Alton Coal Development, LLC

463 North 100 West, Suite 1

Cedar City, Utah 84720

Phone (435) 867-5331 / Fax (435) 867-1192

Oct 21, 2021

DAQ-2021-015686

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

RE: 3rd QT 2021 Report - Coal Hollow Mine
Project ID: N14047-0004

Dear Mrs. Wyffels,

Please find enclosed the Summary of PM_{10} Data Collected at the Coal Hollow Mine, Utah during the Third Quarter, 2021 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

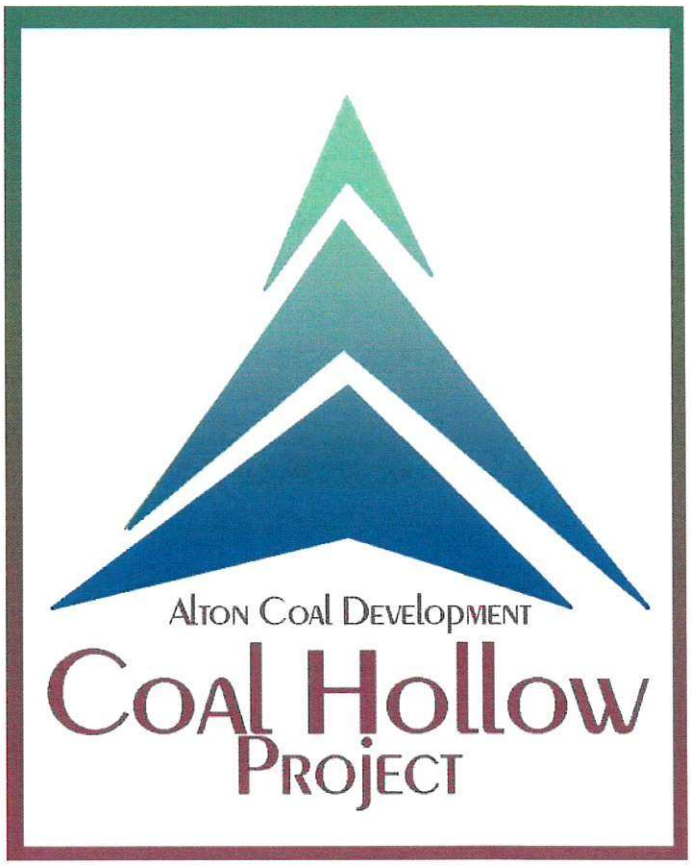
B. Kirk Nicholes
Environmental Specialist
Alton Coal Development, LLC

Alton Coal Development, LLC.

Summary of PM_{10} Data Collected at Coal Hollow Mine, Utah During the Third Quarter, 2021

Submitted to:
Utah Division of Environmental Quality
Division of Air Quality
195 North 1950 West
Salt Lake City, Utah
Contact: Catherine Wyffles

Prepared by:
Alton Coal Development, LLC.
463 N 100W, Suite1
Cedar City, Utah 84721
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_{10}) 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_{10} is a condition of the mines operating permit.

PM_{10} monitoring at the site consists of five BGI PQ200 PM_{10} 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 third quarter of 2021.

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 Section12 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 PM10 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. The CHM compliance monitor and the co-located monitor coordinates are Northing: 4140396, Easting 371147, (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

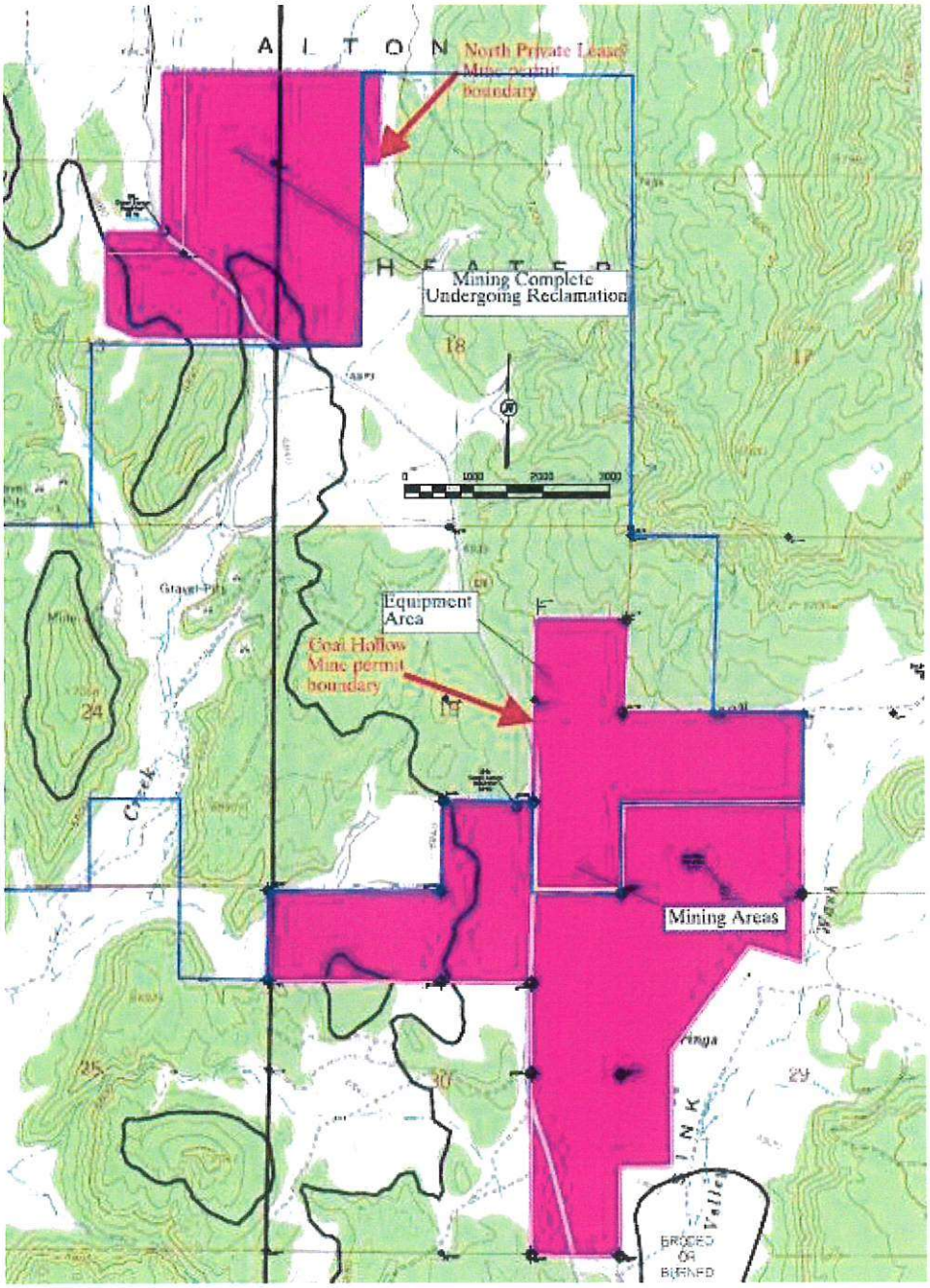
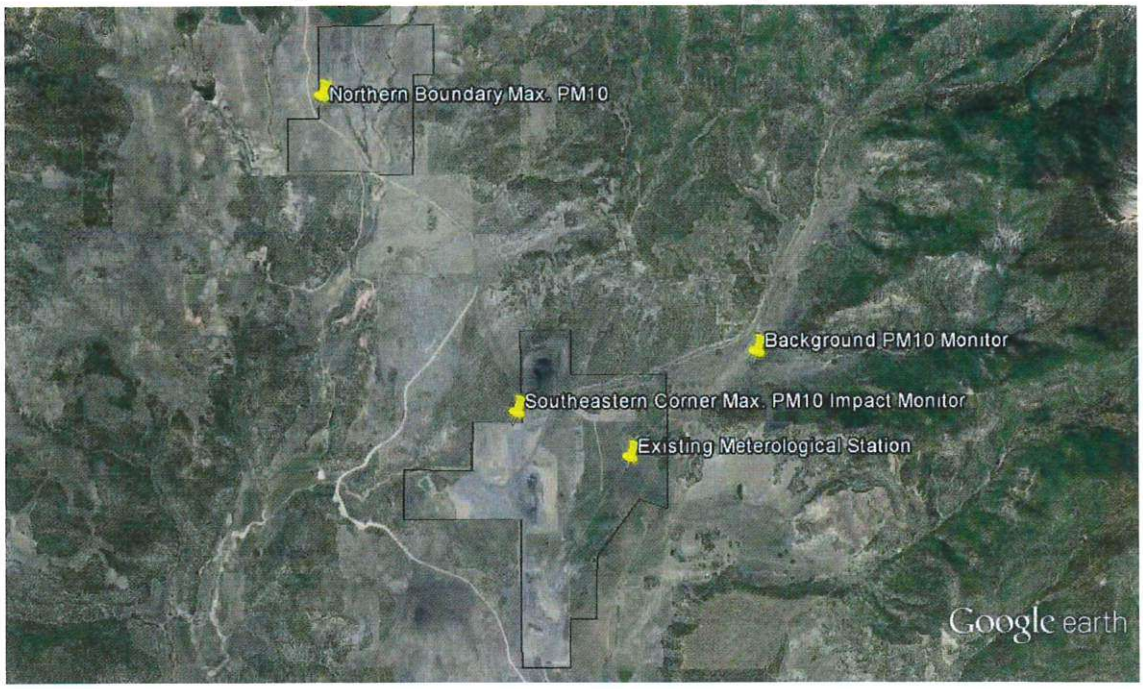


Figure 2 - Satellite View of Monitoring Locations



3.0 AIR QUALITY DATA SUMMARIES

A listing of the measured PM_{10} 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_{10} 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_{10} 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_{10} 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_{10} 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_{10} concentrations were below the 24-hour National Ambient Air Quality Standard (NAAQS) of 150 $\mu g/m^3$.

Table I - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Background Monitor - 962A

RANK	DATE	PM_{10} CONCENTRATION
Highest	08/08/21	48.5
2nd Highest	07/09/21	27.9
Monthly Mean	07/1/21-07/31/21	13.8
Monthly Mean	08/1/21-08/31/21	22.0
Monthly Mean	09/1/21-09/30/21	11.1
Quarterly Mean	07/1/20-09/30/20 (15 valid samples)	15.6

Table II - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor - 963B

RANK	DATE	PM_{10} CONCENTRATION
Highest	09/19/21	9.0
2nd Highest	No Valid Data	No Valid Data
Monthly Mean	07/1/21-07/31/21	No Valid Data
Monthly Mean	08/1/21-08/31/21	No Valid Data
Monthly Mean	09/1/21-09/30/21	N/D*
Quarterly Mean	07/1/20-09/30/20 (1 valid samples)	N/D*

* Not Determined, only one valid run in July and the quarter

Table III - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Collocated Monitor – 964C

RANK	DATE	PM_{10} CONCENTRATION
Highest	07/21/21	117.3
2nd Highest	07/09/21	98.7
Monthly Mean	07/1/21-07/31/21	70.6
Monthly Mean	08/1/21-08/31/21	38.6
Monthly Mean	09/1/21-09/30/21	40.6
Quarterly Mean	07/1/20-09/30/20 (15 valid samples)	49.9

Table IV - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor – 2366D

RANK	DATE	PM_{10} CONCENTRATION
Highest	08/08/21	54.5
2nd Highest	09/07/21	36.2
Monthly Mean	07/1/21-07/31/21	19.4
Monthly Mean	08/1/21-08/31/21	32.0
Monthly Mean	09/1/21-09/30/21	15.6
Quarterly Mean	07/1/20-09/30/20 (14 valid samples)	21.7

Table V - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Collocated Monitor – 2398E

RANK	DATE	PM_{10} CONCENTRATION
Highest	08/08/21	40.4
2nd Highest	08/02/21	18.4
Monthly Mean	07/1/21-07/31/21	6.7
Monthly Mean	08/1/21-08/31/21	35.4
Monthly Mean	09/1/21-09/30/21	No Valid Data
Quarterly Mean	07/1/20-09/30/20 (13 valid samples)	25.8

Table VI – Mean Quarterly and Monthly Wind Speed

	3rd Quarter 2021	Jul.	Aug.	Sep.
Mean Wind Speed (m/s)	2.73	2.60	2.83	2.76

4.0 DATA RECOVERY AND QUALITY ASSURANCE

4.1 Data Recovery

Monitor 962A

Monitor 962A collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 963B

Monitor 963B collected 1 of the 15 samples during the quarter. The percent recovery for this quarter is 7%. With the exception of September 19th, all runs were missed due to power issues. Several remedies were tried to resolve these issues with only temporary success. A couple of successful runs have been made in the 4th quarter with the hopes that the problem has been resolved.

