

Bablinskas, Krystin K (DEC)

From: Schuler, Alan E (DEC)
Sent: Thursday, July 28, 2011 10:30 AM
To: 'Al Trbovich'; Lowther, Sean D (DEC)
Cc: Rob Brown; tom@mortensen.com; esbarnard@earthlink.net; Schuler, Alan E (DEC)
Subject: RE: Wishbone Hill

Thanks Al. We'll look this over.
Alan

From: Al Trbovich [mailto:Atrbovich@slrconsulting.com]
Sent: Thursday, July 28, 2011 9:42 AM
To: Lowther, Sean D (DEC); Schuler, Alan E (DEC)
Cc: Rob Brown; tom@mortensen.com; esbarnard@earthlink.net
Subject: Wishbone Hill

Sean and Alan,

Following up on the conversations between Usibelli and ADEC, the following additional information is being provided in regards to the Wishbone Hill air quality permit application.

1. 1991 Meteorological Data Report

The meteorological data reports for the first three quarters of 1991 are attached. I do not have a record that indicates that these reports were submitted to ADEC in 1991 for review and approval. Note that the 3rd Quarter 1991 report includes four months, July through October.

2. Additional PM₁₀ dispersion modeling files are attached.

The collection of on-site meteorological data at Wishbone Hill satisfied the recovery requirement of greater than 90 percent per quarter. As a result, the available site specific data set was "complete". While the Wishbone Hill meteorological data set satisfied the data recovery requirement, cloud cover data from the Palmer airport was used in the AERMET processing. Because wind speed and direction data from the Palmer airport were also available, the few missing periods of Wishbone Hill wind data (direction and speed) were initially filled with available Palmer airport data from the same hour. That combined wind data set was then used to support the modeling analysis for Wishbone Hill.

Upon review, ADEC determined that the wind data collected at the Palmer airport is not representative of the winds at Wishbone Hill. Therefore, ADEC requested that the substitution of missing Wishbone Hill wind data with Palmer airport wind data not be made. Usibelli has reprocessed the meteorological data in AERMET and removed the command "REFLEVEL NWSSUB" in the AERMET Stage 3 input file to produce an AERMET output file that did not substitute Palmer wind data for the missing Wishbone Hill data periods.

The revised surface and profile AERMET files were then applied to the previously submitted AERMOD PM₁₀ files and AERMOD was rerun with the revised AERMET data. The AERMOD output meteorological statistics from the original run indicated that 8,760 hours of data were processed with 1,955 calm hours identified and 362 missing hours. Using the revised AERMET data set, the AERMOD output meteorological statistics identified 2,401 calm hours and 664 missing hours of data.

The highest-second-highest 24-hour AERMOD modeled PM₁₀ concentration using only the Wishbone Hill wind data was 80.1 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) versus the previously submitted 118 $\mu\text{g}/\text{m}^3$ highest-second-highest modeled PM₁₀ concentration.

3. Raw electronic 1990 meteorological data files

The meteorological data records are attached in the form of 15-minute averages that were used to calculate the hourly average values. The files are entitled WBH?Q90.xls, where the question mark represents the calendar quarter (1 through 4) for the 1990 meteorological period. A final spreadsheet entitled "WBH1YR90.xls" was used to form a sequential hourly record for the year. These files are found in "wishbone hill 1990 raw meteorological data.zip".

4. Letter requesting processing of Minor Air Quality Permit No. AQ1227MSS03

This letter will be provided under separate cover.

Please let me know if you have any question about the attached information.

AI

AI Trbovich
Principal Scientist
SLR International Corp

Email: Attrbovich@slrconsulting.com

Direct: 907-563-2140

Office: 907-563-2137

Fax: 907-563-2164

3401 Minnesota Drive, Suite 300, Anchorage, Alaska, 99503, United States

www.slrconsulting.com



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Bablinskas, Krystin K (DEC)

From: Schuler, Alan E (DEC)
Sent: Wednesday, July 13, 2011 6:05 PM
To: Schuler, Alan E (DEC); Bablinskas, Krystin K (DEC)
Cc: Lowther, Sean D (DEC); Siddeek, Fathima Z (DEC)
Subject: RE: Wishbone Mtrg Effort

Krystin,

I need to head out, but I just found that Usibelli didn't meet the 90-percent data capture requirement for met data in 1st Qtr 1989. I'll scan and e-mail that info to you tomorrow. You may want to provide this type of info to address the public comment regarding additional met years.

