



TRUSTEES FOR ALASKA

SUSTAIN | PROTECT | REPRESENT

May 11, 2011

Sean Lowther
Department of Environmental Conservation
619 East Ship Creek, Suite 249
Anchorage, AK 99501
Sean.Lowther@alaska.gov

Submitted via email

RE: Preliminary Decision to Approve Minor Permit Application for Usibelli Coal Mine, Inc. Wishbone Hill Mining and Processing Operations, Air Quality Control Minor Permit AQ1227MSS02

Dear Mr. Lowther:

Trustees for Alaska submits the following comments on behalf of the Castle Mountain Coalition (“CMC”), Friends of Mat-Su (“FoMS”), Alaska Center for the Environment (“ACE”), and the Sierra Club (collectively “Commenters”) on the Alaska Department of Environmental Conservation’s (“DEC”) *Preliminary Decision to Approve Minor Permit Application for Usibelli Coal Mine, Inc. Wishbone Hill Mining and Processing Operations, Air Quality Control Minor Permit AQ1227MSS02* (“Proposed Permit”). Commenters also submit and incorporate by reference the technical evaluation and comments prepared by Dr. Tran, attached as Appendix A, and by Dr. Sahu, attached as Appendix B.

CMC is a non-profit community organization based in Chickaloon, Alaska that seeks to promote and preserve ecological integrity, economic sustainability, and quality of life within the Matanuska River watershed. FoMS is a non-profit organization that seeks to provide land use information, advocate for borough-wide planning, promote citizen involvement, and offer tools and support to develop a healthy and vibrant community in the Matanuska-Susitna Valley. FoMS has approximately 300 members, including residents from every community in the Matanuska-Susitna Borough. ACE is the largest locally founded non-profit conservation organization in Alaska and advocates for Alaskan's quality of life by protecting wild places, fostering sustainable communities, and promoting recreational opportunities on behalf of nearly 1,500 Alaskan members. The Sierra Club is the nation's oldest and largest grassroots nonprofit organization working to explore, enjoy, and protect the planet, with approximately 1,200 members in Alaska.

The proposed project will be located in an area classified under the Clean Air Act (“CAA”) as a Prevention of Significant Deterioration (“PSD”) Class II area. The area is currently designated as attainment or unclassified for all CAA-regulated pollutants: nitrogen oxides (“NO_x”), sulfur dioxide (“SO₂”), carbon monoxide (“CO”), particulate matter less than 10 microns in aerodynamic diameter (“PM-10”), fine particulate matter (“PM-2.5”), lead, and ozone. The DEC Technical Analysis Report (“TAR”) estimates that the proposed project will emit 67.8 tons per year (“tpy”) of NO_x, 557.2 tpy of PM-10, and 0.1 tpy of SO₂.¹ Usibelli’s Permit Application has a lower estimate for PM-10 emissions (495.8 tpy).² A 900-hp IC engine and two heaters rated at 10 MMBtu/hr are the main sources of the NO_x emissions.³ Fugitive dust sources associated with coal mining and processing are expected to cause the majority of the PM-10 emissions.⁴ Carbon Monoxide and carbon dioxide emissions for the project have not been evaluated.⁵

Usibelli asserts in its Public Access Control Plan that “[t]he nearest community to the site is Palmer, which is located approximately eight miles to the southwest.” However, many members of Commenters live literally next door to the proposed mine site and will be greatly impacted by the proposed activities and air emissions. Thus, any analysis by Usibelli that is based upon impacts to people eight miles away is misleading, at best. For the reasons identified below, DEC should deny the permit application.

I. The Draft Permit and Permit Application underestimate the potential emissions of the proposed project; correcting these errors will likely show that the proposed project is a major source and subject to PSD, Title V, and NESHAP.

The potential emissions of the proposed project have been underestimated and must be amended. Correction of this underestimation will likely result in the source having a potential to emit (“PTE”) above the major source threshold, subjecting the proposal to the PSD, Title V and National Emission Standards for Hazardous Air Pollutants (“NESHAP”) programs of the CAA. The EPA defines “potential to emit” to mean:

[T]he maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the

¹ Alaska Department of Environmental Conservation, Air Permits Program. TAR, page 7, table 1. Usibelli Coal Mine, Inc. Wishbone Hill Coal Mining and Processing Operation. Development of Coal Mining Operations. March 11, 2011.

² Hoefler Consulting Group. *Application for an Air Quality Control Minor Permit for the Wishbone Hill Coal Mining and Processing Operation* (“Permit Application”), page 1 of Emissions Summary Form. Prepared for Usibelli Coal Mine, Inc. May 2010.

³ On page 1, the proposed permit authorizes EU ID 94-97, which appears to be a typographical error that requires correction.

⁴ Permit Application at 1.

⁵ *Id.*

capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable.^[6]

The term “federally enforceable” means “federally enforceable or legally and practicably enforceable by a state or local air pollution control agency.”⁷ Therefore, “a proposed facility that is physically capable of emitting major levels of the relevant pollutant is to be considered a major emitting facility under the CAA unless there are legally and practicably enforceable mechanisms in place to make certain that the emissions remain below the relevant levels.”⁸

The projected emissions of the diesel engine and heaters in the application were based “on unlimited operation.”⁹ Because these projections were below the PSD threshold of 250 tpy and operating permit threshold of 100 tpy for NO_x, CO, SO₂, PM-10, and volatile organic compounds (“VOC”), DEC did not impose any restrictions on these emission units.¹⁰ The projected emissions from the diesel engine were based on information provided by the manufacturer.¹¹ The emissions data from the manufacturer, however, does not account for startups and shutdowns or the cold temperatures the engine will be operating in for much of the year.¹² Under 18 AAC 50.502(e)(2), the projected actual emissions must include both “fugitive emissions to the extent quantifiable *and emissions associated with startups, shutdowns, and malfunctions.*”¹³ The projected emissions from the engine and heaters must account for anticipated startups and shutdowns (e.g., for maintenance purposes).

The Permit Application appears to have an error regarding the type of diesel engine that will be used. The Emission Unit information indicates that Emission Unit 1 is a Caterpillar Model C-18 900-hp engine.¹⁴ It is listed as a non-portable, baseload engine.¹⁵ The current list of Caterpillar diesel engines for “Industrial/OEM Power” applications is

⁶ 40 C.F.R. § 52.24(f)(3).

⁷ EPA Interim Policy on Federal Enforceability of Limitations on Potential to Emit, at 3-4 (Jan. 22, 1996), available at <http://www.epa.gov/ttn/oarpg/t5/memoranda/pte122.pdf> =.

⁸ *Weiler v. Chatham Forest Products*, 392 F.3d 532, 535 (2nd Cir. 2004).

⁹ TAR at 6.

¹⁰ *Id.*

¹¹ *Id.*

¹² Caterpillar C18 Diesel Oilfield Generator Set Information Sheet. <http://catoilandgas.cat.com/cda/files/854120/7/10.7.09+Drilling+Onshore+C18+LEHW7450-01.pdf> (“[Emissions data] shown is based on steady state operating conditions of 77° F, 28.42 in. HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb.”).

¹³ Emphasis added.

¹⁴ Permit Application at 21.

¹⁵ *Id.* at 22.

listed at <http://www.cat.com/industrial-oem/products-applications>. This list does not include the Model C-18 as described in Usibelli's Permit Application. The list includes an engine range of C15 ACERT – C18 ACERT. However, the maximum power for the C18 ACERT engine is 800 hp and not the 900 hp listed in Usibelli's Permit Application. Details of these engines are provided at <http://www.cat.com/cda/layout?m=415325&x=7>. None of the engines in this group are 900 hp, and it appears that the engine in the application is likely in the C27 ACERT group.¹⁶ Thus, it is not clear which engine will really be used as Emission Unit 1, making the emissions calculations seemingly unreliable.

