# Alton Coal Development, LLC.

## Summary of $PM_{10}$ Data
## Collected at Coal Hollow Mine, Utah
## During the Third Quarter, 2012

**Submitted to:**
Utah Division of Environmental Quality
Division of Air Quality
195 North 1950 West
Salt Lake City, Utah
Contact: Jon Black

**Prepared by:**
Alton Coal Development, LLC.
463 N 100W, Suite1
Cedar City, Utah 84721
Contact: Kirk Nicholes
435.867.5331

## Contents



### List of Tables



### List of Figures



### List of Appendices

## 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 three 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 three 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 2012.

## 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 19, 20, 29, and 30 of Township 39S, Range 5W; with an approximate facility location of:

Northing: 41401699 meters

Easting: 371534 meters

Universal Transverse Mercator (UTM) Datum NAD27, Zone 12

The two 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 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 compliance monitor and the co-located monitor coordinates are 37° 24' 5.04" North Latitude, 112° 27' 20.91" West Longitude, WGS84 Datum. The background monitor coordinates are 37° 24' 21.96" North Latitude, 112° 25' 59.97" West Longitude, WGS84 Datum.

## Figure 1 - Site Location Map

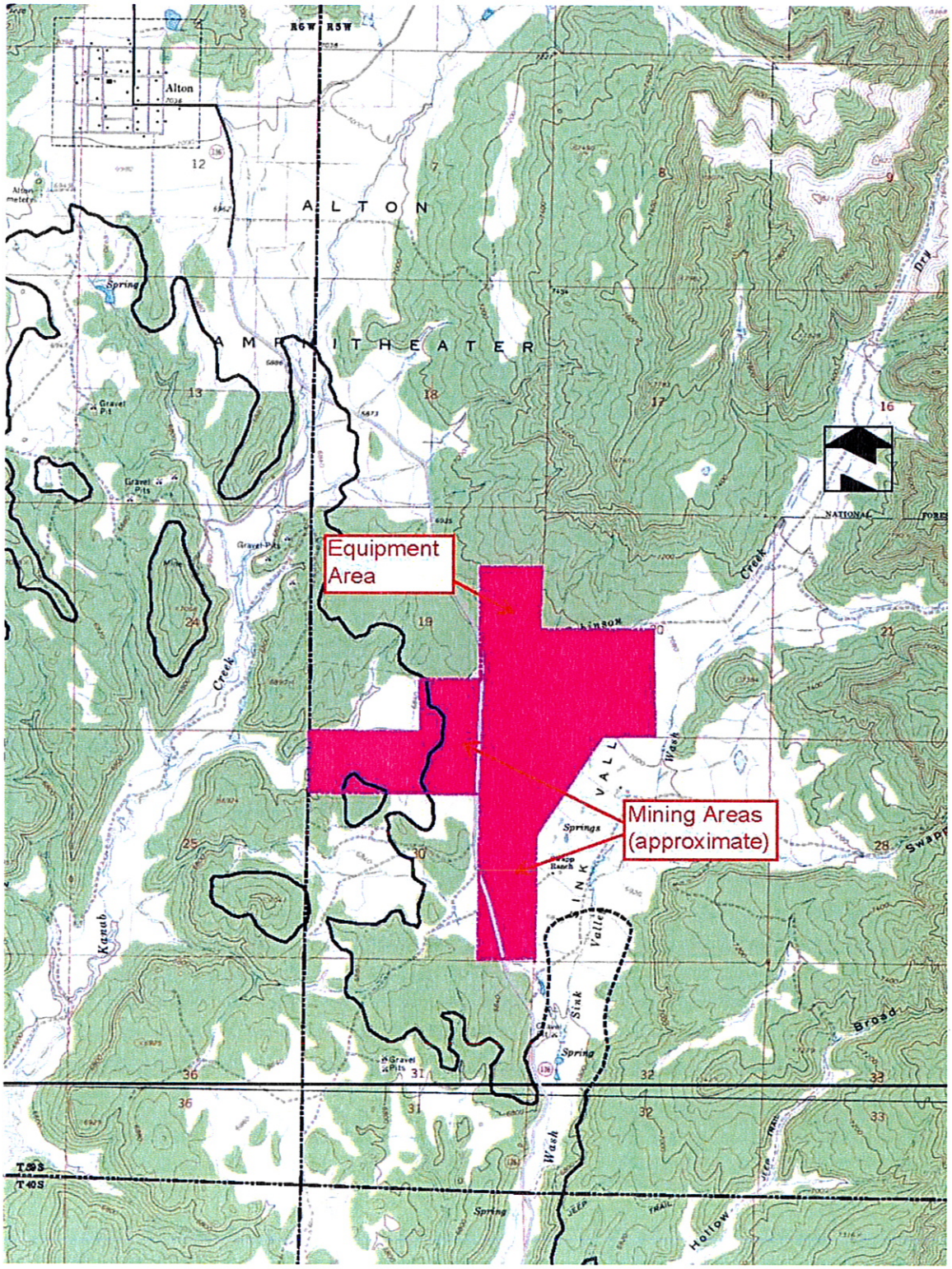

**Figure 2 - Satellite View of Monitoring Locations**


## 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 found 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, duplicate measurements were made with Sampler #963B (designated as a compliance monitor) and Sampler #964C (designated as a co-located sampler). 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.