Alan

From: Schuler, Alan E (DEC)
Sent: Wednesday, July 13, 2011 6:01 PM
To: Bablinskas, Krystin K (DEC)
Cc: Schuler, Alan E (DEC)
Subject: Wishbone Mtrg Effort

Krystin,

You may want to describe what parameters were monitored at Wishbone (see attached quarterly report).

The met monitoring effort started on October 23, 1988. PM monitoring started on October 12, 1988.

Hope this helps.

Alan

Alan Schuler, P.E.
Environmental Engineer
Alaska Department of Environmental Conservation
(907) 465-5112

Bablinskas, Krystin K (DEC)

From: Schuler, Alan E (DEC)
Sent: Thursday, June 23, 2011 5:21 PM
To: Bablinskas, Krystin K (DEC)
Cc: Schuler, Alan E (DEC); Lowther, Sean D (DEC); Siddeek, Fathima Z (DEC); Baumgartner, James R (DEC)
Subject: Wishbone Deposition Discussion

Krystin,

As a follow-up to our phone conversation, I read Usibelli's June 3, 2011 response and found one sentence regarding particle deposition. It's in the last paragraph of page 2. The paragraph regards their switch to the latest version of AERMOD (version 11103). The sentence reads: "*Because of the new version, particulate deposition and plume depletion were also invoked.*"

It's a misleading statement at best.

- First of all, it implies that deposition is required with AERMOD 11103, which is false. Deposition is *not* a required parameter in a regulatory analysis.
- Secondly, it implies that EPA made some kind of change in this newest release that forced Usibelli to do something different. This too is false. EPA enhanced the *debugging* option for when particle deposition is used in the previous release (version 11059), but
 - Usibelli didn't even use the debugging option in their submittal, and
 - even if they had, conducting a debug data-dump doesn't warrant revisions to the deposition parameters.

Bottom-line, ***Usibelli changed their deposition approach on their own volition, not because it was somehow forced upon them when they switched from AERMOD 09292 to AERMOD version 11103.*** Since we received no comments on these parameters, other than public concern about the use of deposition in general, they have no basis for using a less conservative approach from what we public noticed.

Alan

Alan Schuler, P.E.
Environmental Engineer
Alaska Department of Environmental Conservation
(907) 465-5112

Bablinskas, Krystin K (DEC)

From: Lowther, Sean D (DEC)
Sent: Wednesday, May 18, 2011 8:54 AM
To: Trbovich, AL (Hoefler); Rob Brown
Cc: Bablinskas, Krystin K (DEC)
Subject: Additional Question to be Answered by Usibelli

Please provide a response to this.