Monitor 964C

Monitor 964C collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 2366D

Monitor 2366D collected 14 of the 15 samples during the quarter. The percent recovery for this quarter is 93%. For the sample date of August 2nd, although the monitor was programed correctly, the data file was corrupt.

Monitor 2398E

Monitor 2398E collected 3 of the 15 samples during the quarter. The percent recovery for this quarter is 20%. With the exception of the sample dates of July 7th, August 2nd and August 8th, the monitor malfunctioned running only approximately 7 hrs. if at all. A replacement mother board has been purchased to install.

The PM_{10} 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	15	100%
963B	15	1	7%
964C	15	15	100%
2366D	15	14	93%
2398E	15	3	20%

4.2 Quality Assurance

Quality assurance procedures utilized to verify the integrity of the measured PM_{10} data included the following:

1. Review of PM_{10} precision measurements based upon duplicate, collocated measurements.

2. Independent quarterly audits of the PM_{10} samplers.

3. Monthly zero and single point flow rate checks of the PM_{10} samplers.

4.2.1 Precision of PM_{10} Measurements

The precision of the PM_{10} 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_{10} precision checks are reported for instances when the concentrations for duplicate samples both exceed 3 $\mu g/m^3$. 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 1 valid pairs of co-located monitoring data during the quarter due to equipment malfunctions with the 962 B monitor. Single point precision based on *40 CFR, Part 58*, Appendix A Equation 2 results were 10.5%. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58*, Appendix A Equation 11 cannot be determined from one point.

Precision calculations at the North Private Lease were developed based on 2 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 3.9% to 105.6%. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58*, Appendix A Equation 11 cannot be determined from two points.

4.2.2 Audit Results

The accuracy of the PM_{10} sampler flows was verified by a performance audit conducted by Air Resource Specialist on September 2, 2021. 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	1.5	±10%	-1.4	±10%
963B	0.1	±10%	-0.1	±10%
964C	1.6	±10%	-1.6	±10%
2366D	3.0	±10%	-2.9	±10%
2398E	7.9	±10%	-7.3	±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

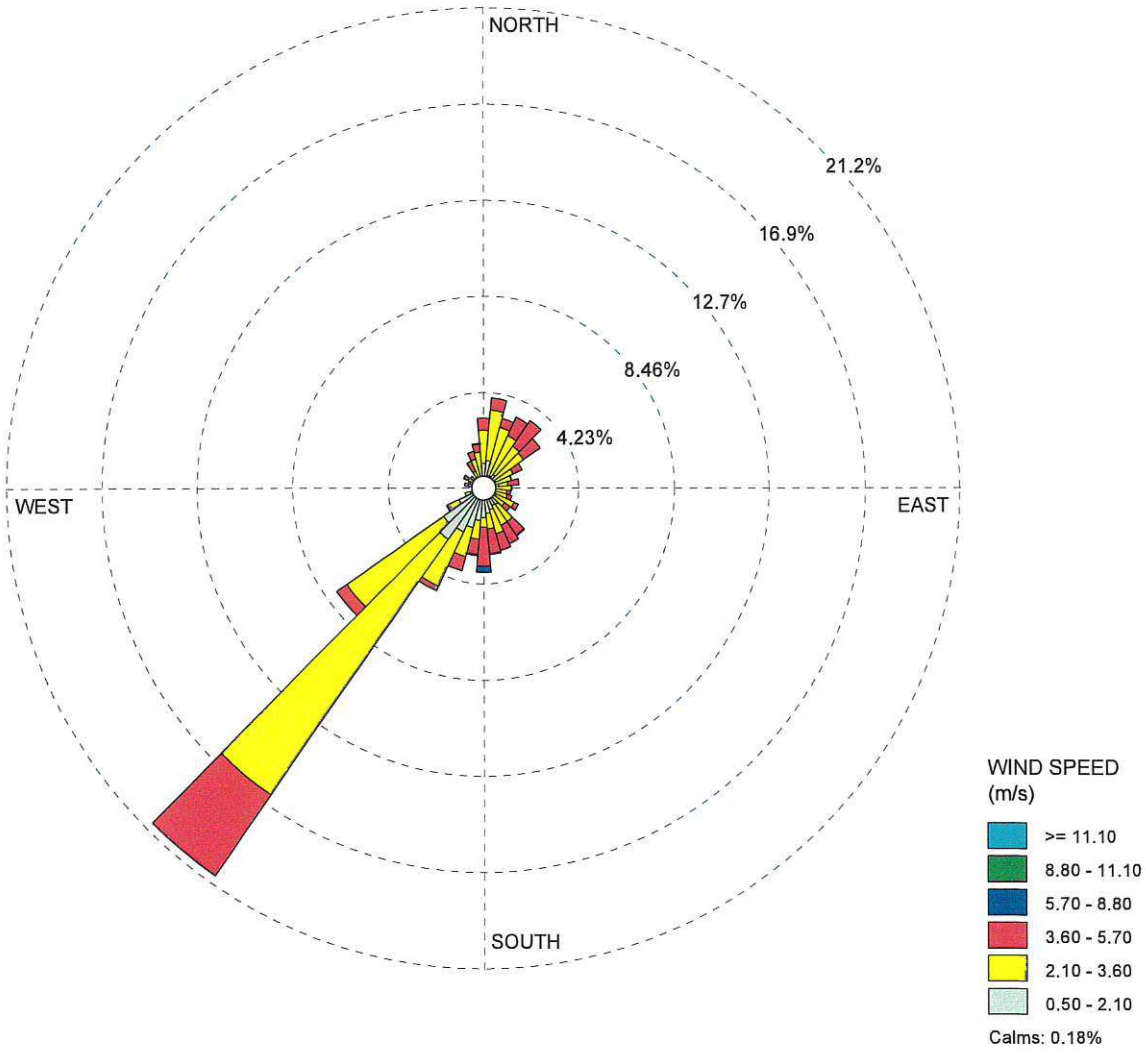
Windrose

WIND ROSE PLOT:

Alton Coal Development, LLC - Coal Hollow Mine
3rd QT_2021

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 7/1/2021 - 00:00** **End Date: 9/30/2021 - 23:00**	COMPANY NAME: **Alton Coal Development, LLC - Coal Hollow Mine**	
		MODELER: **B. Kirk Nicholes**	
	CALM WINDS: **0.18%**	TOTAL COUNT: **2208 hrs.**	
	AVG. WIND SPEED: **2.73 m/s**	DATE: **10/11/2021**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Station ID: 1
Start Date: 7/1/2021 - 00:00
End Date: 9/30/2021 - 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	24	32	12	0	0	0	68
5-15	27	49	12	0	0	0	88
15-25	13	48	9	0	0	0	70
25-35	13	43	20	0	0	0	76
35-45	16	34	30	0	0	0	80
45-55	11	37	20	0	0	0	68
55-65	13	19	10	0	0	0	42
65-75	8	20	1	0	0	0	29
75-85	15	9	11	0	0	0	35
85-95	8	19	1	0	0	0	28
95-105	11	12	4	0	0	0	27
105-115	10	14	5	0	0	0	29
115-125	14	19	5	0	0	0	38
125-135	12	13	7	0	0	0	32
135-145	20	20	16	1	0	0	57
145-155	19	21	20	0	0	0	60
155-165	22	24	17	0	0	0	63
165-175	25	15	24	1	0	0	65
175-185	29	9	38	6	0	0	82
185-195	32	18	15	1	0	0	66
195-205	40	29	14	0	0	0	83
205-215	47	58	5	0	0	0	110
215-225	61	302	95	0	0	0	458
225-235	48	115	12	0	0	0	175
235-245	27	12	1	0	0	0	40
245-255	14	5	0	0	0	0	19
255-265	7	3	1	0	0	0	11
265-275	6	3	2	0	0	0	11
275-285	12	3	4	0	0	0	19
285-295	7	7	2	0	0	0	16
295-305	8	9	5	0	0	0	22
305-315	6	6	4	0	0	0	16
315-325	1	8	1	1	0	0	11
325-335	10	8	11	0	0	0	29
335-345	11	18	8	0	0	0	37
345-355	11	24	8	1	0	0	44
Total	658	1085	450	11	0	0	2208

Frequency of Calm Winds: 4
Average Wind Speed: 2.73 m/s

Station ID: 1
Start Date: 7/1/2021 - 00:00
End Date: 9/30/2021 - 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	0.010870	0.014493	0.005435	0.000000	0.000000	0.000000	0.030797
5-15	0.012228	0.022192	0.005435	0.000000	0.000000	0.000000	0.039855
15-25	0.005888	0.021739	0.004076	0.000000	0.000000	0.000000	0.031703
25-35	0.005888	0.019475	0.009058	0.000000	0.000000	0.000000	0.034420
35-45	0.007246	0.015399	0.013587	0.000000	0.000000	0.000000	0.036232
45-55	0.004982	0.016757	0.009058	0.000000	0.000000	0.000000	0.030797
55-65	0.005888	0.008605	0.004529	0.000000	0.000000	0.000000	0.019022
65-75	0.003623	0.009058	0.000453	0.000000	0.000000	0.000000	0.013134
75-85	0.006793	0.004076	0.004982	0.000000	0.000000	0.000000	0.015851
85-95	0.003623	0.008605	0.000453	0.000000	0.000000	0.000000	0.012681
95-105	0.004982	0.005435	0.001812	0.000000	0.000000	0.000000	0.012228
105-115	0.004529	0.006341	0.002264	0.000000	0.000000	0.000000	0.013134
115-125	0.006341	0.008605	0.002264	0.000000	0.000000	0.000000	0.017210
125-135	0.005435	0.005888	0.003170	0.000000	0.000000	0.000000	0.014493
135-145	0.009058	0.009058	0.007246	0.000453	0.000000	0.000000	0.025815
145-155	0.008605	0.009511	0.009058	0.000000	0.000000	0.000000	0.027174
155-165	0.009964	0.010870	0.007699	0.000000	0.000000	0.000000	0.028533
165-175	0.011322	0.006793	0.010870	0.000453	0.000000	0.000000	0.029438
175-185	0.013134	0.004076	0.017210	0.002717	0.000000	0.000000	0.037138
185-195	0.014493	0.008152	0.006793	0.000453	0.000000	0.000000	0.029891
195-205	0.018116	0.013134	0.006341	0.000000	0.000000	0.000000	0.037591
205-215	0.021286	0.026268	0.002264	0.000000	0.000000	0.000000	0.049819
215-225	0.027627	0.136775	0.043025	0.000000	0.000000	0.000000	0.207428
225-235	0.021739	0.052083	0.005435	0.000000	0.000000	0.000000	0.079257
235-245	0.012228	0.005435	0.000453	0.000000	0.000000	0.000000	0.018116
245-255	0.006341	0.002264	0.000000	0.000000	0.000000	0.000000	0.008605
255-265	0.003170	0.001359	0.000453	0.000000	0.000000	0.000000	0.004982
265-275	0.002717	0.001359	0.000906	0.000000	0.000000	0.000000	0.004982
275-285	0.005435	0.001359	0.001812	0.000000	0.000000	0.000000	0.008605
285-295	0.003170	0.003170	0.000906	0.000000	0.000000	0.000000	0.007246
295-305	0.003623	0.004076	0.002264	0.000000	0.000000	0.000000	0.009964
305-315	0.002717	0.002717	0.001812	0.000000	0.000000	0.000000	0.007246
315-325	0.000453	0.003623	0.000453	0.000453	0.000000	0.000000	0.004982
325-335	0.004529	0.003623	0.004982	0.000000	0.000000	0.000000	0.013134
335-345	0.004982	0.008152	0.003623	0.000000	0.000000	0.000000	0.016757
345-355	0.004982	0.010870	0.003623	0.000453	0.000000	0.000000	0.019928
Total	0.298007	0.491395	0.203804	0.004982	0.000000	0.000000	0.998188