The Permit Application and emissions calculations fail to account for the engine's deterioration curve and associated increases in emissions. The California Air Resources Board ("CARB") certifies engines of the C18 family of Caterpillar engines, which Usibelli appears to plan on using. The useful life of this engine family is 8,000 hours. Thus, all emissions data are valid for a maximum of 8,000 hours of operation. Typically, engine emissions deteriorate with use, resulting in higher emissions as time progresses. The Permit Application does not state whether the engine will be used for only 8,000 hours and then be replaced, or if Usibelli plans on using the same engine for a longer period. Using the emissions data for a time period exceeding 8,000 hours is inappropriate because actual emissions will depend on the deterioration curve for this engine beyond 8,000 hours. Emissions beyond the initial 8,000 hours of operations may be much greater than currently predicted. The Permit Application does not account for that and must be corrected. If this information is not available, the proper solution is to require a continuous emissions monitoring system ("CEMS") to monitor emissions.

The Permit Application relies on "vendor" data for the emission factor of 14 lb/hr of NOx emissions for the 900-hp diesel engine. The annual emissions are estimated assuming 8,760 hours of operation at 14 lb/hr, which equates to 61.3 tpy of NOx emissions from the diesel engine. The Permit Application notes that the engine will be used at "baseload" for 8,760 hours. Yet, the vendor data describes the "Rating Type" as STANDBY. Standby typically refers to emergency or occasional-use type of applications, such as a fire pump or emergency backup power. Here, the engine will be used for primary power, not backup. Thus, the reliance on emissions data developed for this Rating Type is inappropriate for the intended use.

To prevent the proposed project from becoming a major source after a minor source permit has issued, the minor source permit must impose enforceable emission limitations on each source, including CEMS monitoring and reporting, that apply during all phases of operation. For example, the PTE for the diesel engine is listed at 61.3 tpy for NOx and overall PTE is listed at 67.8 tpy.¹⁷ Simply estimating that the NOx emissions will be

¹⁶ See <http://www.cat.com/cda/layout?m=415323&x=7>.

¹⁷ TAR at 7.

below permitting thresholds is insufficient. Rather, the permit must impose enforceable limits to keep emissions below the threshold level and require CEMS to monitor the actual emissions.

State standards for particulate matter emissions, found in 18 AAC 50.055(b)(1), apply to industrial processes (such as transfer points). The TAR did not consider the contribution of particulate matter from any of the industrial processes that will occur at the project site, besides listing them as potential sources.¹⁸ DEC must analyze the particulate matter emissions from these processes to ensure that the project is not subject to major source permitting requirements prior to issuing a minor source permit.

The permit application further underestimates particulate emissions by grouping emission units 3 through 35 together as fugitive sources and only analyzing potential emissions of PM-10. However, a number of these emission units appear to be point sources and should be analyzed as such. This includes the rock crusher, conveyors 1-5, the jig plant, the grader and other equipment where emissions are “captured and vented.”¹⁹ Emissions from point sources must be calculated and included in the PTE for determining PSD, Title V, and NESHAP applicability. Commenters are confident that once these corrections are made to the emission calculations, PSD, Title V, and NESHAP review and permitting will be required.

II. Usibelli has failed to demonstrate that the source will not cause or contribute to a violation of an Alaska ambient air quality standard or increment.

The proposed project will severely impact the ambient air quality and will likely cause or contribute to a violation of the Alaska ambient air quality standards (“AAAQS”). The underestimation of ambient air quality impacts in the Permit Application and TAR stems from the use of invalid meteorological data that has significant gaps, a failure to include regional sources in a cumulative impacts analysis, a background concentration level that is set too low, an overly coarse receptor grid, and numerous shortcomings regarding the PM-10 emissions. Correcting these inaccuracies will likely show that the proposed project will violate the AAAQS.

a. Stale Meteorological Data

The data used in the modeling is over twenty years old and is based on only one year of data from the four years of data Usibelli collected (1988-1991).²⁰ DEC justifies use of this stale data by asserting that it complies with the Environmental Protection Agency’s (“EPA”) *Guideline on Air Quality Models* (“Guideline”), which DEC has adopted by

¹⁸ *Id.* at 10.

¹⁹ 40 C.F.R. 51, Appendix W, § 5.2.2.2.2(e).

²⁰ TAR at 2 (stating that “Usibelli therefore used the meteorological data they collected in 1990 at Wishbone Hill.”).

reference in 18 AAC 50.040(f). However, the discussion in the TAR regarding a 17-year window misrepresents the Guideline and misapplies that time frame here. The Guideline states:

The number of years of record needed to obtain a stable distribution of conditions depends on the variable being measured and has been estimated by Landsberg and Jacobs 87 for various parameters. Although that study indicates in excess of 10 years may be required to achieve stability in the frequency distributions of some meteorological variables, such long periods are not reasonable for model input data. This is due in part to the fact that hourly data in model input format are frequently not available for such periods and that hourly calculations of concentration for long periods may be prohibitively expensive. Another study compared various periods from a 17-year data set to determine the minimum number of years of data needed to approximate the concentrations modeled with a 17-year period of meteorological data from one station. This study indicated that the variability of model estimates due to the meteorological data input was adequately reduced if a 5-year period of record of meteorological input was used.^[21]

The Guideline cites seventeen years with respect to how many years of data is necessary to obtain a representative sample of years to account for yearly variation, not the age of the data that a permit applicant may rely on for its modeling. The mention of seventeen years in the Guideline has nothing to do with the age of acceptable data; this section of the Guideline emphasizes a preference for five years of data and not the one year used here.

In fact, the Guideline requires “enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results.”²² The DEC’s reasoning that the data is “not that much older in comparison to the time it takes for climatologically [sic] changes to occur” fails to account for the fact that the Guideline states a strong preference for five years of data that is truly representative of conditions at the site; allowing an applicant to pick one year of data that is over twenty years old does not “ensure that worst-case meteorological conditions are adequately represented” or that even “typical” meteorological conditions are represented. DEC merely asserts that “[w]hile old, the data meets the Guideline requirements for representativeness”²³ without any supporting information or analysis regarding whether conditions in 1990 were truly representative of typical meteorological conditions at Wishbone Hill. This is particularly

²¹ U.S. Environmental Protection Agency, *Guideline on Air Quality Models* (“Guideline”), 40 C.F.R. 51, Appendix W, § 8.3.1.1(a).

²² *Id.*

²³ TAR, Exhibit B at 2.

problematic as the Guideline requires the use of all available site-specific data,²⁴ but Usibelli used data from one year of the four that were collected. Thus, DEC's reliance on twenty-year-old data runs afoul of the Guideline. DEC failed to explain how this stale data is representative of typical meteorological conditions at the project site.²⁵

Furthermore, Usibelli only used data from 1990 when it had collected data from October 23, 1988 through October 31, 1992. As DEC notes in its Review of Usibelli's Ambient Assessment, "[w]hen modeling with site-specific data, the Guideline states that additional years (up to five) should be used when available to account for year-to-year variation in meteorological conditions."²⁶ At the very least, while still inadequate under the Guideline, all of the available data for these additional years should have been included in the model to account for any year-to-year variations.

b. Significant Data Gaps in the Meteorological Data

The onsite meteorological data is unreliable for modeling purposes given the missing data for many of the hours. A model run with "inappropriate data [] can lead to serious misjudgments regarding the source impact or the effectiveness of a control strategy."²⁷ The data here has large gaps, rendering it unreliable for modeling. The DEC Modeling Review Procedures Manual states:

The EPA Meteorological Monitoring Guidelines requires a minimum of 90 percent valid data capture per quarter, on a joint recovery basis for wind speed, direction, and other relevant parameters. These data capture requirements apply to raw data and do not allow for missing data substitution to achieve the 90 percent requirement (except from equivalent backup sensors at the monitoring station).^[28]

In other words, a model run with more than 10% of missing data for the relevant time period is invalid and unreliable. Here, the onsite meteorological data used in the modeling is missing data for 40.39% of the time period, well in excess of the 10% limit.

²⁴ 40 C.F.R. 51, Appendix W, § 7.2.1.1(e) ("As long a period of record as possible should be used in making estimates to determine design values and PSD increments. If more than 1 year of site specific data is available, it should be used.").

²⁵ While the dataset from the Palmer Municipal Airport's Automated Surface Observing System ("ASOS") weather station may not be perfectly representative of the meteorological conditions at the project site, the data would be better because it would provide five years of recent, complete data. The modeling would be more accurate than using one year of incomplete data that is over twenty years old.