Omission of wind erosion on piles and from material handling

The DEC accepts Usibelli's assessment that wind erosion on materials handling and mining operations is insignificant, based on a statement that winds are too low to cause particles to become suspended. A number of factors determine the conditions that allow particles to become suspended off the ground, off stockpiles, or at transfer points (such as from bulldozers to conveyor belts) including the shape of the pile, how encrusted or wet the pile is, and the "threshold wind speed" that is able to lift the particle. The DEC appears to be inconsistent in determining the threshold wind speeds relevant to suspending particulates at coal facilities in Alaska. In the EIS for the Chuitna project, fugitive emissions were calculated using wind speeds of 2.5 m/s (5.6 mph) based on the 1985 AP42.³ More recently, when assessing the potential impact of wind erosion of coal stockpiles at the Seward port facility, consulting firm MACTEC used 12 mph in determining emission factors for total suspended particulates based on the 1998 AP42.⁴ In determining that wind erosion of coal stockpiles at Wishbone was an insignificant factor, Usibelli used the figure 15 m/s as a threshold wind velocity for lifting coal particles and 20 m/s for overburden particles (34-45 mph). They reference (1998) AP42 Table 13.2.5-2. However, this table refers to data from wind tunnel testing, and specifically the reference to 15-20 m/s is relevant when the wind is measured 10 m or higher above material; when the wind is 15 cm above the surface, the threshold wind velocity is near 5 m/s (11 mph).⁵ Therefore, conservatively, all winds greater than 11 mph should be considered in calculations of potential wind erosion of the run-of-mine stockpile, overburden stockpiles, and the clean coal stockpile. Additionally, because the operation is expected to run 24 hours a day (3 eight-hour shifts), seven days a week, it can reasonably be expected that piles will be handled frequently, even if not concurrently.⁶ Materials handling needs to be included in erosion calculations: "(E)missions generated by wind erosion are also dependent on the frequency of disturbance of the erodible surface because each time that a surface is disturbed, its erosion potential is restored."⁷ There is precedence for this in analysis of particulates at the Seward port facility.⁸ Lastly, predictions are that wind erosion of the run-of-mine coal stockpile, raw coal stockpile, and clean coal stockpiles will be less than 1.5 tons per year sum total. The run-of-mine stockpile is expected to have a capacity of 100,000 tons, but release only 0.7 tons per year of PM₁₀.⁹ In comparison, the Chuitna port coal stockpile of 500,000 tons was expected to release over 200 tons per year of emissions, presumably fugitive dust, assuming 50% dust control.¹⁰ Even given the difference in tonnage, this seems to be a large discrepancy.

Sean D. Lowther
Environmental Engineering Associate I
Mechanical Engineer
Alaska Department of Environmental Conservation
Division of Air Quality - Air Permits Program
619 E. Ship Creek, Ste. 249
Anchorage, AK 99501

**Preliminary Air Quality Control Minor Permit No. AQ1227MSS02 for the
Usibelli Coal Mine, Inc. Wishbone Hill Mining and Processing Operation**

Procedure to Fill Missing Cloud Cover Data – 1990 Year of Meteorological Data

The Usibelli Wishbone Hill on-site meteorological data set:

- Has been determined to be representative of site-specific conditions,
- Was collected in an appropriate manner,
- Has been approved for dispersion modeling at the Wishbone Hill site, and
- Fulfills the requirements of one-year of on-site meteorological data in accordance with the Guideline on Air Quality Modeling.

Cloud cover data needed to process surface boundary parameters in AERMET were obtained from observations taken at the Palmer airport in 1990. This data set contains gaps of time during which no observations are available. The Alaska Department of Environmental Conservation (ADEC) and Usibelli have discussed a number of possible methods to fill in these missing periods, but agreement has not yet been reached on a specific approach.

As an element of the initial air quality permit application, Usibelli provided a sensitivity analysis of the variability in cloud cover data by using the existing 1990 Palmer cloud cover and replacing the existing cloud cover data with either a zero to simulate clear skies or a ten to simulate overcast skies. Based on this assessment, which indicated that slightly higher modeled PM_{10} concentrations occurred under the clear sky assumption, ADEC has suggested conservatively filling all missing periods with a value of zero to simulate clear skies for each hour missing cloud cover.

Usibelli suggested filling with the missing periods with the weighted average value of all the existing 1990 Palmer cloud cover data which was calculated to be equal to seven (7), representing 7/10 or 70 percent sky cover. The Usibelli-suggested approach is less conservative but provided a representative value that is scientifically based on the available data.

The 1990 Palmer cloud cover data includes 4,767 missing hours of cloud cover. Of the remaining valid hours, 822 hours are clear skies, 494 hours are 3/10 cover, 731 hours are 9/10 cover, and 1,946 hours are overcast (10/10). Based on these existing data, the assumption of clear skies for the missing hours is unrealistic because clear skies account for only 20 percent of the valid hours.

Usibelli has examined nine additional years of Palmer cloud cover data and is proposing the following approach to fill in the missing cloud cover periods.