The highest 24-hour mean $PM_{10}$ concentrations measured during the quarter from the two monitoring locations are summarized in Table I, Table II, and Table III. The three highest concentrations, # of valid samples, and the arithmetic mean concentrations from each of the sites are listed. Two measured $PM_{10}$ concentrations were over the 24-hour National Ambient Air Quality Standard (NAAQS) of 150 $\mu g/m^3$. The first on July 2, 2012 is attributed to the

monitor being overwhelmed by the drift from a blast that was detonated at 3:45pm on the 2nd. As this does not represent the average $PM_{10}$ concentration during the sample period, this measurement was invalidated and omitted from statistical calculations. The second occurrence happened on August 1, 2012.

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

| RANK | DATE | $PM_{10}$ CONCENTRATION |
|---|---|---|
| Highest | 7/08/2012 | 23.4 |
| 2nd Highest | 7/02/2012 | 19.9 |
| Monthly Mean | 7/1/12-7/31/12 | 14.3 |
| Monthly Mean | 8/1/12-8/31/12 | 11.0 |
| Monthly Mean | 9/1/12-9/30/12 | 10.3 |
| Quarterly Mean | 7/1/12-9/30/12 (16 valid samples) | 11.8 |

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

| RANK | DATE | $PM_{10}$ CONCENTRATION |
|---|---|---|
| Highest | 9/24/2012 | 107.1 |
| 2nd Highest | 7/20/2012 | 99.2 |
| Monthly Mean | 7/1/12-7/31/12 | 47.0 |
| Monthly Mean | 8/1/12-8/31/12 | 50.4 |
| Monthly Mean | 9/1/12-9/30/12 | 63.3 |
| Quarterly Mean | 7/1/12-9/30/12 (13 valid samples) | 54.6 |

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

| RANK | DATE | $PM_{10}$ CONCENTRATION |
|---|---|---|
| Highest | 8/1/2012 | 155.3 |
| 2nd Highest | 7/20/2012 | 106.7 |
| Monthly Mean | 7/1/12-7/31/12 | 46.0 |
| Monthly Mean | 8/1/12-8/31/12 | 71.8 |
| Monthly Mean | 9/1/12-9/30/12 | 54.2 |
| Quarterly Mean | 7/1/12-9/30/12 (14 valid samples) | 56.3 |

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

| | 3rd Quarter 2012 | July | August | September |
|---|---|---|---|---|
| Mean Wind Speed (m/s) | 2.60 | 2.63 | 2.06 | 2.58 |

## 4.0 DATA RECOVERY AND QUALITY ASSURANCE

### 4.1 Data Recovery

Monitor 962A

Monitor 962A collected 16 of the 16 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 963B

Monitor 963B collected 13 of the 16 samples during the quarter. The percent recovery for this quarter is 81.3%. The sample for the date of July 2, 2012 was invalidated as the dust plum from a nearby blast at 3:45pm overwhelmed the monitor causing the average $PM_{10}$ concentration during the sample period to be skew high. The monitor for the date of July 26, 2012 indicates that it ran for 24 hours (pump time increased by 24 hours) but no information

was recorded. The monitor for the date of August 1, 2012 overran the end time for a total of 61 h 31m of run time invalidating this sample.

Monitor 964C

Monitor 964C collected 14 of the 16 samples during the quarter. The percent recovery for this quarter is 87.5%. The monitor for the date of August 13th and 31st did not run due to a malfunction of the monitor's timer.

The $PM_{10}$ data recoveries for the three monitoring stations are presented below:

**Table V - Summary of Data Recovery**

| SAMPLER | POSSIBLE SAMPLES | VALID SAMPLES | PERCENT DATA RECOVERY |
|---|---|---|---|
| 962A | 16 | 16 | 100% |
| 963B | 16 | 13 | 81.3% |
| 964C | 16 | 14 | 87.5% |

## 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. 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 were developed based on 11 valid pairs of co-located monitoring data during the quarter. Single point precision based on *40 CFR, Part 58*, Appendix A Equation 10 ranged from -31.0% to 25.0% with the majority of precision values occurring in the 10% to -10% range. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58*, Appendix A Equation 11 is 16.4%. This value is above the 10% goal for aggregate CV. The value for third quarter CV was significantly impacted by the four outlier values of 31.0%, 19.6%, 18.7% and -25.0%. Additionally, the CV value is typically reviewed on an annual basis for assessment of overall measurement error. ACD is actively investigating causes that may have an effect on the correlation of precision calculations.

### 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 April 11, 2012. A copy of the audit report is presented in Appendix E and is summarized in Table VI. The audit results indicate that the three samplers were operating properly.

**Table VI - Audit Summary**

| SAMPLER | AUDIT % DIFFERENCE | LIMIT* | DESIGN % DIFFERENCE | LIMIT* |
|---|---|---|---|---|
| 962A | -3.7 | ±4% | 0.0 | ± 5% |
| 963B | -2.1 | ±4% | -0.2 | ± 5% |
| 964C | -2.1 | ±4% | -0.2 | ± 5% |
| *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 are performed by a site technician on a monthly basis. 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.