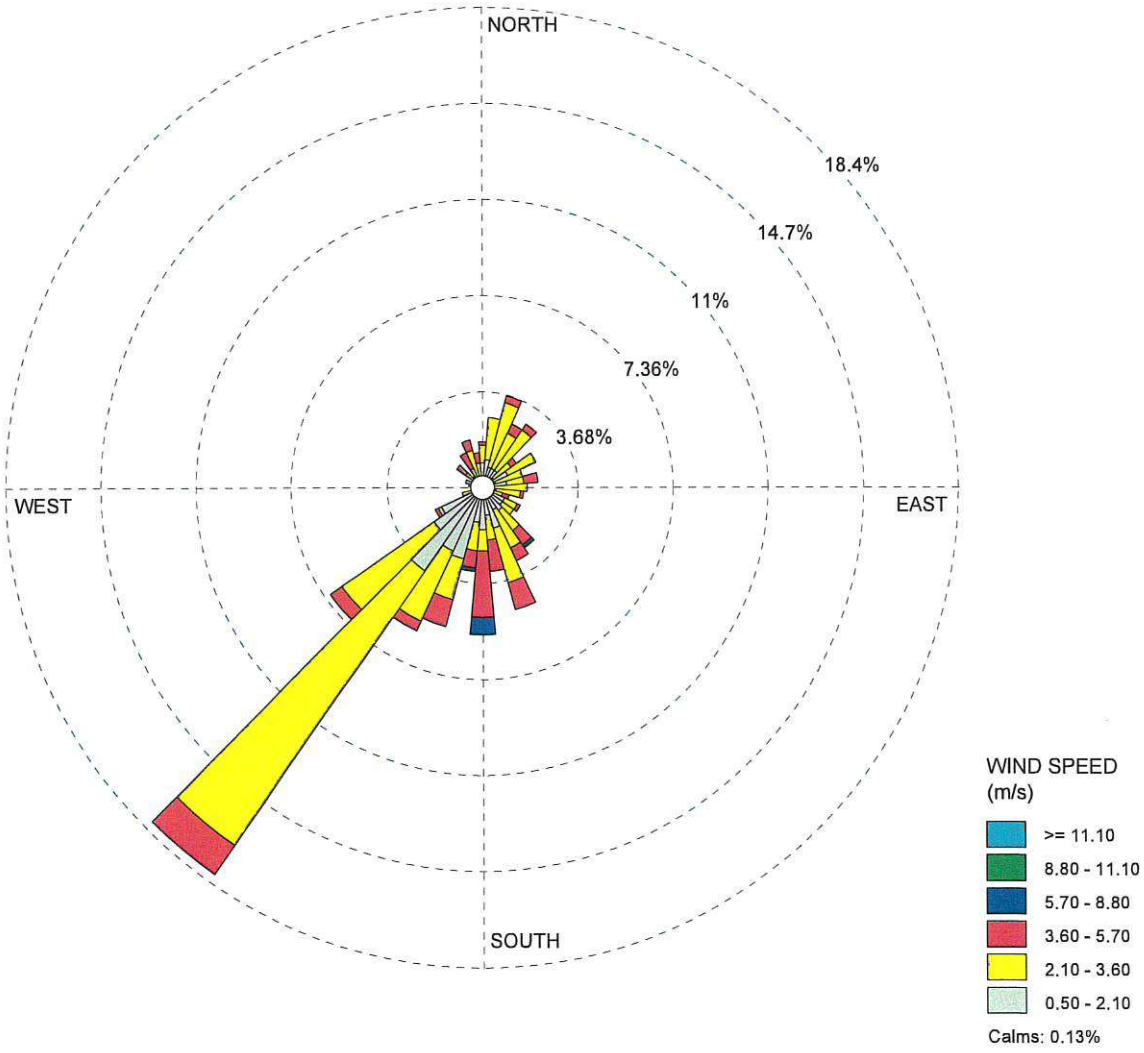
Frequency of Calm Winds: 0.18%
Average Wind Speed: 2.73 m/s

WIND ROSE PLOT:

Alton Coal Development, LLC - Coal Hollow Mine
July_2021

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 7/1/2021 - 00:00** **End Date: 7/31/2021 - 23:00**	COMPANY NAME: **Alton Coal Development, LLC - Coal Hollow Mine**	
		MODELER: **B. Kirk Nicholes**	
	CALM WINDS: **0.13%**	TOTAL COUNT: **744 hrs.**	
	AVG. WIND SPEED: **2.60 m/s**	DATE: **10/11/2021**	PROJECT NO.:

Station ID: 1
Start Date: 7/1/2021 - 00:00
End Date: 7/31/2021 - 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	7	5	1	0	0	0	13
5-15	8	12	0	0	0	0	20
15-25	6	19	2	0	0	0	27
25-35	6	11	3	0	0	0	20
35-45	6	14	2	0	0	0	22
45-55	4	6	2	0	0	0	12
55-65	8	9	0	0	0	0	17
65-75	4	8	0	0	0	0	12
75-85	7	5	4	0	0	0	16
85-95	3	10	0	0	0	0	13
95-105	4	7	1	0	0	0	12
105-115	3	3	2	0	0	0	8
115-125	7	4	1	0	0	0	12
125-135	7	4	0	0	0	0	11
135-145	8	7	5	1	0	0	21
145-155	7	12	4	0	0	0	23
155-165	12	16	8	0	0	0	36
165-175	8	7	9	0	0	0	24
175-185	12	6	19	5	0	0	42
185-195	10	8	5	1	0	0	24
195-205	21	12	8	0	0	0	41
205-215	20	22	3	0	0	0	45
215-225	29	95	10	0	0	0	134
225-235	17	32	4	0	0	0	53
235-245	13	1	1	0	0	0	15
245-255	3	3	0	0	0	0	6
255-265	1	1	1	0	0	0	3
265-275	0	1	1	0	0	0	2
275-285	3	1	0	0	0	0	4
285-295	2	3	0	0	0	0	5
295-305	0	0	2	0	0	0	2
305-315	3	3	3	0	0	0	9
315-325	0	3	1	0	0	0	4
325-335	2	4	5	0	0	0	11
335-345	3	8	3	0	0	0	14
345-355	1	6	3	0	0	0	10
Total	255	368	113	7	0	0	744

Frequency of Calm Winds: 1
Average Wind Speed: 2.60 m/s

Station ID: 1
Start Date: 7/1/2021 - 00:00
End Date: 7/31/2021 - 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	0.009409	0.006720	0.001344	0.000000	0.000000	0.000000	0.017473
5-15	0.010753	0.016129	0.000000	0.000000	0.000000	0.000000	0.026882
15-25	0.008065	0.025538	0.002688	0.000000	0.000000	0.000000	0.036290
25-35	0.008065	0.014785	0.004032	0.000000	0.000000	0.000000	0.026882
35-45	0.008065	0.018817	0.002688	0.000000	0.000000	0.000000	0.029570
45-55	0.005376	0.008065	0.002688	0.000000	0.000000	0.000000	0.016129
55-65	0.010753	0.012097	0.000000	0.000000	0.000000	0.000000	0.022849
65-75	0.005376	0.010753	0.000000	0.000000	0.000000	0.000000	0.016129
75-85	0.009409	0.006720	0.005376	0.000000	0.000000	0.000000	0.021505
85-95	0.004032	0.013441	0.000000	0.000000	0.000000	0.000000	0.017473
95-105	0.005376	0.009409	0.001344	0.000000	0.000000	0.000000	0.016129
105-115	0.004032	0.004032	0.002688	0.000000	0.000000	0.000000	0.010753
115-125	0.009409	0.005376	0.001344	0.000000	0.000000	0.000000	0.016129
125-135	0.009409	0.005376	0.000000	0.000000	0.000000	0.000000	0.014785
135-145	0.010753	0.009409	0.006720	0.001344	0.000000	0.000000	0.028226
145-155	0.009409	0.016129	0.005376	0.000000	0.000000	0.000000	0.030914
155-165	0.016129	0.021505	0.010753	0.000000	0.000000	0.000000	0.048387
165-175	0.010753	0.009409	0.012097	0.000000	0.000000	0.000000	0.032258
175-185	0.016129	0.008065	0.025538	0.006720	0.000000	0.000000	0.056452
185-195	0.013441	0.010753	0.006720	0.001344	0.000000	0.000000	0.032258
195-205	0.028226	0.016129	0.010753	0.000000	0.000000	0.000000	0.055108
205-215	0.026882	0.029570	0.004032	0.000000	0.000000	0.000000	0.060484
215-225	0.038978	0.127688	0.013441	0.000000	0.000000	0.000000	0.180108
225-235	0.022849	0.043011	0.005376	0.000000	0.000000	0.000000	0.071237
235-245	0.017473	0.001344	0.001344	0.000000	0.000000	0.000000	0.020161
245-255	0.004032	0.004032	0.000000	0.000000	0.000000	0.000000	0.008065
255-265	0.001344	0.001344	0.001344	0.000000	0.000000	0.000000	0.004032
265-275	0.000000	0.001344	0.001344	0.000000	0.000000	0.000000	0.002688
275-285	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
285-295	0.002688	0.004032	0.000000	0.000000	0.000000	0.000000	0.006720
295-305	0.000000	0.000000	0.002688	0.000000	0.000000	0.000000	0.002688
305-315	0.004032	0.004032	0.004032	0.000000	0.000000	0.000000	0.012097
315-325	0.000000	0.004032	0.001344	0.000000	0.000000	0.000000	0.005376
325-335	0.002688	0.005376	0.006720	0.000000	0.000000	0.000000	0.014785
335-345	0.004032	0.010753	0.004032	0.000000	0.000000	0.000000	0.018817
345-355	0.001344	0.008065	0.004032	0.000000	0.000000	0.000000	0.013441
Total	0.342742	0.494624	0.151882	0.009409	0.000000	0.000000	0.998656