- For each year of the period 1986 through 1995, process the Palmer surface and Anchorage upper air data in AERMET to obtain cloud cover values.
- For each hour of a valid sky cover value over the 10 year period, determine the minimum cloud cover value.
- Substitute the valid minimum cloud cover value for any missing cloud cover value in the 1990 sky cover record; and
- Calculate the average cloud cover for each year of the 10 year period and apply the minimum calculated average cloud cover to the remaining missing periods of cloud cover data.

Using this approach, approximately 1,900 hours of missing data in the 1990 cloud cover data set will be replaced with valid hourly cloud cover data from the coincident hour from one of the other nine years of cloud cover data. This replacement leaves approximately 2,885 hours of missing cloud cover in the 1990 data set. The average cloud cover value from each of the 10 years of Palmer data ranges from 6.89 to 7.92 for a cloud cover value of between 7 and 8. Therefore, the value of 7 would be used to fill in the missing hours.

The revised and filled hourly cloud cover will be processed in stage 1 AERMET on the on-site data record and will consist of valid 1990 Palmer cloud cover data, augmented with minimum recorded coincident hour cloud cover data available from one of the other nine years of sky cover data to fill in missing values, and an minimum average annual cloud cover value to fill in the remaining cloud cover data.

This revised meteorological data set will be used in AERMOD to model the emission profile associated with particulate matter resulting from the planned operations at Usibelli Wishbone Hill.

Particulate Matter Deposition and Particle Size Speciation

The types of activities associated with mining can disturb surface material and cause particulate matter to become airborne. Larger disturbed particles will settle to the ground more quickly than smaller particles due to higher settling velocities. Applying a particle size speciation to account for this phenomenon is an acceptable and appropriate methodology. AERMOD is coded to simulate these activities and account for the

downwind plume depletion and deposition mechanics that remove material from the plume as the plume is transported downwind.

The primary activities at Wishbone Hill that will disturb surface dust are those activities associated with overburden removal and hauling, active open pit mining, and truck hauling. Combustion related particulate will tend to be smaller than the more fugitive type of material.

A number of organizations have studied fugitive dust associated with the types of activities planned for Wishbone Hill, including Midwest Research Institute and the National Stone Sand and Gravel Association which has compiled a report detailing the Modeling of Fugitive Sources with AERMOD. A further source of information is the Air Pollution Control Handbook (APCH) which provides a graphical interpretation of size distributions associated with different source emission types including road and soil dust as well as construction dust.