²⁶ TAR, Exhibit B at 2.

²⁷ 40 C.F.R.51, Appendix W, § 2.1(c).

²⁸ Alaska DEC, 2006. ADEC Modeling Review Procedures Manual ("Procedures Manual") at 63.

The model is missing data for 3,538 hours of the total 8,760 hours of the relevant time period.²⁹ Thus, Usibelli's assertion that "[d]ata collection during the period for the measured values of wind speed, wind direction, temperature, precipitation, and sigma theta were found to exceed 90 percent data capture rates during the full (January through December) 1990 period," is incorrect.³⁰ The modeling results cannot be relied on to issue a permit; DEC must require Usibelli to provide adequate data prior to permit issuance.

c. Regional Sources

The TAR estimates the 24-hour PM-10 ambient impacts to be 141.7 ug/m³ (113.2 ug/m³ from project + 28.5 ug/m³ from background). This nearly exceeds the 24-hour AAAQS of 150 ug/m³. Despite almost exceeding the AAAQS, both Usibelli and DEC declined to do a cumulative impact analysis of other nearby sources, claiming that none existed. However, the nearby Jonesville Mine has a permit from the Alaska Department of Natural Resources ("DNR") to conduct surface coal mining, including re-mining tailings piles. This nearby coal mining activity will in all likelihood contribute to local PM-10 concentrations.³¹ Therefore, the assumption that no nearby sources exist is erroneous. The cumulative impacts of the proposed project and the Jonesville Mine must be analyzed prior to permit issuance to ensure compliance with the AAAQS. This is particularly important as the 24-hour predicted impact of 141.7 ug/m³ nearly exceeds the 24-hour AAAQS of 150 ug/m³.

d. Background Concentrations

Background concentrations should include pollutant concentrations from natural sources, other nearby sources, and unidentified sources.³² To calculate the background concentration level of PM-10, Usibelli separated the 2009 PM-10 data from Eagle River into three "sectors," based on wind direction. Usibelli then — generally speaking — took the data set for each sector, averaged it, and chose the highest average concentration of the three sectors as the background concentration (28.5 ug/m³).³³ The Department independently averaged the background data using a slightly different method, which resulted in a higher background concentration but not one that would result in a modeled violation of the 24-hour PM-10 AAAQS.³⁴ Both approaches involved averaging the PM-10 data over a year. By using this average, the predicted AAAQS impacts reported in the TAR and Permit Application likely understate the "maximum AAAQS impacts."³⁵

²⁹ See AERMOD Output, page 408.

³⁰ Permit Application, Attachment F at 4.

³¹ The Jonesville Mine is not currently active, but the mining company is in the process of renewing its permit and is likely to become active in the foreseeable future.

³² 40 C.F.R. 51, Appendix W, § 8.2.1(a).

³³ TAR, Exhibit B at 10.

³⁴ *Id.* at 11.

³⁵ *Id.*

While, on average, the background concentration may be low enough to result in the modeled emissions being below the AAAQS, the *24-hour* ambient air conditions do not involve *average annual* conditions. Thus, for days where the background concentration of PM-10 is 8.3 ug/m³ or more above the annual average, the modeling would indicate the potential for violations of the AAAQS.

In addition, the 2009 Eagle River data shows that at least 35 days had 24-hour PM-10 concentrations well over 40 ug/m³, which is 11.5 ug/m³ over the background concentration used in the analysis.³⁶ Only six of these days had average wind speeds of over 10 knots.³⁷ Only three of these six days had wind speeds and directions that indicate they were caused by natural wind-driven events.³⁸ Regardless, the Guideline requires consideration of natural sources in addition to other nearby sources and unidentified sources.³⁹ Violations of the AAAQS would be predicted by the model if the background concentrations accurately reflected actual conditions present in the region during numerous days during the year, even ignoring the fairly regular dust storms resulting from glacial silt being blown off of the Matanuska Glacier.

As a result, this averaging method underestimates PM-10 concentrations, which when modeled, does not accurately reflect violations of the AAAQS. The Department must use a more accurate method for determining PM-10 concentrations.

e. Coarse Receptor Grid

The AERMOD model used 50 meter (“m”) spacing around the boundary of the project area and along public trails that transect the ambient boundary. The receptor grid is also extended outward approximately 200 m at 100 m spacing from the project boundary. However, the DEC Modeling Review Procedures Manual recommends a 25-m spaced grid around the receptor with the maximum impact to ensure that the maximum has been truly defined.⁴⁰ The TAR offers no explanation of why the 100-m spacing is “acceptable,” or why DEC is deviating from its own recommendations.⁴¹ The model

³⁶ DEC Permit Files. Usibelli – Additional Response to the ADEC December 20, 2010 Concern No. 5 with the Wishbone Hill May 2010 Modeling Demonstration, page 3-4. February 9, 2011.

³⁷ *Id.*

³⁸ *Id.* at 4.

³⁹ 40 C.F.R. 51, Appendix W, § 8.2.1(a) (“Background concentrations are an essential part of the total air quality concentration to be considered in determining source impacts. Background air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.”).

⁴⁰ Procedures Manual at 60.

⁴¹ TAR, Exhibit B at 8; *Utahns for Better Transp. v. U.S. Dept. of Transp.*, 305 F.3d 1152 (10th Cir. 2002) (“Agencies are under an obligation to follow their own regulations, procedures, and precedents, or provide a rational explanation for their departure.”) (internal citation omitted).

should be re-run using the correct 25-m spacing in conformity with the Procedures Manual.

f. Underestimated PM-10 Emissions

Without explanation, the modeling omitted Unit 36 (“Off Source – coal truck haul – access road”).⁴² Leaving out this emissions unit results in underestimating PM-10 emissions and must be corrected.

The model further underestimates PM-10 emissions by ignoring hours with low wind speeds. For hours with wind speeds less than 1 meter/second (“m/s”), the model treats the conditions as absolutely calm and ignores the PM-10 emissions completely. However, for low-level sources associated with surface coal mining, maximum PM-10 impacts occur near the project under low wind speed. High concentrations of particulate matter can result from wind speeds of less than 1 m/s that affect the ambient air beyond the project boundary. The onsite meteorological data contained 2,445 hours of calm hours (27.91% of the possible 8,760 hours of the year but almost 50% of the total hours input into the model) where PM-10 emissions were calculated to be zero.⁴³ It appears that the AERMOD model used here ignores these hours completely, does not calculate concentrations for them and, therefore, severely underestimates project impacts. This is particularly concerning because the number of calm hours input into the model represents almost 50% of the hours input (only 5,222 hours of meteorological data were input into the model, 2,445 hours of which were calm hours).

The modeling further underestimated PM-10 emissions by excluding emissions resulting from wind erosion on material piles and mining operations.⁴⁴ Data quality concerns aside, the meteorological data indicates that wind speeds will not often be high enough to overcome the coefficient of friction between particles on the stockpiles except in winter, when wind erosion will be reduced by snow cover.⁴⁵ DEC “finds this assumption acceptable” but is “nevertheless requiring Usibelli to adhere to [the Fugitive Dust Control

⁴² AERMOD Output at 3 (listing modeled emission sources).

⁴³ *Id.* at 408.

⁴⁴ TAR, Exhibit B at 6 (“Usibelli did not include the impacts of wind erosion on material piles and mining operations, such as digging and hauling.”).

⁴⁵ The choice of wind speed to estimate fugitive emissions from stockpiles, mining operations, and the bare ground appears arbitrary. DEC allowed the use of significantly higher threshold wind speeds for the calculations than at other coal projects in Alaska. For example, DEC calculated fugitive emissions in the Environmental Impact Statement for the Chuitna project using wind speeds of 2.5 m/s. Here, in contrast, DEC allowed Usibelli to use 15 m/s as the threshold wind velocity for lifting coal particles and 20 m/s for overburden particles. DEC must correct these discrepancies prior to permit issuance and require Usibelli to perform the calculations using wind speeds similar to that used at Chuitna and the Seward Coal Loading Facility.