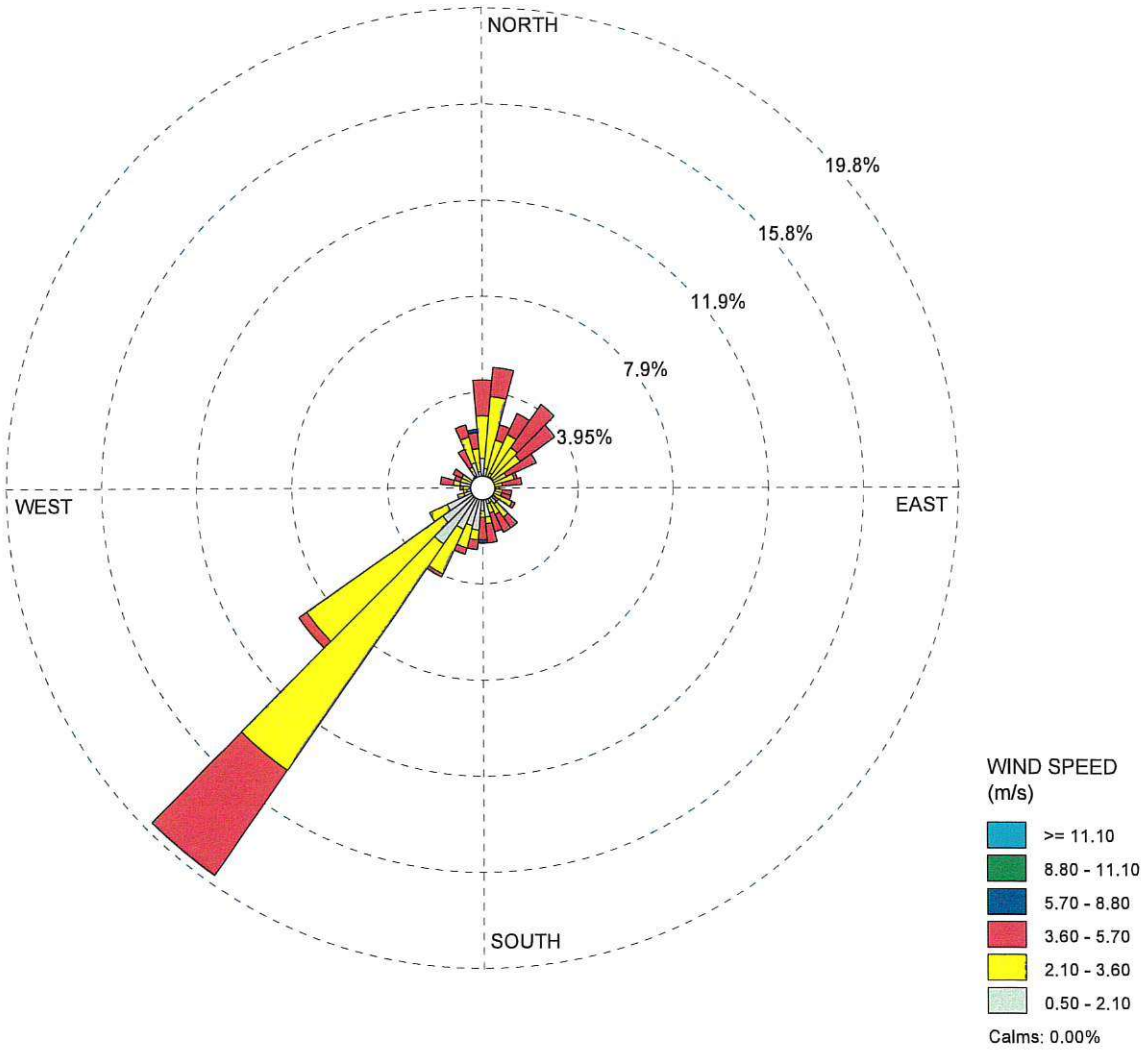
Frequency of Calm Winds: 0.13%
Average Wind Speed: 2.60 m/s

WIND ROSE PLOT:

Alton Coal Development, LLC - Coal Hollow Mine
August_2021

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 8/1/2021 - 00:00** **End Date: 8/31/2021 - 23:00**	COMPANY NAME: **Alton Coal Development, LLC - Coal Hollow Mine**	
		MODELER: **B. Kirk Nicholes**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **744 hrs.**	
	AVG. WIND SPEED: **2.83 m/s**	DATE: **10/11/2021**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Station ID: 1
Start Date: 8/1/2021 - 00:00
End Date: 8/31/2021 - 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	9	13	11	0	0	0	33
5-15	6	22	9	0	0	0	37
15-25	3	12	5	0	0	0	20
25-35	5	13	7	0	0	0	25
35-45	4	11	16	0	0	0	31
45-55	4	10	13	0	0	0	27
55-65	2	6	10	0	0	0	18
65-75	3	7	1	0	0	0	11
75-85	2	4	6	0	0	0	12
85-95	1	3	1	0	0	0	5
95-105	4	2	3	0	0	0	9
105-115	1	5	3	0	0	0	9
115-125	3	7	1	0	0	0	11
125-135	2	2	2	0	0	0	6
135-145	6	5	4	0	0	0	15
145-155	5	4	6	0	0	0	15
155-165	5	3	6	0	0	0	14
165-175	9	2	6	0	0	0	17
175-185	7	2	7	1	0	0	17
185-195	13	3	3	0	0	0	19
195-205	12	7	2	0	0	0	21
205-215	14	15	1	0	0	0	30
215-225	21	84	39	0	0	0	144
225-235	15	51	3	0	0	0	69
235-245	12	6	0	0	0	0	18
245-255	6	2	0	0	0	0	8
255-265	5	1	0	0	0	0	6
265-275	4	2	1	0	0	0	7
275-285	7	2	4	0	0	0	13
285-295	3	4	2	0	0	0	9
295-305	0	7	3	0	0	0	10
305-315	1	1	1	0	0	0	3
315-325	0	3	0	1	0	0	4
325-335	4	3	6	0	0	0	13
335-345	8	8	4	0	0	0	20
345-355	5	7	5	1	0	0	18
Total	211	339	191	3	0	0	744

Frequency of Calm Winds: 0
Average Wind Speed: 2.83 m/s

Station ID: 1
Start Date: 8/1/2021 - 00:00
End Date: 8/31/2021 - 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	0.012097	0.017473	0.014785	0.000000	0.000000	0.000000	0.044355
5-15	0.008065	0.029570	0.012097	0.000000	0.000000	0.000000	0.049731
15-25	0.004032	0.016129	0.006720	0.000000	0.000000	0.000000	0.026882
25-35	0.006720	0.017473	0.009409	0.000000	0.000000	0.000000	0.033602
35-45	0.005376	0.014785	0.021505	0.000000	0.000000	0.000000	0.041667
45-55	0.005376	0.013441	0.017473	0.000000	0.000000	0.000000	0.036290
55-65	0.002688	0.008065	0.013441	0.000000	0.000000	0.000000	0.024194
65-75	0.004032	0.009409	0.001344	0.000000	0.000000	0.000000	0.014785
75-85	0.002688	0.005376	0.008065	0.000000	0.000000	0.000000	0.016129
85-95	0.001344	0.004032	0.001344	0.000000	0.000000	0.000000	0.006720
95-105	0.005376	0.002688	0.004032	0.000000	0.000000	0.000000	0.012097
105-115	0.001344	0.006720	0.004032	0.000000	0.000000	0.000000	0.012097
115-125	0.004032	0.009409	0.001344	0.000000	0.000000	0.000000	0.014785
125-135	0.002688	0.002688	0.002688	0.000000	0.000000	0.000000	0.008065
135-145	0.008065	0.006720	0.005376	0.000000	0.000000	0.000000	0.020161
145-155	0.006720	0.005376	0.008065	0.000000	0.000000	0.000000	0.020161
155-165	0.006720	0.004032	0.008065	0.000000	0.000000	0.000000	0.018817
165-175	0.012097	0.002688	0.008065	0.000000	0.000000	0.000000	0.022849
175-185	0.009409	0.002688	0.009409	0.001344	0.000000	0.000000	0.022849
185-195	0.017473	0.004032	0.004032	0.000000	0.000000	0.000000	0.025538
195-205	0.016129	0.009409	0.002688	0.000000	0.000000	0.000000	0.028226
205-215	0.018817	0.020161	0.001344	0.000000	0.000000	0.000000	0.040323
215-225	0.028226	0.112903	0.052419	0.000000	0.000000	0.000000	0.193548
225-235	0.020161	0.068548	0.004032	0.000000	0.000000	0.000000	0.092742
235-245	0.016129	0.008065	0.000000	0.000000	0.000000	0.000000	0.024194
245-255	0.008065	0.002688	0.000000	0.000000	0.000000	0.000000	0.010753
255-265	0.006720	0.001344	0.000000	0.000000	0.000000	0.000000	0.008065
265-275	0.005376	0.002688	0.001344	0.000000	0.000000	0.000000	0.009409
275-285	0.009409	0.002688	0.005376	0.000000	0.000000	0.000000	0.017473
285-295	0.004032	0.005376	0.002688	0.000000	0.000000	0.000000	0.012097
295-305	0.000000	0.009409	0.004032	0.000000	0.000000	0.000000	0.013441
305-315	0.001344	0.001344	0.001344	0.000000	0.000000	0.000000	0.004032
315-325	0.000000	0.004032	0.000000	0.001344	0.000000	0.000000	0.005376
325-335	0.005376	0.004032	0.008065	0.000000	0.000000	0.000000	0.017473
335-345	0.010753	0.010753	0.005376	0.000000	0.000000	0.000000	0.026882
345-355	0.006720	0.009409	0.006720	0.001344	0.000000	0.000000	0.024194
Total	0.283602	0.455645	0.256720	0.004032	0.000000	0.000000	1.000000

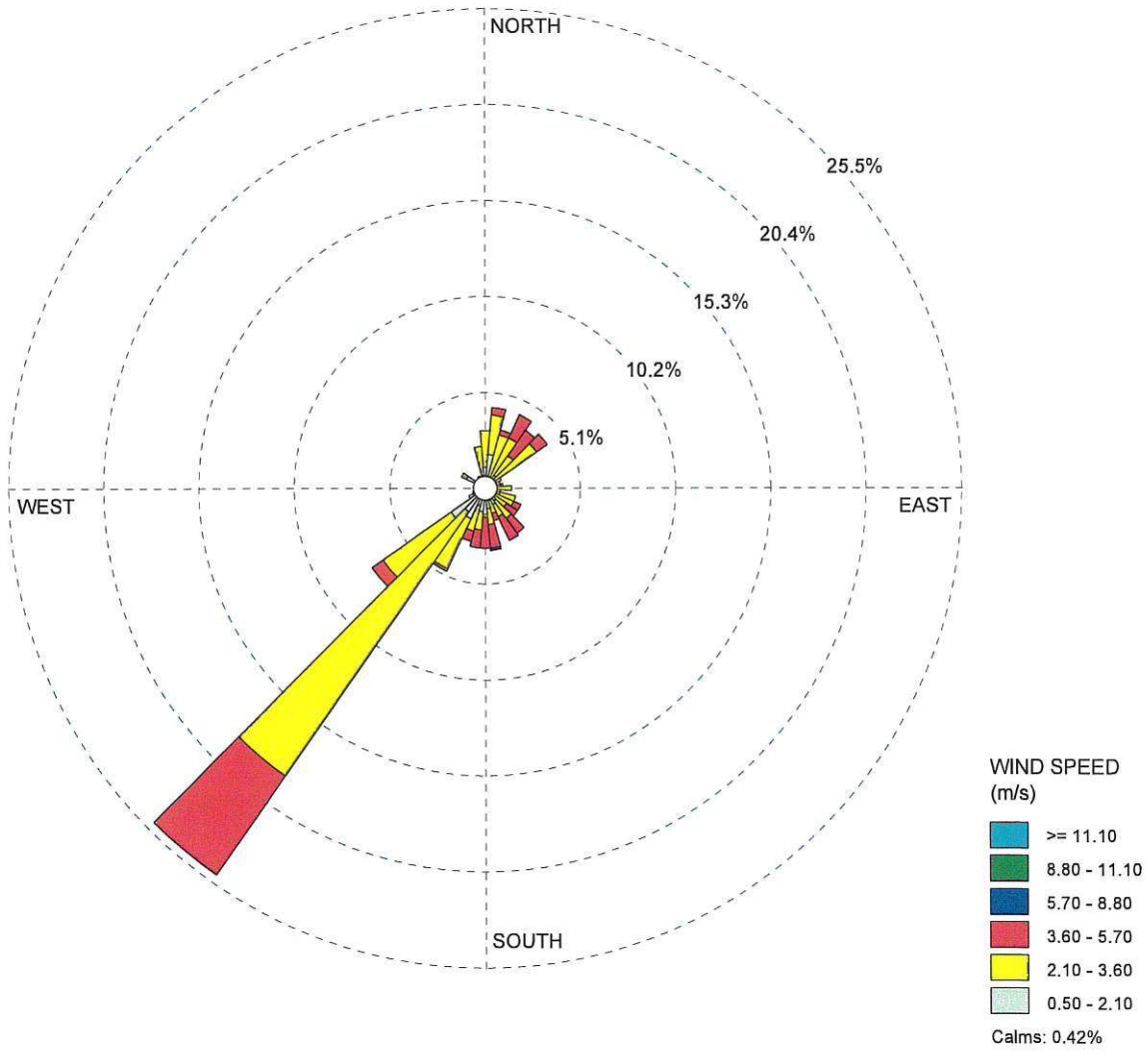
Frequency of Calm Winds: 0.00%
Average Wind Speed: 2.83 m/s