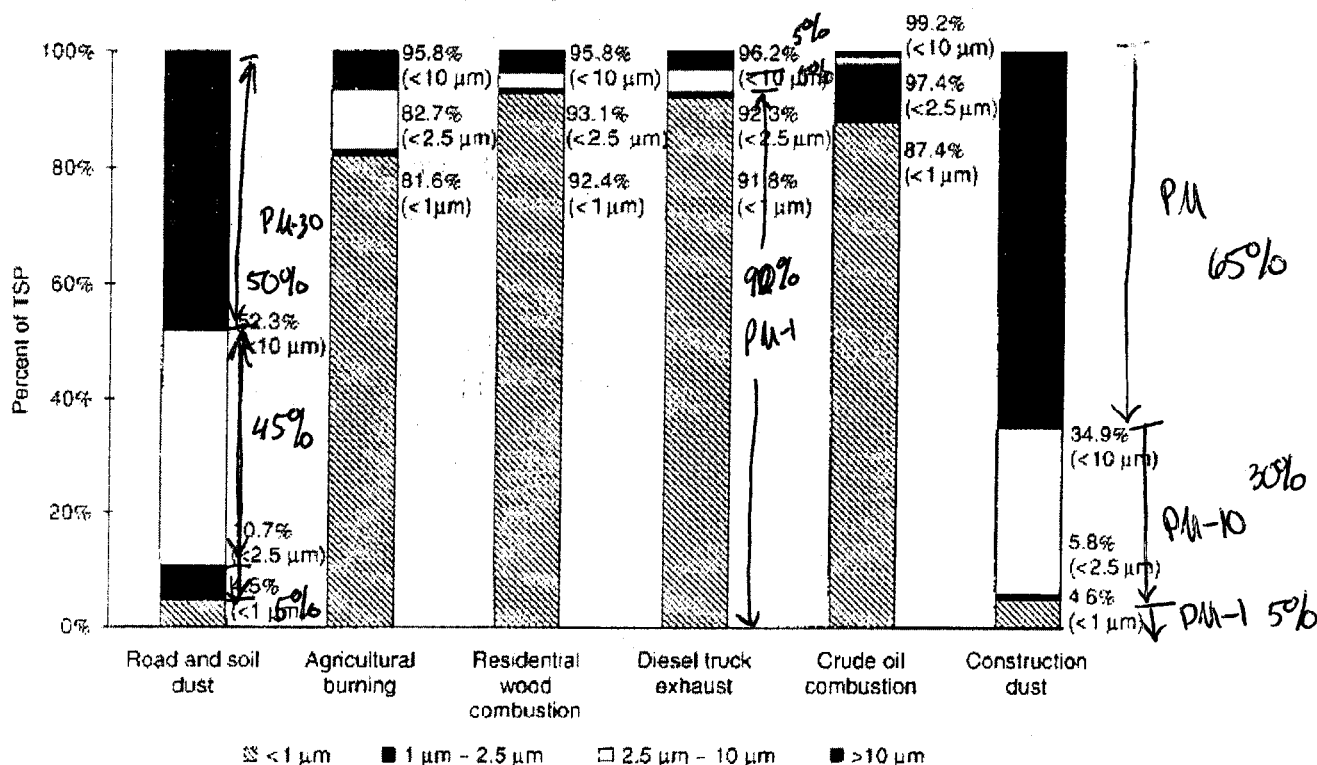


Figure 2. Size Distributions of Several Particulate Source Emissions¹⁷⁻¹⁹.

As can be seen from the APCH figure provided above, the particle sizes are generally larger for road and soil dust and construction activities than for more combustion related activities.

The size speciation used to simulate the activities at Wishbone Hill included three size classifications of 1 micrometer (micron or μm), 10 microns, and 30 microns in diameter. The density chosen is that associated with either unknown (1) or coal and aggregates (2). The percentage in each size class also varied by activity so that combustion related sizes were primarily smaller particles and fugitive particulate matter emissions were primarily larger particles.

As seen in the APCH graphic, construction related activities which are similar to overburden and mining include a larger proportion of larger sized particles. For the AERMOD modeling, activities such as overburden removal and handling were assumed to include a larger proportion of large particles. This assumption was made because much of the overburden removal and handling activity includes the large scale removal of soils. This activity generates larger material that is well above the size classification shown in the APCH figure, and only minor amounts of small particulate matter. To simulate this activity, 80 percent of the particulate matter was assumed to be 30 microns in diameter, with 10 percent assumed to be 10 microns in diameter and 10 percent assumed to be 1 micron in diameter.

This speciation was also applied to open pit mining and topsoil removal.

For mobile sources and road hauling, the percentage of large particles was decreased to 60 percent with the other 40 percent being 10 microns or less. For combustion emission unit activities, the size speciation was set to 30 percent being 10 microns in diameter and 50 percent being 1 micron in diameter.



USIBELLI COAL MINE, INC.

PO Box 1000 • Healy, Alaska 99743
Telephone (907) 683-2226 • Facsimile (907) 683-2253

August 18, 2011

Dr. Fathima Siddeek
Alaska Department of Environmental Conservation (ADEC)
Air Permits Program
410 Willoughby Ave., Suite 303
PO Box 111800
Juneau, AK 99801

RE: Wishbone Hill Coal Mining and Processing Operation Minor Permit Application

Dear Dr. Siddeek:

By way of this letter, Usibelli Coal Mine, Inc. (UCM) requests the withdrawal of the minor air quality permit application for Permit No. AQ1227MSS02.

UCM requests that ADEC issue a minor air quality permit based on the air quality permit application for Permit No. AQ1227MSS03.