Plan] to further reduce the likelihood of erosion.”⁴⁶ The Fugitive Dust Control Plan, however, does not include any control measures on the stockpiles or other parts of the mining operation (it only applies to the roads). Furthermore, the assumption that snow cover will be present to reduce erosion lacks support. The information on wind speeds used by Usibelli to establish background concentrations indicates that many of the high wind days occurred in October, November, and April; these are months when snow cover is far from certain.⁴⁷ The Permit Application notes that all the high wind speeds recorded in the 1990 dataset occurred in November.⁴⁸ However, the 2009 data from the Eagle River Parkgate monitor site — used to establish background concentrations — demonstrates that high wind speeds occur during a much wider time frame, from October to April. Also, it is unclear whether snow cover will be present on, for example, the run-of-the-mine stockpile to prevent erosion in the winter. If the stockpile will be moved around and constantly added to and taken from by normal operations, that snow will not accumulate — and have a wind-erosion-reducing effect — for any significant length of time. The Raw Coal Stockpile, Clean Coal Stockpile, and Reject Stockpile likewise would likely have enough turn-over that snow cover would not accumulate and prevent wind erosion. The potential emissions summary included in Table C-2 of Usibelli’s application estimates that these stockpiles and the mine area itself will have PM-10 emissions of approximately 64.92 tpy. By failing to consider these potential emissions in modeling the 24-hour PM-10, the model has further underestimated PM-10 emissions.

The TAR underestimates the 24-hour PM-10 ambient impacts by failing to use the maximum highest 24-hour concentration predicted by the modeling. Rather, the DEC used the second highest maximum 24-hour concentration predicted by the modeling to predict the 24-hour PM-10 impact to be 141.7 ug/m³ (113.2 ug/m³ from the project plus 28.5 ug/m³ from background). The ADEC Modeling Review Procedures Manual states that this is the proper procedure (using the second highest maximum 24-hour concentration predicted by the modeling) *unless* “it has been determined that a one year site specific data set is not temporarily representative[;] then the highest concentration estimate should be considered the design value [and compared to the AAAQS].”⁴⁹ As discussed above, the 1990 data set is not temporarily representative because it is missing over 40% of the data for the selected year and almost 50% of the data used are calm hours. Therefore, that data set is unlikely “to assure that the conditions producing worst-case estimates have been adequately sampled.”⁵⁰ Thus, using the highest modeled value is appropriate here. Using the highest maximum 24-hour concentration of PM-10

⁴⁶ TAR, Exhibit B at 6.

⁴⁷ DEC Permit Files. Usibelli – Additional Response to the ADEC December 20, 2010 Concern No. 5 with the Wishbone Hill May 2010 Modeling Demonstration, page 3-4, Table 2. February 9, 2011.

⁴⁸ Permit Application, Attachment F at 6.

⁴⁹ ADEC Modeling Review Procedures Manual at 63; *see also* 40 C.F.R. 51, Appendix W, § 7.2.1.1(c).

⁵⁰ *Id.*

predicted by the modeling, the predicted PM-10 impact would be 163.7 ug/m³ (135.17 ug/m³ from the project plus 28.5 ug/m³ from background), in excess of the 24-hour AAAQS of 150 ug/m³.⁵¹ The model must be re-run with all of the PM-10 emissions sources and appropriate background levels to ensure that the project will not cause or contribute to a violation of AAAQS.

III. Both DEC and the Applicant Failed to Analyze a Number of Important Potential Impacts to Air Quality.

DEC must deny an application if construction and operation of a source will result in a violation of the AAAQS. *See* 18 AAC 50.542(f)(1)(B). Furthermore, DEC may require an applicant, subject to 18 AAC 50.502(b), to provide an ambient AAAQS analysis for any pollutant.⁵² Here, DEC only requested an analysis of NO_x and PM-10. However, 18 AAC 50.110 prohibits “any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.” Given the location of the project, with nearby residences, schools, and community centers, DEC should require an analysis of the 1-hour NO₂ impacts, of 24-hour and annual PM-2.5 emissions, ozone, and visibility impacts from PM-10 prior to issuing a permit as these emissions may injure human health or welfare, animal or plant life, or property, and may unreasonably interfere with the enjoyment of life or property.

a. NO_x emissions

Neither the Permit Application nor the TAR evaluates potential 1-hour NO₂ impacts. On January 25, 2010, the EPA promulgated a new 1-hour NO₂ National Ambient Air Quality Standard (“NAAQS”) of 100 ppb (or 188 ug/m³). The new NO_x NAAQS took effect on February 9, 2010.⁵³ However, the applicant has not demonstrated that its construction and operation will not violate this new NO_x NAAQS. Additionally, the NO_x analysis that was conducted did not include NO_x emissions from blasting or an analysis of any human health impacts from that blasting.⁵⁴ Those emissions must be included in all the

⁵¹ 18 AAC 50.010(1)(A) (The 24-hour PM-10 AAAQS is 150 micrograms per cubic meter, “with this standard being attained when the expected number of days in a calendar year with a 24-hour average concentration above 150 micrograms per cubic meters is less than or equal to one day.”).

⁵² 18 AAC 50.540(c)(2)(D).

⁵³ 40 C.F.R. Parts 50 and 58. 75 Fed. Reg. 6474 (Feb. 9, 2010), *available at* <http://www.epa.gov/ttn/naaqs/standards/nox/fr/20100209.pdf>.

⁵⁴ Attalla, M., S. Day, T. Lange, W. Liley, & S. Morgan, *NO_x emissions from blasting operations in open-cut coal mining*. 42 Atmospheric Environment 7874, 7874 (2008) (“Although NO_x from blasting in open-cut coal mining may represent only a very small portion of the mining operations’ total NO_x emissions, the rapid release and high concentration associated with such activities may pose a health risk.”).

NOx emissions calculations and DEC should analyze whether the blasting activities may injure human health or “unreasonably interfere with the enjoyment of life or property.”⁵⁵

b. PM 2.5

Both the Permit Application and the TAR indicate that the proposed project will emit a large quantity of PM-10. However, neither document discusses PM-2.5 emissions. The AAAQS for PM-2.5 is 35 ug/m³ for the 24-hour average and 15 ug/m³ for the annual average.⁵⁶ In 2010, multiple violations of the 24-hour PM-2.5 AAAQS were recorded in the Matanuska-Susitna Borough.⁵⁷ In 2008, the 98th percentile concentration of PM-2.5 was 33.0 ug/m³ and the annual mean was 6.54 ug/m³ in the Matanuska-Susitna Borough.⁵⁸ In 2006, the 98th percentile was 40.0 ug/m³ and the annual mean was 7.48 ug/m³.⁵⁹ Given these relatively high background concentrations, the geography of the Matanuska Valley and Anchorage Bowl, and location of the project, the PM-2.5 emissions of the proposed project may cause additional violations of the 24-hour AAAQS and increase the annual average up even higher. The Permit Application and TAR should, therefore, evaluate the PM-2.5 24-hour and annual impacts from all project sources.

c. Ozone

The proposed project will emit NOx (67.8 tpy) and VOC (0.7 tpy). Both NOx and VOC are known ozone precursors. These emissions will react in sunlight to form ozone, which may be especially problematic given the long hours of daylight in the summer months. Thus, the proposed project will increase ozone levels in the region and may interfere with the attainment and/or maintenance of the ozone standard. Yet, neither the Permit Application nor the TAR analyzed the potential ozone impacts. Notably, violations of the *current* 8-hour ozone standard of 0.075 ppm⁶⁰ have been recorded in Denali National

⁵⁵ 18 AAC 50.110.

⁵⁶ 18 AAC 50.010(1)(B).

⁵⁷ EPA monitoring data show daily mean concentrations in Matanuska-Susitna Borough in excess of the 24-hour AAAQS for PM-10 on 01/11/2010 (38.4 ug/m³), 01/30/2010 (37.5 ug/m³), and 03/12/201 (42.5 ug/m³). See http://www.epa.gov/cgi-bin/broker?msaorcountyName=&msaorcountyValue=&poll=88101&county=02170&site=-1&msa=1&state=1&sy=2010&flag=Y&query=view&debug=2&service=data&program=dataprog.query_daily3P_dm.sas (last visited April 13, 2011).