WIND ROSE PLOT:

Alton Coal Development, LLC - Coal Hollow Mine
September_2021

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 9/1/2021 - 00:00** **End Date: 9/30/2021 - 23:00**	COMPANY NAME: **Alton Coal Development, LLC - Coal Hollow Mine**	
		MODELER: **B. Kirk Nicholes**	
	CALM WINDS: **0.42%**	TOTAL COUNT: **720 hrs.**	
	AVG. WIND SPEED: **2.76 m/s**	DATE: **10/11/2021**	PROJECT NO.:

Station ID: 1
Start Date: 9/1/2021 - 00:00
End Date: 9/30/2021 - 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	8	14	0	0	0	0	22
5-15	13	15	3	0	0	0	31
15-25	4	17	2	0	0	0	23
25-35	2	19	10	0	0	0	31
35-45	6	9	12	0	0	0	27
45-55	3	21	5	0	0	0	29
55-65	3	4	0	0	0	0	7
65-75	1	5	0	0	0	0	6
75-85	6	0	1	0	0	0	7
85-95	4	6	0	0	0	0	10
95-105	3	3	0	0	0	0	6
105-115	6	6	0	0	0	0	12
115-125	4	8	3	0	0	0	15
125-135	3	7	5	0	0	0	15
135-145	6	8	7	0	0	0	21
145-155	7	5	10	0	0	0	22
155-165	5	5	3	0	0	0	13
165-175	8	6	9	1	0	0	24
175-185	10	1	12	0	0	0	23
185-195	9	7	7	0	0	0	23
195-205	7	10	4	0	0	0	21
205-215	13	21	1	0	0	0	35
215-225	11	123	46	0	0	0	180
225-235	16	32	5	0	0	0	53
235-245	2	5	0	0	0	0	7
245-255	5	0	0	0	0	0	5
255-265	1	1	0	0	0	0	2
265-275	2	0	0	0	0	0	2
275-285	2	0	0	0	0	0	2
285-295	2	0	0	0	0	0	2
295-305	8	2	0	0	0	0	10
305-315	2	2	0	0	0	0	4
315-325	1	2	0	0	0	0	3
325-335	4	1	0	0	0	0	5
335-345	0	2	1	0	0	0	3
345-355	5	11	0	0	0	0	16
Total	192	378	146	1	0	0	720

Frequency of Calm Winds: 3
Average Wind Speed: 2.76 m/s

Station ID: 1
Start Date: 9/1/2021 - 00:00
End Date: 9/30/2021 - 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	0.011111	0.019444	0.000000	0.000000	0.000000	0.000000	0.030556
5-15	0.018056	0.020833	0.004167	0.000000	0.000000	0.000000	0.043056
15-25	0.005556	0.023611	0.002778	0.000000	0.000000	0.000000	0.031944
25-35	0.002778	0.026389	0.013889	0.000000	0.000000	0.000000	0.043056
35-45	0.008333	0.012500	0.016667	0.000000	0.000000	0.000000	0.037500
45-55	0.004167	0.029167	0.006944	0.000000	0.000000	0.000000	0.040278
55-65	0.004167	0.005556	0.000000	0.000000	0.000000	0.000000	0.009722
65-75	0.001389	0.006944	0.000000	0.000000	0.000000	0.000000	0.008333
75-85	0.008333	0.000000	0.001389	0.000000	0.000000	0.000000	0.009722
85-95	0.005556	0.008333	0.000000	0.000000	0.000000	0.000000	0.013889
95-105	0.004167	0.004167	0.000000	0.000000	0.000000	0.000000	0.008333
105-115	0.008333	0.008333	0.000000	0.000000	0.000000	0.000000	0.016667
115-125	0.005556	0.011111	0.004167	0.000000	0.000000	0.000000	0.020833
125-135	0.004167	0.009722	0.006944	0.000000	0.000000	0.000000	0.020833
135-145	0.008333	0.011111	0.009722	0.000000	0.000000	0.000000	0.029167
145-155	0.009722	0.006944	0.013889	0.000000	0.000000	0.000000	0.030556
155-165	0.006944	0.006944	0.004167	0.000000	0.000000	0.000000	0.018056
165-175	0.011111	0.008333	0.012500	0.001389	0.000000	0.000000	0.033333
175-185	0.013889	0.001389	0.016667	0.000000	0.000000	0.000000	0.031944
185-195	0.012500	0.009722	0.009722	0.000000	0.000000	0.000000	0.031944
195-205	0.009722	0.013889	0.005556	0.000000	0.000000	0.000000	0.029167
205-215	0.018056	0.029167	0.001389	0.000000	0.000000	0.000000	0.048611
215-225	0.015278	0.170833	0.063889	0.000000	0.000000	0.000000	0.250000
225-235	0.022222	0.044444	0.006944	0.000000	0.000000	0.000000	0.073611
235-245	0.002778	0.006944	0.000000	0.000000	0.000000	0.000000	0.009722
245-255	0.006944	0.000000	0.000000	0.000000	0.000000	0.000000	0.006944
255-265	0.001389	0.001389	0.000000	0.000000	0.000000	0.000000	0.002778
265-275	0.002778	0.000000	0.000000	0.000000	0.000000	0.000000	0.002778
275-285	0.002778	0.000000	0.000000	0.000000	0.000000	0.000000	0.002778
285-295	0.002778	0.000000	0.000000	0.000000	0.000000	0.000000	0.002778
295-305	0.011111	0.002778	0.000000	0.000000	0.000000	0.000000	0.013889
305-315	0.002778	0.002778	0.000000	0.000000	0.000000	0.000000	0.005556
315-325	0.001389	0.002778	0.000000	0.000000	0.000000	0.000000	0.004167
325-335	0.005556	0.001389	0.000000	0.000000	0.000000	0.000000	0.006944
335-345	0.000000	0.002778	0.001389	0.000000	0.000000	0.000000	0.004167
345-355	0.006944	0.015278	0.000000	0.000000	0.000000	0.000000	0.022222
Total	0.266667	0.525000	0.202778	0.001389	0.000000	0.000000	0.995833

Frequency of Calm Winds: 0.42%
Average Wind Speed: 2.76 m/s

APPENDIX B

Listing of PM_{10} Concentrations

Individual Data Sheets provided on CD

Background Monitor 962A

PM_{10} Sampler Summary

July 1, 2021 - September 30, 2021

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-A **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
07/03/21	P2971286	**12.7**	**16.4**	24:00	24.0	18.6	394.5569	394.8623	0.3054		
07/09/21	P2971290	**21.4**	**27.9**	24:00	24.0	18.4	393.1662	393.6814	0.5152		
07/15/21	P2971509	**8.3**	**10.6**	24:00	24.0	18.9	385.5598	385.7604	0.2006		
07/21/21	P2971514	**5.4**	**6.9**	24:00	24.0	18.8	389.0581	389.1880	0.1299		
07/27/21	P2971738	**5.6**	**7.2**	24:00	24.0	19.0	399.5050	399.6416	0.1366		
08/02/21	P2971743	**9.5**	**12.1**	24:00	24.0	18.9	383.9210	384.1507	0.2297		
08/08/21	P2972178	**37.9**	**48.5**	24:00	24.0	18.8	392.0129	392.9244	0.9115		
08/14/21	P2972183	**10.0**	**12.7**	24:00	24.0	18.9	391.0790	391.3198	0.2408		
08/20/21	P2972188	**19.5**	**24.5**	24:00	24.0	19.1	401.3167	401.7856	0.4689		
08/26/21	P2972330	**9.7**	**12.4**	24:00	24.0	18.8	402.1833	402.4180	0.2347		
09/01/21	P2972335	**5.4**	**6.8**	24:00	24.0	19.1	391.3959	391.5276	0.1317		
09/07/21	P2972512	**15.3**	**19.6**	24:00	24.0	18.8	380.8264	381.1954	0.3690		
09/13/21	P2972517	**4.5**	**5.7**	24:00	24.0	18.9	391.1212	391.2296	0.1084		
09/19/21	P2972698	**7.3**	**9.1**	24:00	24.0	19.1	380.5891	380.7647	0.1756		
09/25/21	P2972702	**11.2**	**14.2**	24:00	24.0	19.0	395.1823	395.4525	0.2702		

# Valid	Recovery	Average	St. Dev.	Max	Min
15	**100%**	**15.6**	**11.2**	**48.5**	**5.7**

Compliance Monitor 963B

PM_{10} Sampler Summary

July 1, 2021 - September 30, 2021

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-B
AQS ID:
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
07/03/21	P2971287	Invalid - AN	Invalid - AN	0:00	0.0	0.0	390.1255	390.1469	0.0214	SP	
07/09/21	P2971291	Invalid - AN	Invalid - AN	0:00	0.0	0.0	396.1896	396.1951	0.0055	SP	
07/15/21	P2971510	Invalid - AN	Invalid - AN	0:00	0.0	0.0	391.8911	391.8967	0.0056	SP	
07/21/21	P2971515	Invalid - AN	Invalid - AN	0:00	0.0	0.0	389.6931	389.7050	0.0119	SP,HT	
07/27/21	P2971739	Invalid - AN	Invalid - AN	0:00	0.0	0.0	399.3466	399.3595	0.0129	SP	
08/02/21	P2971744	Invalid - AQ	Invalid - AQ	24:00	24.0	19.3	388.1731	388.6942	0.5211	CI	
08/08/21	P2972179	Invalid - AN	Invalid - AN				392.0276	392.0338	0.0062	SP,MD	
08/14/21	P2972184	Invalid - AN	Invalid - AN				392.0444	392.0498	0.0054	SP,MD	
08/20/21	P2972189	Invalid - AN	Invalid - AN				395.5347	396.7435	1.2088	SP,MD	
08/26/21	P2972331	Invalid - AN	Invalid - AN				396.7685	396.7922	0.0237	SP,MD	
09/01/21	P2972336	Invalid - AN	Invalid - AN				396.7656	396.7796	0.0140	SP,MD	
09/07/21	P2972513	Invalid - AN	Invalid - AN				403.8582	403.8702	0.0120	SP,MD	
09/13/21	P2972518	Invalid - AN	Invalid - AN				399.4535	399.4643	0.0108	SP,MD	
09/19/21	P2972699	7.3	9.0	24:00	24.0	19.5	392.0425	392.2182	0.1757		
09/25/21	P2972705	Invalid - AN	Invalid - AN				392.6299	393.1898	0.5599	SP,MD	

