sensor Reference				
Barometric Pressure Reference				
Wind Speed Reference (high rpm)				
Wind Speed Reference (low rpm)				
Wind Speed Torque Gauge				
Wind Direction Alignment Reference				
Wind Direction Linearity Reference				
Wind Direction Torque Gauge				
Solar Radiation Reference #1				
Solar Radiation Reference #2				
UV Radiation Reference				
Multiplier		W/m2 / mV		
Precipitation Reference				
Volume		mL		

PM Flow Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Flow Standard #2				
PM Flow Standard #3				
PM Flow Standard #4				

PM Temperature Standard #1	BGI	Deltcal	1237	11/2/2023
PM Temperature Standard #2				
PM Temperature Standard #3				
PM Temperature Standard #4				

PM Barometric Pressure Standard #1	BGI	DeltaCal	1237	11/2/2023
PM Barometric Pressure Standard #2				
PM Barometric Pressure Standard #3				
PM Barometric Pressure Standard #4				

TEOM MTV Standard				
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HiVol Direct Flow Reference				
Orifice				
ΔP orifice manometer				

**APPENDIX B**  
**AUDIT STANDARDS CERTIFICATIONS**



Mesa Labs 12100 W. 6th Ave  
 Lakewood, CO 80228  
 NIST Traceable Calibration Facility

**CERTIFICATE OF CALIBRATION - NIST TRACEABILITY**

Calibration Report #: 1237-02112022  
 DeltaCal Serial Number: 1237  
 Calibration Technician: Zabdiel Pimentel  
 Date: 2-Nov-2022  
 Recommended Recal Date: 2-Nov-2023

**Critical Venturi Flow Meter**

Max Uncertainty = 0.346%

TE20004	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20006	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature:  $\pm 0.03^{\circ}\text{C}$  from  $-5^{\circ}\text{C}$  -  $70^{\circ}\text{C}$  Room Temperature:  $23.80^{\circ}\text{C}$   
 Brand: Eutechnics  
 TE Number: TE12306 Serial Number: 308304  
 Std Cal Date: 8-Apr-22 Std Cal Due Date: 8-Apr-23

Ambient Temperature (set):  $23.8^{\circ}\text{C}$   
 Aux (filter) Temperature (set):  $23.8^{\circ}\text{C}$

**Barometric and Absolute Pressure**

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number: TE20204 Serial Number: U1220935  
 Std Cal Date: 21-Apr-22 Std Cal Due Date: 21-Apr-23

**DeltaCal:**

Barometric pressure (set): 612.0 mmHg

**Results of Venturi Calibration**

Flow Rate (Q) vs. Pressure Drop ( $\Delta P$ ).

Where: Q=Lpm,  $\Delta P$ = Cm of H2O

Venturi

TE20004	Q= 3.88435	$\Delta P^{\wedge}$	0.52280	Overall Uncertainty: 0.35%
TE20006	Q= 3.79060	$\Delta P^{\wedge}$	0.54992	Overall Uncertainty: 0.35%



Mesa Labs 12100 W. 6th Ave Lakewood,  
CO 80228

NIST Traceable Calibration Facility

**As Shipped Calibration Data for DeltaCal**

Unit Type: DC 1
Flow Range: 1.5-19.5 LPM
Serial No. : 1237
Firmware Version: 4.00P

Date	Technician
02Nov2022	Zabdiel Pimentel

Ambient Pressure:	612.0	mmHg
Ambient Temperature:	23.8	°C

Range 1		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi Type	TE20004 1A	1	129.18	612.0	6.353	6.365	0.189
Flow range	6 - 30.00 LPM	2	202.97	612.0	10.085	10.044	-0.407
		3	263.08	612.0	13.126	13.089	-0.282
		4	301.81	612.0	15.085	15.070	-0.099
		5	340.65	612.0	17.050	17.049	-0.006
		6	385.74	612.0	19.331	19.374	0.222
Maximum allowable error at any flow rate is 0.75%.						Average Result	-0.064 <b>PASS</b>

Range 2		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi Type	TE20006 2A	1	112.06	612.0	1.552	1.553	0.064
Flow range	1.40 - 6.0 LPM	2	174.88	612.0	2.463	2.475	0.487
		3	239.27	612.0	3.398	3.404	0.177
		4	306.66	612.0	4.376	4.348	-0.640
		5	365.03	612.0	5.223	5.201	-0.421
		6	415.08	612.0	5.949	5.951	0.034
Maximum allowable error at any flow rate is 0.75%.						Average Result	-0.050 <b>PASS</b>

Performed By: Zabdiel Pimentel

Date: 2-Nov-2022

Approved By: Casey Reitz

Date: 03Nov2022



Mesa Labs 12100 W. 6th Ave Lakewood,  
CO 80228

NIST Traceable Calibration Facility

**As-Found data for DeltaCal**

Unit Type: DC 1
Flow Range: 1.5-19.5 LPM
Serial No. : 1237
Firmware Version: 4.00P

Date	Technician
02Nov2022	Zabdiel Pimentel

Ambient Pressure:	612.0	mmHg
Ambient Temperature:	23.8	°C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	Standard	Diff	+/- 1 mmHg	DUT	Standard	Diff	+/- 1 mmHg
Pres <sub>AMB</sub> mmHg	612.5	612.0	0.5	Pass	612.0	612.0	0	Pass
	DUT	Standard	Diff	+/- 1 °C	DUT	Standard	Diff	+/- 1 °C
Temp <sub>AMB</sub> °C	23.8	23.8	0	Pass	23.8	23.8	0	Pass
Temp <sub>Filter</sub> °C	23.8	23.8	0	Pass	23.8	23.8	0	Pass

	Offset	New Offset
Pres <sub>AMB</sub>	3.5	3
Temp <sub>AMB</sub>	-0.05	-0.05
Temp <sub>Filter</sub>	-0.05	-0.05

Range 1		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi Type	TE20004 1A	1	128.81	612.0	6.332	6.195	-2.164
Flow range	6 - 30.00 LPM	2	205.09	612.0	10.189	10.024	-1.619
		3	267.30	612.0	13.335	13.090	-1.837
		4	306.13	612.0	15.298	15.005	-1.915
		5	347.34	612.0	17.382	17.049	-1.916
		6	385.82	612.0	19.328	18.976	-1.821
Maximum allowable error at any flow rate is 0.75%.						Average Result	-1.879
							<b>FAIL</b>

Range 2		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi Type	TE20006 2A	1	112.81	612.0	1.563	1.617	3.455
Flow range	1.40 - 6.0 LPM	2	173.40	612.0	2.442	2.526	3.440
		3	223.69	612.0	3.172	3.205	1.040
		4	306.88	612.0	4.379	4.332	-1.073
		5	370.63	612.0	5.304	5.240	-1.207
		6	414.87	612.0	5.946	5.849	-1.631
Maximum allowable error at any flow rate is 0.75%.						Average Result	0.671
							<b>FAIL</b>

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

SEP - 7 2023

DIVISION OF AIR QUALITY