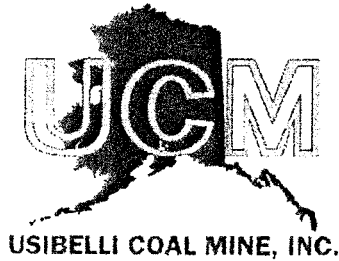
Please contact me at (907) 745-6028 if you have any questions regarding this request.

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Sincerely,

Robert Brown
Project Manager

Cc: Al Trbovich, SLR



634 S Bailey St, Ste 204
Palmer, Alaska 99645
Phone: 907-745-6028
Fax: 907-745-6083

August 5, 2011

Dr. Fathima Siddeek
Alaska Department of Environmental Conservation (ADEC)
Air Permits Program
410 Willoughby Ave., Suite 303
P.O. Box 111800
Juneau, Alaska 99811-1800

Re: Wishbone Hill Coal Mining and Processing Operation Minor Air Permit Application

Dear Dr. Siddeek:

Usibelli Coal Mine, Inc. (Usibelli) requests that ADEC issue a minor air quality permit based on the air quality permit application for Permit No. AQ1227MSS02, as amended with the supplemental information that was provided to ADEC during the application processing period, the public comment period, and the post-public comment period.

Please contact me at 907-745-6028 or Al Trbovich of SLR International at (907) 563-2140 if you have any questions regarding this request.

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Sincerely,

Robert Brown
Project Manager

cc: Al Trbovich, SLR.

Bablinskas, Krystin K (DEC)

From: Schuler, Alan E (DEC)
Sent: Thursday, July 14, 2011 10:56 AM
To: Bablinskas, Krystin K (DEC)
Cc: Schuler, Alan E (DEC)
Subject: FW: Wishbone Hill Monitoring Data
Attachments: Feb 1990 Application Transmittal.PDF; QAPP Submittal (July 1988).PDF; Annual Data Report Submittal (Jan 1990).PDF; Eighth Qtr Report Submittal (Feb 1991).PDF; Permission to Shutdown PreCons Mtg (Oct 1990).PDF; QAPP Approval (March 1989).PDF; Wishbone Map.pdf; Proposed Site and Nearby Stations (Oct 1988).PDF

Is this the e-mail you mentioned on the phone? If so, the Feb 1991 date on "Eighth Qtr Report Submittal (Feb 1991).pdf" regards the transmittal date, not the data date. The data was for July 1990 – September 1990.

From: Schuler, Alan E (DEC)
Sent: Friday, September 19, 2008 11:49 AM
To: Al Trbovich (Hoefler)
Cc: Schuler, Alan E (DEC); bcoiley@usibelli.com
Subject: Wishbone Hill Monitoring Data

Al,
As promised on the phone a couple of days ago, here scanned copies of key letters regarding the Wishbone Hill monitoring effort. The monitoring plan was approved by Gerry Guay. There were at least eight quarterly reports.

I'm also attaching a copy of the February 1990 application transmittal letter that I mentioned, which stated "Idemitsu Alaska, Inc. is aggressively proceeding with the development of the Wishbone Hill project and is anticipating the start-up of construction activities on September 1st of this year." Looks like that plan got changed.

In looking a little closer at the file, the "wrong met data" sticky note I mentioned regarded a modeling analysis of the *rail loadout facility* (which was to be south of Palmer). The note did *not* regard the Wishbone Hill modeling analysis. I hadn't notice that there were two facilities and sets of modeling assessments when I first went through the file. Therefore, my previous concern that there may have been multiple meteorological data sets used in the Wishbone Hill analysis was unfounded.

I still haven't found an electronic copy of the meteorological data, but I will check with Richard Heffern when he returns from the field next week. I discovered that he has a large box full of old floppies, so there's still hope of finding something.

Alan

P.S. I haven't found the actual quarterly reports yet, but it sounds like you have them. If we get to a worst-case scenario that your staff needs to hand-enter the hourly data, I may be requesting a copy of the quarterly reports so that we can spot check the data entry. Don't copy them yet though. Just wanted to give you a heads-up of this potential request.

Alan Schuler, P.E.
Environmental Engineer
Alaska Department of Environmental Conservation
Voice: (907) 465-5112
FAX: (907) 465-5129