# Valid	Recovery	Average	St. Dev.	Max	Min
1	7%	9.0	#DIV/0!	9.0	9.0

Collocated Monitor 964C

PM_{10} Sampler Summary

July 1, 2021 - September 30, 2021

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-C
AQS ID:
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
07/03/21	P2971288	**52.3**	**66.7**	23:59	24.0	18.9	394.7812	396.0401	1.2589		
07/09/21	P2971292	**76.8**	**98.7**	23:59	24.0	18.7	396.6586	398.5045	1.8459		
07/15/21	P2971511	**25.3**	**31.6**	23:59	24.0	19.2	395.1123	395.7215	0.6092		
07/21/21	P2971516	**93.0**	**117.3**	23:59	24.0	19.1	390.8594	393.0953	2.2359		
07/27/21	P2971740	**30.8**	**38.5**	23:59	24.0	19.2	388.1788	388.9193	0.7405		
08/02/21	P2971745	**27.5**	**34.4**	23:59	24.0	19.2	400.7233	401.3845	0.6612		
08/08/21	P2972180	**29.8**	**37.5**	23:59	24.0	19.1	399.8187	400.5352	0.7165		
08/14/21	P2972185	**13.5**	**17.0**	23:59	24.0	19.2	395.5627	395.8886	0.3259		
08/20/21	P2972190	**54.8**	**68.0**	23:59	24.0	19.4	388.0785	389.3980	1.3195		
08/26/21	P2972332	**28.5**	**35.9**	23:59	24.0	19.1	392.1427	392.8302	0.6875		
09/01/21	P2972337	**5.4**	**6.7**	23:59	24.0	19.4	398.5950	398.7265	0.1315		
09/07/21	P2972514	**74.6**	**94.0**	23:59	24.0	19.1	398.5069	400.3005	1.7936		
09/13/21	P2972519	**50.7**	**63.7**	23:59	24.0	19.1	389.5708	390.7916	1.2208		
09/19/21	P2972700	**6.5**	**8.1**	23:59	24.0	19.4	388.8652	389.0234	0.1582		
09/25/21	P2972706	**24.4**	**30.4**	23:59	24.0	19.3	396.0792	396.6670	0.5878		

# Valid	Recovery	Average	St. Dev.	Max	Min
15	**100%**	**49.9**	**33.6**	**117.3**	**6.7**

Compliance Monitor 2366D

PM_{10} Sampler Summary

July 1, 2021 - September 30, 2021

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-D **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
07/03/21	P2971285	**17.1**	**21.7**	24:00	24.0	19.0	393.5591	393.9712	0.4121		
07/09/21	P2971293	**20.9**	**26.6**	24:00	24.0	18.8	398.9019	399.4044	0.5025		
07/15/21	P2971512	**9.0**	**11.2**	24:00	24.0	19.4	395.2246	395.4428	0.2182		
07/21/21	P2971517	**18.1**	**22.6**	24:00	24.0	19.2	388.6719	389.1072	0.4353		
07/27/21	P2971741	**12.1**	**15.0**	24:00	24.0	19.4	386.8918	387.1829	0.2911		
08/02/21	P2971746	**Invalid - AN**	**Invalid - AN**				388.9502	389.3245	0.3743	SP,MD	
08/08/21	P2972181	**43.5**	**54.5**	24:00	24.0	19.2	391.1465	392.1946	1.0481		
08/14/21	P2972186	**12.0**	**14.9**	24:00	24.0	19.3	397.8502	398.1387	0.2885		
08/20/21	P2972191	**30.4**	**37.4**	24:00	24.0	19.6	395.9983	396.7314	0.7331		
08/26/21	P2972333	**17.0**	**21.2**	24:00	24.0	19.3	406.9012	407.3107	0.4095		
09/01/21	P2972338	**5.7**	**7.0**	24:00	24.0	19.5	390.1506	390.2878	0.1372		
09/07/21	P2972515	**28.9**	**36.2**	24:00	24.0	19.2	395.3348	396.0314	0.6966		
09/13/21	P2972520	**9.3**	**11.6**	24:00	24.0	19.4	392.4128	392.6376	0.2248		
09/19/21	P2972704	**6.9**	**8.5**	24:00	24.0	19.6	401.3877	401.5549	0.1672		
09/25/21	P2972703	**11.9**	**14.7**	24:00	24.0	19.4	395.9280	396.2144	0.2864		

# Valid	Recovery	Average	St. Dev.	Max	Min
14	**93%**	**21.7**	**13.3**	**54.5**	**7.0**

Collocated Monitor 2398E

PM_{10} Sampler Summary

July 1, 2021 - September 30, 2021

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-E **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
07/03/21	P2971289	**5.3**	**6.7**	24:00	24.0	19.0	398.6941	398.8219	0.1278		
07/09/21	P2971294	**Invalid - AG**	**Invalid - AG**	7:28	7.5	6.0	401.1998	401.3708	0.1710	SP	
07/15/21	P2971513	**Invalid - AG**	**Invalid - AG**	7:28	7.5	6.0	388.1531	388.1926	0.0395	SP	
07/21/21	P2971518	**Invalid - AN**	**Invalid - AN**				393.3321	393.5668	0.2347	SP,MD	
07/27/21	P2971742	**Invalid - AN**	**Invalid - AN**	0:00	0.0	0.0	399.1067	399.1671	0.0604	SP	
08/02/21	P2971747	**14.3**	**18.4**	24:00	24.0	18.7	390.6938	391.0388	0.3450		
08/08/21	P2972182	**40.4**	**52.4**	24:00	24.0	18.5	393.2306	394.2028	0.9722		
08/14/21	P2972187	**Invalid - AN**	**Invalid - AN**				390.5903	390.6553	0.0650	SP,MD	
08/20/21	P2972192	**Invalid - AN**	**Invalid - AN**				393.7436	394.0017	0.2581	SP,MD	
08/26/21	P2972334	**Invalid - AN**	**Invalid - AN**				391.7088	391.8400	0.1312	SP,MD	
09/01/21	P2972339	**Invalid - AN**	**Invalid - AN**				397.5282	397.5673	0.0391	SP,MD	
09/07/21	P2972516	**Invalid - AN**	**Invalid - AN**				392.3665	392.7251	0.3586	SP,MD	
09/13/21	P2972521	**Invalid - AN**	**Invalid - AN**				391.0061	391.0751	0.0690	SP,MD	
09/19/21	P2972701	**Invalid - AN**	**Invalid - AN**				387.3562	387.3982	0.0420	SP,MD	
09/25/21	P2972697	**Invalid - AN**	**Invalid - AN**				385.9995	386.1097	0.1102	SP,MD	

# Valid	Recovery	Average	St. Dev.	Max	Min
3	**20%**	**25.8**	**23.7**	**52.4**	**6.7**

APPENDIX C

Precision and Single-Point Flow Rate Checks

Alton Coal Development

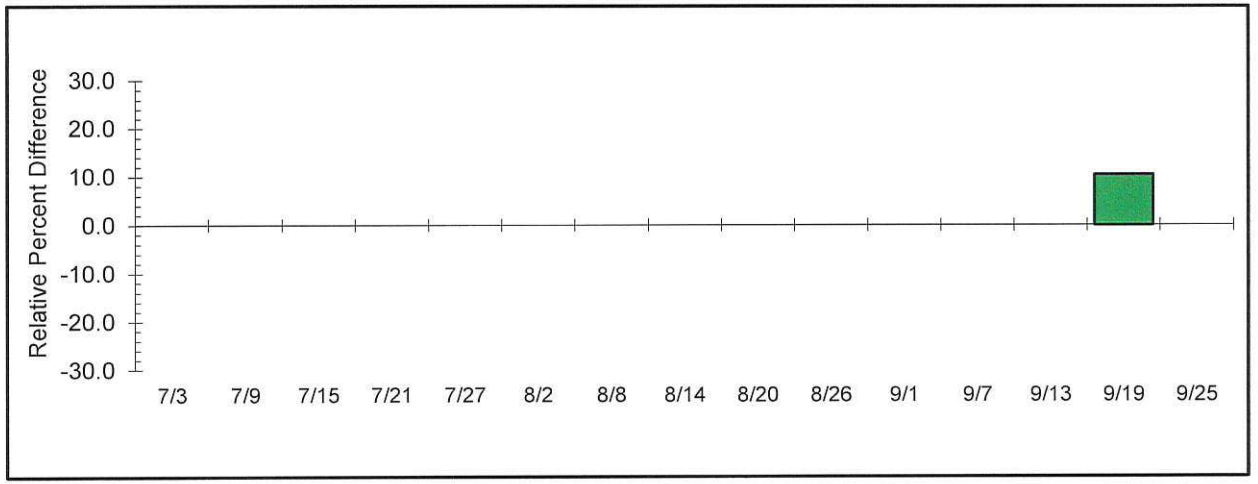
Coal Hollow

Precision Report For Collocated Samplers

STP PM10 Concentrations(µg/m³)
July 1, 2021 - September 30, 2021

Date	7/3	7/9	7/15	7/21	7/27	8/2	8/8	8/14	8/20	8/26	9/1	9/7	9/13	9/19	9/25
Coal Hollow-B														9.0	
Coal Hollow-C	66.7	98.7	31.6	117.3	38.5	34.4	37.5	17.0	68.0	35.9	6.7	94.0	63.7	8.1	30.4
Rel. %Diff.	*	*	*	*	*	*	*	*	*	*	*	*	*	10.5	*

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



Statistical Calculations:

n=	1.0	S Dev=	N/A %
Mean=	10.5	** CV=	N/A %

*** Both sample concentrations must be greater than or equal to 3 µg/m³ 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

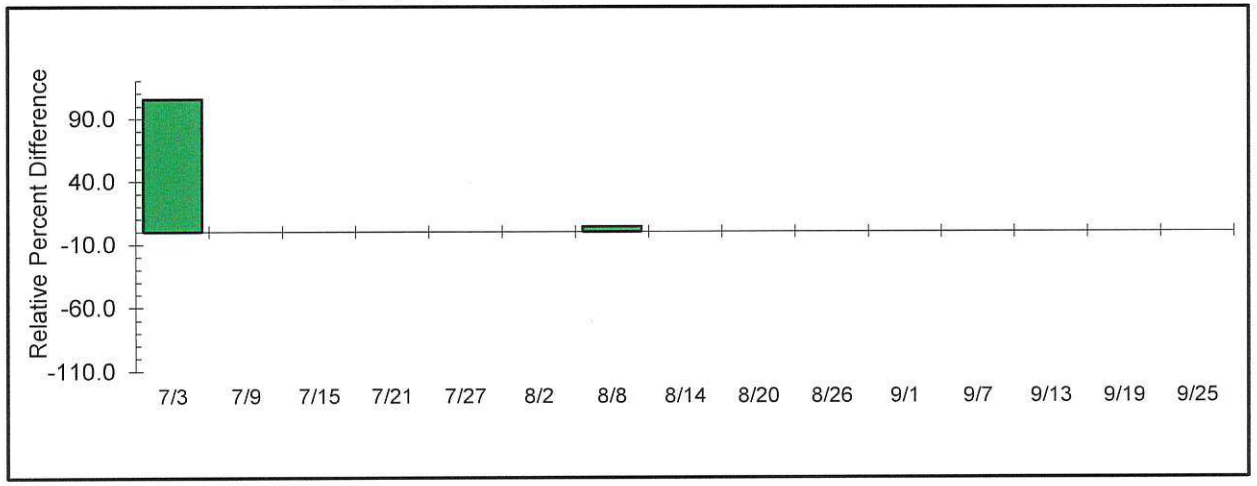
Coal Hollow

Precision Report For Collocated Samplers

STP PM10 Concentrations(µg/m³)
July 1, 2021 - September 30, 2021

Date	7/3	7/9	7/15	7/21	7/27	8/2	8/8	8/14	8/20	8/26	9/1	9/7	9/13	9/19	9/25
Coal Hollow-D	21.7	26.6	11.2	22.6	15.0		54.5	14.9	37.4	21.2	7.0	36.2	11.6	8.5	14.7
Coal Hollow-E	6.7					18.4	52.4								
Rel. %Diff.	105.6	*	*	*	*	*	3.9	*	*	*	*	*	*	*	*

Relative Percent Difference = ((X - Y) / ((X + Y) / 2)) * 100 X=Coal Hollow-D Y =Coal Hollow-E



Statistical Calculations:

n=	2.0	S Dev=	71.9 %
Mean=	54.8	** CV=	404.7 %

*** Both sample concentrations must be greater than or equal to 3 µg/m³ 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**