⁵⁸ U.S. EPA, AirData, County Air Quality Report – Criteria Air Pollutants. <http://iaspub.epa.gov/airsdata/adaqs.summary?geotype=st&geocode=AK&geoinfo=st~AK~Alaska&year=2008&fld=county&fld=stabbr&fld=regn&exc=1&rpp=25> (last visited April 13, 2011).

⁵⁹ *Id.*

⁶⁰ 18 AAC 50.010(4).

Park.⁶¹ The EPA recently announced that the current ozone standard may be lowered to 0.06 – 0.07 ppm. Given that the project will emit ozone precursors, the potential for these emissions to cause or contribute to violations of the ozone AAAQS should be evaluated before DEC issues a permit.

d. Plume Blight – Visibility

The proposed project will emit significant amounts of NO_x (67.8 tpy) and PM-10 (557.2 tpy). Both NO_x and PM-10 reduce visibility. The TAR analysis only focused on the impacts to visibility caused by the diesel engine and heaters. However, there are many other sources of NO_x and PM-10 at the project site, including haul roads and mine blasting. The analysis of impacts to visibility should be expanded to include an analysis of the impacts on visibility of *all* PM-10-emitting sources. Further, the VISCREEN model developed by the EPA should be used to analyze the proposed project's overall effects on visibility. This is particularly important as the TAR itself recognizes the potential for equipment used at the proposed project to exceed the visibility standard.⁶²

State standards for visible emissions in 18 AAC 50.055(a)(1) applies to the diesel fire engines and heaters (as fuel burning equipment) and other sources such as transfer points (as industrial processes). The DEC, however, is only requiring an initial compliance demonstration of the heaters because “[o]il fired heaters...have historically complied” with the visibility standards when “properly operated and maintained.”⁶³ The DEC has not provided any information to support this statement regarding historical compliance. If the DEC is going to rely on its historical experience with oil fired heaters, it must provide adequate support of the basis for its conclusion. Additionally, this statement itself establishes the importance of proper operation and maintenance. Therefore, these heaters should be tested for compliance on an ongoing, quarterly basis or have a CEMS monitor installed.

The TAR is silent on how the permit will ensure compliance with the visibility standards from other sources, such as transfer points, which are subject to the visibility requirements as industrial processes. *See* 18 AAC 50.055(a)(1). DEC should include these sources in its analysis of visibility and include necessary permit requirements to ensure visibility standards are met.

⁶¹ Ozone was recorded at 0.076 ppm in 2008. *See* <http://iaspub.epa.gov/airsdata/adaqs.monvals?geotype=st&geocode=AK&geoinfo=st~AK~Alaska&pol=O3&year=2008&fld=monid&fld=siteid&fld=address&fld=city&fld=county&fld=stabbr&fld=regnrpp=25> (last visited April 13, 2011).

⁶² TAR at 10 (“Diesel-fired engines have the potential to exceed the visible emission standard.”).

⁶³ *Id.*

IV. The Control Plans are inadequate.

The Public Access Control Plan and Fugitive Dust Control Plan must be modified before the permit is issued. The Public Access Control Plan fails physically exclude the public and, therefore, air within the mine area is “ambient air” under EPA’s regulations and must comply with the AAAQS. Furthermore, the Fugitive Dust Control Plan should allow for public notice and comment regarding any proposed modifications and require more objective monitoring of the monitoring of the plan’s effectiveness.

a. Public Access Control Plan

The Public Access Control Plan is insufficient. Unless Usibelli physically excludes people from the mine area, the air quality within the project boundary must meet the AAAQS. EPA regulations define “ambient air” as “that portion of the atmosphere, external to buildings, to which the general public has access.”⁶⁴ The EPA’s longstanding interpretation of this regulation is that — to not qualify as ambient air — public access must be precluded by a fence or other physical barrier.⁶⁵ The Public Access Control Plan here involves gating public right-of-way 52715 and fencing the facilities area and the west end of Mine Area 1.⁶⁶ The rest of the ambient air boundary will have signs posted every 800 yards stating that access to the area is restricted.⁶⁷ This plan does not physically exclude the public and, therefore, the area within the ambient air boundary must meet the AAAQS. Otherwise, the applicant must physically exclude the public by erecting a fence or some other physical barrier along the entire ambient air boundary.

b. Fugitive Dust Control Plan

To ensure compliance with the AAAQS for NO₂ and 24-hour PM-10, the permit requires compliance with the Public Access Control Plan and the Fugitive Dust Control Plan.⁶⁸ The Fugitive Dust Control Plan can be modified in the future, subject to DEC approval. As the modification can be “approved” merely by DEC’s silence, it appears that the public will have no opportunity to comment — or even know about — any proposed changes.⁶⁹ Any future modifications of the Fugitive Dust Control Plan should be subject

⁶⁴ 40 C.F.R. 50.1(e).

⁶⁵ United States Environmental Protection Agency, Office of Air Quality Planning and Standards. Memo re: Receptor Locations in Ambient Air. January 21, 1986. <http://www.epa.gov/scram001/guidance/mch/ama4.txt> (last visited April 26, 2011).

⁶⁶ Permit Application, Attachment H at 1-2.

⁶⁷ *Id.* at 2.

⁶⁸ TAR, Exhibit B at 11-12.

⁶⁹ Preliminary Permit at 31 (“To maintain the most optimal dust control plan for the mining operations, the operator may periodically modify the plan or make changes to the monitoring procedures. Prior to making any modifications or changes to this plan, the operator will obtain written approval from ADEC. The request for ADEC approval will be submitted to

to public notice and comment given the interest of, and impact to, the public in this project.

Additionally, the Fugitive Dust Control Plan only calls for active dust suppression controls on roads. This should be expanded to include other open mine areas where re-vegetation has not yet occurred or is not expected to occur (e.g., on the stockpiles) to reduce fugitive dust.

In addition, monitoring the effectiveness of the Fugitive Dust Control Plan should be further refined. The test of timing how long it takes dust to dissipate after a vehicle passes will be greatly affected by additional variables such as wind speed, other weather conditions, the speed of the vehicle, the weight of the vehicle, etc. These variables should be controlled to replicate actual use of the roads: the vehicle used in the test should be the 150-ton haul trucks, driving at a typical speed used during mining operations. Factors such as wind speed and other weather variables should be recorded at the time of the test.

Thank you for the opportunity to comment on this proposed permit. Please contact me at kstrong@trustees.org or (907) 276-4244 x108 if you have any questions.

Sincerely,

/s/
Katie Strong
Staff Attorney

the agency at least 30 days prior to implementing the planned changes. It will be assumed that the request has been approved if no response is received from ADEC in 30 days.”).



TRUSTEES FOR ALASKA

SUSTAIN | PROTECT | REPRESENT

September 19, 2011

Krystin Bablinskas
ADEC Air Permits Program
619 East Ship Creek, Suite 249
Anchorage, AK 99501-1677
Krystin.Bablinskas@alaska.gov

Submitted via email

RE: Preliminary Decision to Approve Minor Permit Application for Usibelli Coal Mine, Inc. Wishbone Hill Mining and Processing Operations, Air Quality Control Minor Permit AQ1227MSS03

Dear Ms. Bablinskas:

Trustees for Alaska submits the following comments on behalf of the Castle Mountain Coalition (“CMC”), Friends of Mat-Su (“FoMS”), Alaska Center for the Environment (“ACE”), Cook Inletkeeper, and the Sierra Club (collectively “Commenters”) on the Alaska Department of Environmental Conservation’s (“ADEC”) *Preliminary Decision to Approve Minor Permit Application for Usibelli Coal Mine, Inc. Wishbone Hill Mining and Processing Operations, Air Quality Control Minor Permit AQ1227MSS03* (“Proposed Permit”) under the Clean Air Act (“CAA”). Commenters also submit and incorporate by reference the technical evaluation and comments prepared by AMI Environmental, attached as Appendix A; the technical evaluation and comments prepared by Dr. Ranajit (Ron) Sahu, attached as Appendix B; and Commenters’ previous comments (including attachments) submitted on the proposed Air Quality Control Minor Permit AQ1227MSS02.