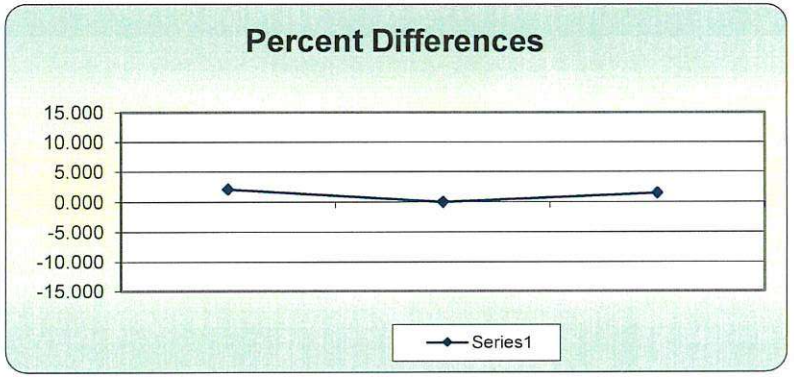
Alton Coal Development, LLC - Coal Hollow Mine

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^2	$\|d\|$	$\|d\|^2$	
16.7	16.36	2.078	0.699	4.319	2.078	4.319	
16.7	16.71	-0.060	75th Percentile	0.004	0.060	0.004	
16.7	16.46	1.458	1.768	2.126	1.458	2.126	

n	$\Sigma\|d\|$	"AB" (Eqn 4)
3	3.596	1.199
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
2	6.449	1.034

Bias (%) (Eqn 3)	Both Signs Positive
2.94	TRUE
Signed Bias (%)	Both Signs Negative
+2.94	FALSE



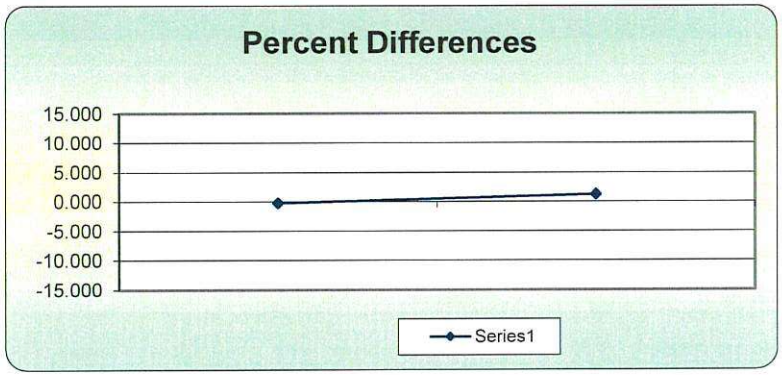
Alton Coal Development, LLC - Coal Hollow Mine

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^2**	**$\|d\|$**	**$\|d\|^2$**	
16.7	16.75	-0.299	0.061	0.089	0.299	0.089	
16.87	16.68	1.139	**75th Percentile**	1.298	1.139	1.298	
			0.780				

n	$\sum\|d\|$	"AB" (Eqn 4)
2	1.438	0.719
n-1	$\sum\|d\|^2$	**"AS" (Eqn 5)**
1	1.387	0.594

Bias (%) (Eqn 3)	Both Signs Positive
3.37	TRUE
Signed Bias (%)	Both Signs Negative
+3.37	FALSE



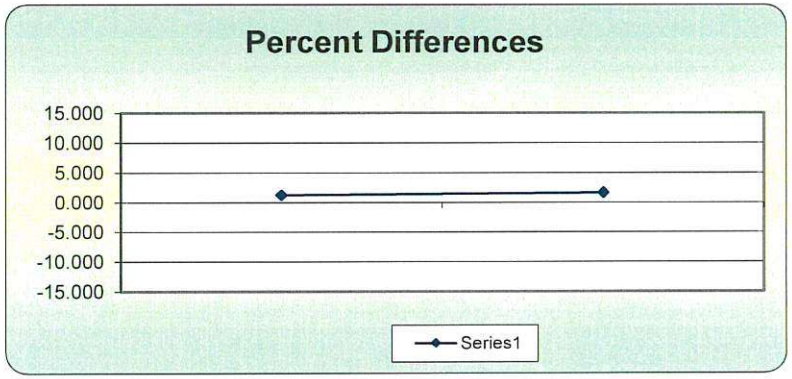
Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 964C		Pollutant type:					Bias (%)
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	|d|	$\|d\|^2$	
16.7	16.5	1.212	1.304	1.469	1.212	1.469	
16.7	16.44	1.582	75th Percentile	2.501	1.582	2.501	
			1.489				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
2	2.794	1.397
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
1	3.970	0.261

Bias (%) (Eqn 3)	Both Signs Positive
2.56	TRUE
Signed Bias (%)	Both Signs Negative
+2.56	FALSE



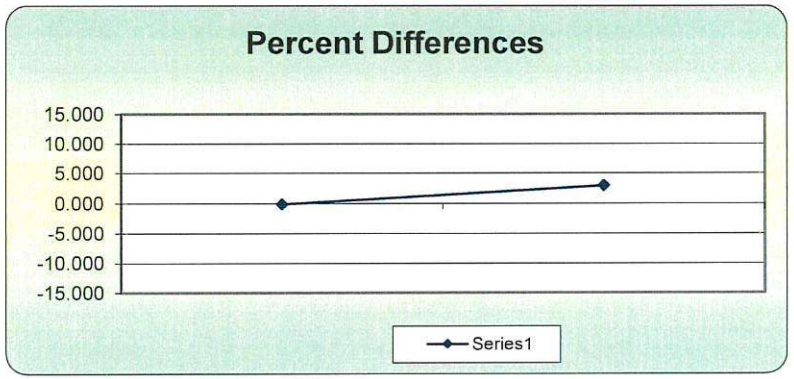
Alton Coal Development, LLC - Coal Hollow Mine

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**	**$\|d\|$**	**$\|d\|^2$**	
16.7	16.73	-0.179	0.605	0.032	0.179	0.032	
16.7	16.22	2.959	**75th Percentile**	8.758	2.959	8.758	
			2.175				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
2	3.139	1.569
n-1	$\Sigma\|d\|^2$	**"AS" (Eqn 5)**
1	8.790	1.966

Bias (%) (Eqn 3)	Both Signs Positive
10.35	TRUE
Signed Bias (%)	Both Signs Negative
+10.35	FALSE



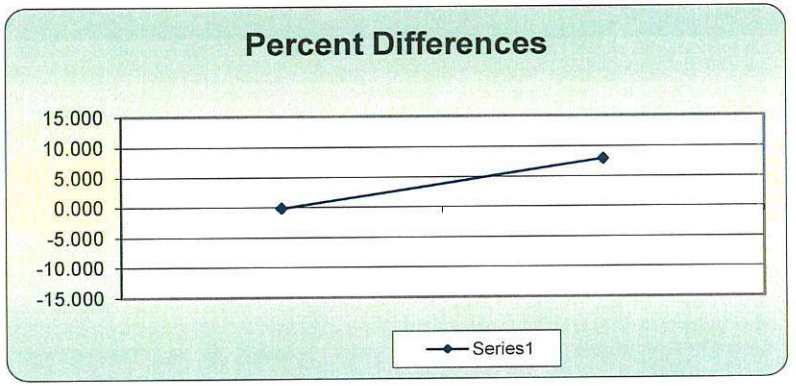
Alton Coal Development, LLC - Coal Hollow Mine

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^2	$\|d\|$	$\|d\|^2$	
16.7	16.74	-0.239	1.791	0.057	0.239	0.057	
16.7	15.48	7.881	75th Percentile	62.112	7.881	62.112	
			5.851				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
2	8.120	4.060
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
1	62.169	5.404

Bias (%) (Eqn 3)	Both Signs Positive
28.19	TRUE
Signed Bias (%)	Both Signs Negative
+28.19	FALSE



APPENDIX D

Field Data Sheets

15.0, 18.4, 16.7

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
07-06-21	0112	07-06-21	1208	14	18	M-M	07-09-21	KN
071221	1537	071221	1433	18	23	M-M	071521	JKSR
071621	1414	071621	1310	23	29	M-M	072121	JKSR
072321	0938	072321	0834	29	4	M-M	072721	JKSR
072921	1041	072921	0936	4	9	M-M	080221	JKSR
080421	1152	080421	1047	9	13	M-M	080821	JKSR
080921	1437	080921	1331	13	18	M-M	081421	JKSR
081721	1433	081721	1327	18	23	M-M	082021	JKSR
082321	1132	082321	1026	23	35	M-M	082621	JKSR
082721	1416	082721	1310	35	41	M-M	080121	JKSR
080221	0727	080221	0623	41	4	M-M	090721	KN
090921	1333	090921	1233	4	9	M-M	091321	JKSR
091621	1035	091621	0935	9	14	M-M	091921	JKSR
092021	1029	092021	0929	14	30	M-M	092521	KN
092821	1057	092821	0956	30	18	M-M	100121	JKSR

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
092021	1033	159	158		KN	Cleaned Manifold

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
092021	1037	16.7	586	588	14.2	13.9	13.16	16.36		KN
092021	1054	16.7	586	588	14.4	14.0	13.44	16.71		KN

Compliance Monitor 963B

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	
07-06-21	0149	07-06-21	0128	15	19	M-M	0709-21	KN	Didn't Run Current Date 7/14/
071221	1550	071221	1432	19	24	M-M	071521	JKSR	(same)
071621	1426	071621	1326	24	30	M-M	072121	JKSR	Did not Run
072321	0953	072321		30	5	M-M	072721	JKSR	(Did not Run)
072921	1055	[illegible]21		5	10	M-M	080221	JKSR	" " "
080421	1213	080421	1113	10	14	M-M	080821	JKSR	
080921	1416	080921	1316	14	19	M-M	081421	JKSR	
081721	1452	081721		19	24	M-M	082021	JKSR	Did not Run Code T
082321	1159	082321	1058	24	37	M-M	082621	JKSR	Max Load Exceeded codes PET
082721	1433	082721	1332	37	42	M-M	090121	JKSR	
090221	0818	090221		42	5	M-M	090921	KN	Didn't Run Low Power
090921		090921	1251	5	10	M-M	091321	JKSR	Did Not Run wrong Time
091621	1047	091621		10	15	M-M	091921	JKSR	" " "
092021	1116	092021	1017	15	CH31	M-M	092521	KN	
092821	1112	092821	1012	CH31	19	M-M	100121	JKSR	Halted by Operator?

2 8 8 6

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
092021	1123	1.31	127	Pass	KN	Cleaned Manifolds

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
092021	1126	16.7	596	594.5	18.9	15.1	13.54	16.25		KN

Co-located Monitor 964C

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
07-06-21	0156	07-06-21	1254	16	20	M-M	07-09-21	KN
071221	1551	071221	1450	20	26	M-M	071521	JKSR
071621	1428	071621	1327	26	31	M-M	072121	JKSR
072321	0954	072321	0853	31	6	M-M	072721	JKSR
072921	1057	072921	0956	6	11	M-M	080221	JKSR
080421	1215	080421	1115	11	15	M-M	080821	JKSR
080921	1418	080921	1317	15	20	M-M	081421	JKSR
081721	1459	081721	1358	20	26	M-M	082021	JKSR
082321	1200	082321	1059	26	38	M-M	082621	JKSR
082721	1434	082721	1333	38	36	M-M	090121	JKSR
090221	0809	090221	0718	26	6	M-M	090721	KN
090921	1353	090921	1252	6	11	M-M	091321	JKSR
091621	1048	091621	0947	11	16	M-M	091921	JKSR
092021	1118	092021	1017	16	CH32	M-M	092521	KN
092821	1114	092821	1013	CH32	20	M-M	100121	JKSR

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
092021	1133	115	116	Pass	KM	Cleaned Manifold

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
092021	1139	16.7	595	594.5	15.0	15.3	17.32	16.50		KM