CMC is a nonprofit community organization based in Chickaloon, Alaska that seeks to promote and preserve the ecological integrity, economic sustainability, and quality of life within the Matanuska River watershed. FoMS is a nonprofit organization that seeks to provide land use information, advocate for borough-wide planning, promote citizen involvement, and offer tools and support to develop a healthy and vibrant community in the Matanuska-Susitna Valley. FoMS has approximately 300 members, including residents from every community in the Matanuska-Susitna Borough. ACE is the largest locally founded nonprofit conservation organization in Alaska and advocates for Alaskans’ quality of life by protecting wild places, fostering sustainable communities, and promoting recreational opportunities on behalf of over 6,000 Alaskan members. Cook Inletkeeper is a non-profit public interest research and advocacy organization whose mission is to protect Alaska’s Cook Inlet watershed and the life it sustains.

1026 West 4th Avenue, Suite 201
Anchorage, AK 99501
(907)276-4244

The Sierra Club is the nation's oldest and largest grassroots nonprofit organization working to explore, enjoy, and protect the planet, with approximately 1,200 members in Alaska, some of whom reside in the Mat-Su Valley.

ADEC should deny the permit application because the permitting analysis fails to ensure that the proposed operation will operate at minor source levels. Also, numerous problems plague the ambient air modeling prepared by Usibelli, which severely underestimates the impacts of the proposed project to the ambient air quality.

I. The proposed operation has the potential to emit air pollutants at PSD major source levels and, therefore, ADEC must either include enforceable emission limits or subject the source to major source permitting requirements.

ADEC cannot approve the proposed minor source permit as currently drafted. Because the source has the potential to emit air pollutants at major source levels, ADEC must include enforceable conditions that limit emissions. Further, ADEC must re-analyze the potential of the operation to emit greenhouse gases, NO₂, SO₂, PM-10, and CO at major source levels prior to issuing Usibelli a minor source permit.

a. The permit fails to include conditions to ensure that the proposed operation will not emit PM-10 at major source levels.

The proposed permit conditions are inadequate to ensure the proposed operation will not emit PM-10 at major source levels. The monthly visual inspections required under Permit Condition 4.1.c fails to ensure that emission limits will be continually complied with. Additionally, the visibility emission monitoring of Emissions Unit ("EU") ID 12 imposed by Permit Condition 11 fails to accurately assess whether emissions are below the major source threshold. Similarly, Permit Conditions 15.1 and 15.2 regarding EU ID 1 do not impose enforceable emission limits to ensure that the source remains under the major source threshold as there is no correlation between visible emissions and PM-10 mass emissions. In other words, EU ID 1 could be emitting at a rate that will result in 250 tons per year of PM-10 and 19% opacity (and, therefore, be in full compliance with Permit Condition 15.2 but emitting at major source levels). ADEC must include enforceable emission limits to ensure that the operation does not violate the CAA by emitting PM-10 at major source levels while operating under a minor source permit.

b. The permitting materials fail to evaluate whether the proposed operation will exceed major source levels for greenhouse gases.

Coal mines often emit large amounts of methane; this includes surface mining like that proposed at Wishbone Hill. See EPA's Coalbed Methane Outreach Program at <http://www.epa.gov/cmop/basic.html> (last accessed September 7, 2011). The coal mining industry is one of the largest emitters of methane in the United States, accounting for more than 10% of human methane emissions. See U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007 (2009) at 3-36, available at http://www.epa.gov/climatechange/emissions/downloads/09/GHG2007entire_report-508.pdf (last accessed September 7, 2011) (the total inventory

includes methane emissions from active and abandoned coal mines). While methane escapes during the processing, transport, and storage of coal, 90% of emissions come from the actual coal mining process. *See* U.S. EPA, Office of Air and Radiation, Technical Support Document for Underground Coal Mines: Proposed Rule for Mandatory Reporting of Greenhouse Gases 3 (2009), available at: http://www.epa.gov/climatechange/emissions/downloads/tsd/TSD%20Coal%20Mining%2002%2004%2009_1.pdf (last accessed September 7, 2011).

If the proposed operation at Wishbone Hill emits approximately 5,000 tons per year of methane, it would exceed the 100,000 tons per year CO₂ equivalent PSD major source threshold. *See* 18 AAC 50.040(h) (adopting 40 C.F.R. 52.21(b)(49) by reference). Neither the permit application nor the technical analysis evaluated potential greenhouse gas emissions, such as methane, when evaluating whether the operation would trigger PSD permitting requirements. Given the potential of this operation to emit methane in large quantities, ADEC cannot issue the minor source permit until it evaluates the potential greenhouse gas emission levels from the project and clearly establishes that the operation will not emit green house gases at major source levels.

c. The permit does not clearly limit SO₂ emissions below the major source threshold.

Permit Condition 21 limits EU ID 1 and 2 emissions of SO₂ to 500 ppm over a 3-hour average. It is unclear, however, how this translates into tons per year and, therefore, unclear how this emission limit relates to the emissions threshold for major source permitting. Additionally, the permit fails to impose any monitoring to ensure compliance with this 500 ppm emission limit. *See* Permit Condition 21. Also, the Technical Analysis Report (“TAR”) calculates the Potential to Emit (“PTE”) based on 15 ppm even though the permit limits SO₂ emissions from EU ID 1 and 2 to 500 ppm and even though calculating SO₂ emissions is only required if the sulfur content of the fuel is 0.75 percent or 7500 ppm. Thus, the permit must either limit SO₂ emissions from EU ID 1 and 2 to 15 ppm and require a SO₂ Continuous Emissions Monitoring System (“CEMS”) or at least quarterly stack testing to ensure compliance with that limit or recalculate the emissions based on the actual permit limitations.

d. The permit fails to contain any enforceable limits to keep emissions below 250 tons per year for NO_x and CO emissions.

The permit fails to contain any enforceable limits to ensure that emissions do not exceed 250 tons per year for NO_x or CO. This is particularly egregious as the PTE calculations failed to consider NO_x emissions from blasting, which are vented out blasting holes. The TAR assumed NO₂ emissions from blasting would be non-existent. *See* TAR Ex. A. However, NO₂ emissions from blasting operations can be very high. For example, coal mines evaluated by the U.S. Bureau of Land Management in Wyoming’s Powder River Basin estimate NO_x emissions from blasting to be between 1,033 and 4,747 tons per year at each mine site. *See, e.g.,* Final EIS for the Wright Area Coal Lease Applications at 3-83 to 3-86, available at: <http://www.blm.gov/wy/st/en/info/NEPA/documents/hpd/Wright-Coal.html> (last accessed September 13, 2011); Final EIS for the South Gillette Area Coal Lease Applications at 3-64 to 3-66, available at: <http://www.blm.gov/pgdata/content/wy/en/info/NEPA/documents/hpd/SouthGillette.html> (last accessed

September 13, 2011); Final EIS for the West Antelope II Coal Lease at Appendix F-6, available at: http://www.blm.gov/wy/st/en/info/NEPA/documents/cfo/West_Antelope_II.html (last accessed September 13, 2011); Draft EIS for the Hay Creek II Coal Lease at Appendix F-6, available at <http://www.blm.gov/wy/st/en/info/NEPA/documents/hpd/HayCreekII.html> (last accessed September 13, 2011).

Furthermore, the use vendor emissions information on NO_x used for EU ID 1 was inappropriate. First, it remains unclear what actual engine model will be used for EU 1, making confirmation of the vendor emission rates exceedingly difficult. *See* Appendix B. Second, the permitting materials do not evaluate what happens to NO₂ emissions from EU 1 after 8,760 hours of operation or, alternatively, include a permit condition that limits the use of EU ID 1 to 8,760 hours. Emissions may increase greatly after the engine has operated longer than the time period evaluated by the vendor. *Id.* Without an enforceable permit condition that requires the replacement of the engine after 8,760 hours of use or the modeling of emissions after that time period, the permit does not ensure the source will remain below 250 tons per year of NO₂ emissions. Moreover, ADEC failed to confirm vendor emissions data or evaluate it in light of actual operating conditions on site to account for variables such as temperature, altitude, or humidity. These factors can dramatically affect NO_x emissions from diesel engines to the point where EU 1 may have the potential to emit NO_x over the major source threshold of 250 tons per year. *Id.*

II. The permit application and technical analysis do not ensure that the proposed operation will not cause or contribute to a violation of Alaska's Ambient Air Quality Standards.

Numerous problems plague the modeling of the impacts to ambient air quality. These issues would be largely resolved by requiring Usibelli to either collect new on-site data (via installation of an Automated Surface Observing System ("ASOS") station) or to use ASOS station data from the Palmer Municipal Airport from the previous five years.

a. The model relies on old data that is unrepresentative of meteorological conditions at the site and fails to ensure that worst-case meteorological conditions were reflected in the results.

The modeling continues to rely on data collected over twenty years ago. The Environmental Protection Agency's ("EPA") *Guideline on Air Quality Models* ("Guideline") requires "enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results." 40 C.F.R. 51, Appendix W, § 8.3.1.1(a). Here, it remains unclear whether the 1990 data ensures that such worst-case meteorological conditions were represented in the modeling results. Data collected between 1949 and 1999 indicates that the weather in 1990 was highly unusual. According to the Western Regional Climate Center, 99 inches of snow fell in the Matanuska Valley in 1990. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?akmatv> (Last accessed 09/06/2011). The mean amount of snow fall in the Matanuska Valley over a fifty year period (1949 – 1999) was 51.9 inches per year. *Id.* Also, 1990 had some of the lowest recorded temperatures over the same time period. Relying on such anomalous weather conditions for the modeling of ambient air quality impacts does not ensure that the results reflect

worst-case conditions or even typical conditions at the site and fails to comply with the Guideline. *See* 40 C.F.R. 51, Appendix W, § 8.3.a (“The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern.”).

b. The permitting materials fail to explain why the on-site data collected in 1991 was not used in the modeling.

Usibelli’s predecessor collected meteorological data from October 1988 through October 1991. TAR, Exhibit B at 3. ADEC asserts that it only received data from October 1988 through December 1990 and, therefore, did not consider data from 1991. *Id.* However, this is inaccurate. ADEC had access to and obtained data from 1991 in evaluating this permit application. *See* Appendix C at 1, Email exchange between Krystin Bablinskas, Alan Schuler, Al Trbovich, Sean Lower, Rob Brown, and others dated July 28, 2011 on file with ADEC (“The meteorological data reports for the first three quarters of 1991 are attached.”). Whether or not ADEC reviewed and approved the reports in 1991 when the data was collected, the 1991 data is available and must be evaluated for quality control and potential inclusion in the modeling.

c. The Fugitive Dust Control Plan must be amended to include dust suppression techniques included in the modeling of fugitives related to EUs 29-35.

The Technical Analysis Report states that “wet suppression or other control techniques” will be used “when the Permittee is operating in those areas (identified, as EU’s 29-35).” TAR at 7. EUs ID 29-35 are mobile equipment used in the mining operation (e.g., equipment used for grader operations, overburden and coal hauling, and other miscellaneous operations). It is unclear what “areas” the statement in the TAR refers to, as the cited EUs are equipment and not physical locations. ADEC must clarify this statement to make clear when and where wet suppression or other dust control technologies must be used.

Additionally, while the TAR states that ADEC included “a permit condition requiring that the Permittee employ wet suppression techniques ... when the Permittee is operating in those areas (identified as EU’s 29-35),” the proposed permit does not actually include the described condition. The Fugitive Dust Control Plan only calls for active dust suppression on roads, yet the mobile equipment identified as EUs 29-35 would operate in areas beyond mine roads (e.g., on the backfill and stockpiles). Thus, the permit does not ensure that control techniques are in place to reduce emissions by 50 percent as assumed by the AP-42 emission factors used in the modeling of fugitives associated with EUs 29-25. *See* TAR at 7. Without these reductions, the modeling underestimates the impacts of the operation on ambient air quality and may have failed to predict a violation of the AAAQS. Therefore, the permit must be amended to clearly include these emission reduction techniques or the model must be re-run to remove these reductions.

d. The estimation of PM-10 emissions improperly annualized emissions from topsoil removal and overburden loading and dumping.

Usibelli's estimates of PM-10 emissions improperly "annualizes" the PM-10 emission rate for topsoil removal and for overburden removal and blasting. *See* TAR, Exhibit B at 7-8 ("Topsoil removal occurs 2,660 hours per year (hr/y) and was modeled using the annual average, rather than maximum short-term, emission rate to reflect this intermittent activity."). Contrary to ADEC's assertion, this approach is not conservative. In fact, it dilutes the ambient values and seriously underestimates PM-10 emissions. Additionally, the emissions estimate must assume the maximum emission rate in every hour that topsoil removal is allowed. In the absence of an enforceable permit condition limiting topsoil removal (e.g., to the cited 2,660 hours per year (110 days)), the modeling must assume that topsoil removal occurs continuously. Similarly, if Usibelli wants to have the modeling reflect that overburden loading and dumping will occur no more than 30 days per year, *see* TAR, Exhibit B at 7, then an enforceable permit condition limiting the loading and dumping must be included in the permit.

Additionally, a permit condition should limit blasting to no more than 240 times per year for overburden removal and 120 times per year for coal removal as these assumptions were used to model impacts to ambient air quality. *See id.* at 8. Unless these permit limits are included, the emissions modeling must assume that these activities are occurring at all times to properly calculate the maximum emission rate. Accordingly, ADEC must either include a permit condition limiting these activities accordingly or must re-run the model to determine PM-10 emissions from continuous topsoil removal, coal removal, and overburden removal and blasting to determine whether these activities will cause or contribute to a violation of the PM-10 AAAQS.

e. The estimated NOx emissions should have included NOx emissions from EUs 29-35 and blasting operations.

The modeling should have included NOx emissions from EUs 29-35 and blasting operations to accurately evaluate the operation's potential for violating the AAAQS for NOx. Usibelli only evaluated NOx emissions from the diesel-fired generator and the heaters. *See* TAR, Exhibit B at 7. NOx emissions from these other sources have the potential to cause the operation to exceed the AAAQS. Usibelli assumed that blasting would not cause any NO2 emissions. *See* TAR Ex. B at 7 ("Only two of the emission units (the diesel-fired generator and the diesel-fired comfort heaters) emit NOx. Usibelli therefore limited the annual average NO2 assessment to just those two units."). However, as discussed above, *supra* I.d., NO2 emissions from blasting can be very high. As explained by the U.S. Bureau of Land Management:

Blasting that is done to assist in the removal of material overlying the coal (the overburden) can result in emissions of several products, including NO2, as a result of the incomplete combustion of nitrogen-based explosives used during the blasting process. When this occurs, gaseous, orange-colored clouds may be formed and they can drift or be blown off mine permit areas. Incomplete combustion during blasting may be caused by wet conditions in the overburden, incompetent or fractured geological formations, deformation of the boreholes, and blasting agent factors. The rate of release is not well

known but is believed to be dependent on a wide number of factors that likely include, but are not necessarily limited to: downhole confinement; downhole moisture; type/blend of ammonium nitrate, fuel oil (ANFO) and emulsion; and detonation velocity.

U.S. Bureau of Land Management, Final Environmental Impact Statement for the South Gillette Area Coal Leasing Project at 3-60 to 3-61. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/south_gillette/feis.Par.69474.File.dat/09_chap3.pdf (last accessed September 9, 2011). NO_x emissions from blasting can be estimated using emission factors provided in EPA guidance document AP-42, Section 13.3, “Explosives Detonation.” Available online at: <http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s03.pdf> (last accessed September 9, 2011). NO₂ impacts can then be derived by multiplying the modeled NO_x concentrations by .75 and adding the background NO₂ concentration, in accordance with Section 6.2.3 of EPA’s Guideline on Air Quality Models. 40 CFR 51, Appendix W. Performing this analysis for the proposed permit is critical to ensuring the operation will not cause or contribute to a violation of the AAAQS for NO₂. ADEC cannot issue the proposed permit prior to conducting this analysis and ensuring that the operation will not cause or contribute to a violation of AAAQS for NO₂.

f. The applicant improperly used Particle Deposition when modeling the impacts of PM-10 emissions.