Compliance Monitor 2366D

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	
07-06-21	1410	07-06-21	1206	13	21	M-M	07-09-21	KN	
071221	1614	071221	1510	21	27	M-M	071521	JKSR	
071621	1444	071621	1340	27	32	M-M	072121	JKSR	
072321	1017	072321	0911	32	7	M-M	072721	JKSR	
072921	1125	072921	1019	7	12	M-M	080221	JKSR	
080421	1519	080421	1413	12	16	M-M	080921	JKSR	
080921	1517	080921	1410	16	21	M-M	081421	JKSR	
081721	1630	081721	1523	21	27	M-M	082021	JKSR	
082321	1225	082321	1119	27	39	M-M	082621	JKSR	
082721	1514	082721	1406	27	JBR 7	M-M	090121	JKSR	Predict Run
090221		090221		JBR7	7	M-M	090721	KN	
090921	1416	090921	1414	7	12	M-M	091321	JKSR	
091621	1147	091621	1044	12	17	M-M	091921	JKSR	
092021	1416	092021	1313	17	33	M-M	092521	KN	
092821	1155	092821	1054	33	21	M-M	100121	JKSR	

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
092821	1418	153	151	Pass	KN	Cleaned Manifold

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
092021	1421	16.7	596	594	18.9	19.7	16.30	16.73		KN

Co-located Monitor 2398E

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	
07-06-21	1415	07-06-21	1311	18	22	M-M	07-09-21	KN	P-Flag
071221	1615	071221	1511	22	28	M-M	071521	JKSR	codes P&G Didn't Run Finish
071621	1446	071621	1342	28	33	M-M	072121	JKSR	
072321	1019	072321	0914	33	8	M-M	072721	JKSR	codes P&G No Data
072921	1126	072921	1021	8	34	M-M	080221	JKSR	codes P&G No Data
080421	1520	080421	1414	34	17	M-M	080821	JKSR	codes P&G
080921	1518	080921	1412	17	22	M-M	081421	JKSR	" "
081721	1627	081721	1525	22	28	M-M	082021	JKSR	Did not Run
082321	1227	082321	1120	28	40	M-M	082621	JKSR	codes Max load exceeded P&G
082721	1518	082721	1411	40	JBR 8	M-M	090121	JKSR	
090221	0908	090221	0801	JBR 8	8	M-M	090721	KN	
090921	1420	090921	1314	8	13	M-M	091221	JKSR	codes P&G Max load exceeded
091621	1149	091621	1048	13	29	M-M	091921	JKSR	codes P&G
092021		092021		29	34	M-M	092521	KN	
092821	1158	092821	1056	34	22	M-M	100121	JKSR	Max load exceeded

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance
092021	1430	149	142	Pass	KN	Cleaned Manifold

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
092021	1436	16.7	[redacted]	594	18.7	19.3	13.33	16.74		KN

APPENDIX E

Independent PM_{10} Sampler Performance Audit Report

AUDIT REPORT
FOR

ALTON COAL DEVELOPMENT, LLC
COAL HOLLOW MINE
ALTON, UTAH
THIRD QUARTER 2021

Prepared for

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

Prepared by

Air Resource SPECIALISTS

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

Site Audited: September 2, 2021

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LIST OF TABLES

1.0 INTRODUCTION

Air Resource Specialists, Inc. (ARS) conducted a performance audit of Alton Coal Development, LLC ambient air quality monitoring systems on September 2, 2021. 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' 5.0" N	37° 24' 20.9" N	37° 24' 43" N
Longitude	112° 27' 21.0" W	112° 26' 1.1" W	112° 27' 30.6" W
UTM	12S 371147 4140396	12S 373119 4140856	12S 370928 4141570
Elevation	6,890 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_{10}	BGI PQ200S	Yes
	PM_{10} (collocated)	BGI PQ200S	Yes
Background #1	PM_{10}	BGI PQ200S	Yes
Primary NPL	PM_{10}	BGI PQ200	Yes
	PM_{10} (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:

Christian A. Kirk
Quality Assurance Officer / Lead Auditor
Air Resource Specialists, Inc.
1901 Sharp Point Drive, Suite F
Fort Collins, Colorado 80525
Telephone: 970-484-7941
Fax: 970-484-3423
E-mail: 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_{10})

The filter-based FRM PM_{10} 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_{10}	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

References	Manufacturer	Model Number	Serial Number	Expiration Date
FRM Flow	BGI	DeltaCal	1220	12/3/2021

3.0 AUDIT RESULTS

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

Performance Audit Results

Sampler 2366D was unable to produce a leak check result. However, after successive runs of the check, it was clear the sampler did not have a leak. It was able to hold a vacuum. There appears to be a possible motherboard issue.

APPENDIX A

AUDIT DATA FORMS

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021

MANUFACTURER	BGI
MODEL	PQ200S
SERIAL NUMBER	N963B

Date and Time correct?
☑ Yes ☐ 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	16.68	16.70	0.1%	-0.1%	PASS

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

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	12.6	11.7	-0.9	PASS

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

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	11.4	12.4	1.0	PASS

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

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	592.0	594.0	2.0	PASS

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

NOTES:

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021

MANUFACTURER	BGI
MODEL	PQ200S
SERIAL NUMBER	N964C

Date and Time correct?
☑ Yes ☐ No
If no, time off by:
0 min

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	16.44	16.70	1.6%	-1.6%	PASS

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

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	11.6	12.0	0.4	PASS

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

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	10.7	10.0	-0.7	PASS

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

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	592.0	593.0	1.0	PASS

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

NOTES:

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021

MANUFACTURER	BGI
MODEL	PQ200S
SERIAL NUMBER	N962A

Date and Time correct?
☑ Yes ☐ No
If no, time off by:
0 min

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	16.46	16.70	1.5%	-1.4%	PASS

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

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	10.3	10.0	-0.3	PASS

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

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	10.0	9.8	-0.2	PASS

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

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	586.0	584.0	-2.0	PASS

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

NOTES:

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2366D

Date and Time correct?
☑ Yes ☐ No
If no, time off by:
0 min

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	16.22	16.70	3.0%	-2.9%	PASS

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

AMBIENT TEMPERATURE SENSOR (°C)				
	Reference	Instrument	Difference	
	14.5	12.6	-1.9	PASS

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

FILTER TEMPERATURE SENSOR (°C)				
	Reference	Instrument	Difference	
	12.2	10.9	-1.3	PASS

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

PRESSURE SENSOR (mmHg)				
	Reference	Instrument	Difference	
	592.0	594.0	2.0	PASS

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

NOTES:

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2398E

Date and Time correct?
☑ Yes ☐ No
If no, time off by:
0 min

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail
	N/A	PASS

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	15.48	16.70	7.9%	-7.3%	PASS

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

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	14.9	14.0	-0.9	PASS

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

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	15.1	13.5	-1.6	PASS

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

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	592.0	593.0	1.0	PASS

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

NOTES: A leak check result was unable to be produced by the instrument, however it was very clear after several runs that sufficient vacuum was created and no leak was present.

Air Resource SPECIALISTS

SITE INFORMATION

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
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:	

Air Resource SPECIALISTS

CALIBRATION AND VERIFICATION STANDARDS

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	Jonathan Furst	DATE	9/2/2021
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				
Multiplier		W/m2 / mV		
UV Radiation Reference				
Multiplier		W/m2 / mV		
Precipitation Reference				
Volume		mL		

PM Flow Standard #1	BGI	deltaCal	1220	12/3/2021
PM Flow Standard #2				
PM Flow Standard #3				
PM Flow Standard #4				

PM Temperature Standard #1	BGI	deltaCal	1220	12/3/2021
PM Temperature Standard #2				
PM Temperature Standard #3				
PM Temperature Standard #4				

PM Barometric Pressure Standard #1	BGI	deltaCal	1220	12/3/2021
PM Barometric Pressure Standard #2				
PM Barometric Pressure Standard #3				
PM Barometric Pressure Standard #4				

TEOM MTV Standard				

HiVol Direct Flow Reference				
Orifice				
ΔP orifice manometer				

APPENDIX B

AUDIT STANDARDS CERTIFICATIONS

Mesa Labs 10 Park Place Butler, NJ 07405
NIST Traceable Calibration Facility, ISO 9001:2008 Registered

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

(Refer to instruction manual for further details of calibration)

DeltaCal Serial Number: 1220 **Date:** 03-Dec-20

Calibration Technician : Jan Oviedo

Critical Venturi Flow Meter: Max Uncertainity = 0.346%

Serial Number:	1A CEESI NVLAP NIST Data File 07BGI-0001
Serial Number:	2A CEESI NVLAP NIST Data File 07BGI-0003
Serial Number:	5C COX Nist Data File CCAL33222 - 5 C
Serial Number:	4A CEESI NVLAP NIST Data File 07BGI-0002
Serial Number:	3A CEESI NVLAP NIST Data File 07BGI-0004

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 22.00 °C

Brand: Telatemp **Serial Number:** 358921

Std Cal Date: 28-Apr-20 **Std Cal Due Date:** 28-Apr-21

DeltaCal :

Ambient Temperature (set): 22.00 °C

Aux (filter) Temperature (set): 22.00 °C

Barometric Pressure and Absolute Pressure

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

Serial Number: C4310002

Std Cal Date: 13-Mar-20 **Std Cal Due Date:** 13-Mar-21

DeltaCal :

Barometric pressure (set): 755.5 mm of Hg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Q= 3.94124 ΔP ^ 0.51981 Overall Uncertainty: 0.35%

Q= 3.86918 ΔP ^ 0.53223 Overall Uncertainty: 0.35%

Date Placed In Service (To be filled in by operator upon receipt): 12/3/2020

Recommended Recalibration Date (12 months from date placed in service): 12/8/2021

Revised: August 2019
Cal102-01T2 Rev G

Mesa Labs 10 Park Place Butler, NJ 07405

NIST Traceable Calibration Facility, ISO 9001:2008 Registered

To Check a DeltaCal
1.5-19.5

VER 4.00P

Date	Technician
12/3/2020	Jan Oviedo

Maximum allowable error at any flow rate is .75%.

Serial No. 1220

BP= 755.5 mm of Hg

	Reading Abs. P Crit. Vent. mm of Hg	Room Temp	CV Qa Flow Lpm	Qa deltaCal Indicated	% Error
# 2	152.18	22.00	1.703	1.712	0.55
	234.08	22.00	2.645	2.637	-0.29
	319.20	22.00	3.624	3.641	0.47
	392.35	22.00	4.465	4.493	0.62
	499.50	22.00	5.698	5.715	0.30
	555.52	22.00	6.342	6.356	0.22
#1	186.13	22.10	7.328	7.300	-0.39
	260.90	22.10	10.333	10.285	-0.46
	341.08	22.10	13.555	13.538	-0.12
	409.59	22.10	16.308	16.293	-0.09
	488.24	22.10	19.468	19.524	0.29
				Average %	0.10

Mesa Labs 10 Park Place Butler, NJ 07405

NIST Traceable Calibration Facility, ISO 9001:2008 Registered

To Check a DeltaCal
1.5-19.5

VER 4.00P

Pre-Recertification

Date	Technician
12/3/2020	Jan Oviedo

Maximum allowable error at any flow rate is .75%.

Serial No. 1220

BP= 755.5 mm of Hg

	Reading Abs. P Crit. Vent. mm of Hg	Room Temp	CV Qa Flow Lpm	Qa deltaCal Indicated	% Error
# 2	142.63	22.00	1.593	1.601	0.52
	226.02	22.00	2.552	2.567	0.59
	300.24	22.00	3.406	3.411	0.15
	386.13	22.00	4.394	4.411	0.39
	480.34	22.00	5.477	5.494	0.30
	541.90	22.00	6.186	6.234	0.78
#1	186.65	22.00	7.347	7.321	-0.35
	270.58	22.00	10.718	10.722	0.04
	333.03	22.00	13.227	13.297	0.53
	409.81	22.00	16.311	16.448	0.84
	481.73	22.00	19.200	19.463	1.37
				Average %	0.47

As Received

	DUT	Standard	Difference		Allowable	Condition
Pres AMB mmhg	753.5	755	-1.5		1	Out of Tolerance
Temp AMB °C	22.6	22	0.6		1	In Tolerance
Temp Filter °C	22	22	0		1	In Tolerance