Project emissions were calculated for PM-10 using AP-42 emission factors that are adjusted for PM-10. Particle deposition is not normally simulated for either PM-10 or PM-2.5 as its effects are negligible for small particles. *See also* Appendix C at 4 (“Deposition is *not* a required parameter in a regulatory analysis.”) (emphasis in original). Particle deposition is used for particles larger than PM-10, such as PM-30, where emissions are calculated for total suspended particulates (“TSP”). However, using large mass fractions for PM-30 and particle deposition for strictly PM-10 emissions can largely underestimate the impacts of PM-10 emissions. In other words, it is incorrect to use particle deposition when modeling PM-10 emissions, and this leads to significant underestimations of PM-10 impacts. Running the modeling without particle deposition, AERMOD predicts a maximum 24-hour concentration of 280.2 ug/m³ and a second-highest concentration of 243.9 ug/m³. *See* Appendix A. Even without accounting for background concentrations, this far exceeds the AAAQS of 150 ug/m³ for PM-10. Therefore, the proposed project will cause a violation of the AAAQS and ADEC cannot issue the proposed permit. *See* 18 AAC 50.542(f)(1)(B) (ADEC must deny an application if construction and operation of a source will result in a violation of the AAAQS).

g. The 1990 dataset prevents the full use of the EPA’s most recent version of AERMOD, leading to the severe underestimation of ambient air quality impacts.

The use of the 1990 dataset to model ambient air quality impacts underestimates the impacts of emissions because of the way AERMOD deals with “calms” (i.e., wind speeds of less than 3 knots) when used without ASOS data that takes measurements on a 1- to 2-minute interval. The 1990 dataset contains 2,401 hours (27.41% of the possible 8,760 hours for the year) of “calms” where the model assigns a concentration of zero despite impacts to ambient air

quality often being most significant during these low wind speeds. EPA recognized this problem and recently changed the model to better account for “calms.” However, this updated model requires wind speed measurements from an ASOS station that are recorded on a 1- to 2-minute interval. Those measurements are then entered into AERMINUTE and then processed through AERMET and AERMOD. Because the 1990 dataset was not ASOS data taken on a 1- to 2-minute interval, the modeling significantly underestimates ambient air quality impacts.

To better understand the potential for impacts to ambient air quality, Commenters employed a modeling expert to run AERMOD using meteorological surface data from the Palmer Municipal Airport and upper-air data from the Anchorage International Airport from the most recent five year period available (2006-2010). *See* Appendix A. This data was collected by an ASOS station and contains 1-minute wind data designed to reduce problems in the modeling with “calms” and, therefore, improve the accuracy of the model’s predictions. The entire five-year dataset from 2006-2010 only included 1,403 hours of “calms.” The 1990 dataset contains 2,401 hours of “calms.” Therefore, the accuracy of the 2006-2010 dataset is much higher, as contemplated by the EPA when it revised the modeling procedures to address the problems with modeling “calms.”

Using the 2006-2010 data to predict PM-10 impacts from the proposed operation clearly demonstrates that the operation will cause violations of the AAAQS. Maximum 24-hour concentrations predicted by the AERMOD model range from 231.8 ug/m³ in 2007 to 287.5 ug/m³ in 2009. The second highest concentrations range from 176.8 ug/m³ in 2006 to 223.9 ug/m³ in 2008. Even without including background concentrations, all of these maximum and second-highest concentrations significantly exceed the AAAQS of 150 ug/m³. The second-highest concentration of 223.9 ug/m³ in 2008 is the 6th highest concentration for the five-year period; combined with the background concentration of 28.5 ug/m³, the predicted concentration of 272.4 ug/m³ far exceeds the AAAQS of 150 ug/m³. *See* Appendix A. Therefore, when using the latest version of AERMOD with data that more accurately deals with “calms,” the proposed operation will in all likelihood violate the AAAQS and ADEC cannot issue the permit. *See* 18 AAC 50.542(f)(1)(B).

ADEC argues that meteorological surface data from the Palmer Municipal Airport ASOS station would be unrepresentative of conditions at Wishbone Hill. DNR August 18, 2011 Response to Comments (“RTC”) at 10. However, ADEC then concludes that background PM-10 data from Eagle River, which is further from the site than Palmer, would be acceptable because “[l]ike Wishbone Hills, Eagle River is subject to the wind-blown dust events prevalent in the Mat-Su Valley.” TAR, Exhibit B at 14. While Commenters agree with ADEC that wind speeds and directions vary between Palmer and Wishbone Hill, Commenters note that Palmer, which is closer to the proposed operation, is also subject to wind-blown dust events in the Mat-Su Valley. Furthermore, the wind direction determines the location of the impacted receptor, not the impact to ambient air quality. The much more important factor is wind speed. Given the problems with the 1990 dataset (the age of the data, the unusual weather year, and the inability of the dataset to take advantage of EPA’s solution to modeling air impacts during “calm” periods, and an excessive number of “calm” periods compared to other years) and the ability of the dataset from the Palmer Municipal Airport to resolve many of these issues, ADEC should either use the Palmer Municipal Airport ASOS station data and impose permit conditions to bring the

estimated PM-10 impacts below the AAAQS, or collect one year of on-site data using an ASOS station to resolve the current problems with the 1990 dataset.

III. The permit improperly allows for modifications without complying with the statutory and regulatory requirements for revisions to minor permits.

Permit Condition 3.1 allows changes to the proposed permit in the form of attachment documents without following the legal requirements for revisions to minor permits. Permit Condition 3.1 reads:

[Fugitive Dust] Plan changes that are more stringent shall not require a public comment period; Plan changes that are deemed, by the Department, to be less stringent than the ones use[d] to establish the permit, shall at the discretion of the Department, be public noticed under the provisions of 18 AAC 50.542(d)(1)(A) through 18 AAC 50.542(d)(1)(C).

Additionally, Permit Condition 5.5 allows for permit modification simply through “written approval” from ADEC. These provisions fail to comply with applicable regulations governing minor permit revisions. *See* 18 AAC 50.546(a) (“The department will use the procedures of 18 AAC 50.540 – 18 AAC 50.544 to revise a minor permit...in accordance with AS 46.14.280.”). Permit Conditions 3.1 and 5.5 must be revised to only allow permit modifications as provided in 18 AAC 50.546(a).

IV. The Public Access Control Plan fails to physically exclude the public from non-ambient air.

The Public Access Control Plan continues to be insufficient. Unless Usibelli physically excludes the public from the mine area, the air quality within the project boundary must meet the AAAQS. EPA regulations define “ambient air” as “that portion of the atmosphere, external to buildings, to which the general public has access.” 40 C.F.R. 50.1(e). The EPA’s longstanding interpretation of this regulation is that to not qualify as ambient air, public access must be precluded by a fence or other physical barrier. *See e.g.* U.S. EPA, Office of Air Quality Planning and Standards. Memo re: Receptor Locations in Ambient Air. January 21, 1986. <http://www.epa.gov/scram001/guidance/mch/ama4.txt> (last accessed September 7, 2011).

The Public Access Control Plan fails to require physical barriers to areas that are not considered ambient air. *See* Permit Conditions 3.1.c, 3.2, 3.3. Natural barriers on the northwestern edge of the mine may sufficiently preclude public access. However, the natural barriers on the western and southern borders are insufficient to physically exclude the public. Likewise, the entire eastern edge requires a fence, as no natural barriers exist that would physically preclude public access as required by EPA regulations. Simply posting signs every 800 yards that state access to the area is restricted is insufficient to *physically exclude* people from the property. ADEC must require Usibelli to either fence the entire ambient air boundary or to re-evaluate impacts to the ambient air from which the public is not physically excluded.

V. Monitoring of Meteorological Conditions and PM-10 Emissions

Permit Condition 5.4 requires the meteorological station to be at least three meters high. The typical height of meteorological towers is ten meters. This height is generally regarded as necessary to reduce the effects of nearby objects and the ground on measurements and to ensure that the information gathered is accurate and useful. Therefore, Commenters request that ADEC require Usibelli to install a station that is at least ten meters tall.

Commenters request that the placement of the PM-10 and meteorological monitoring stations be addressed in the current permit so that the public has an opportunity to evaluate and participate in the decision of where this equipment is located. Commenters also request that the permit require multiple PM-10 monitoring stations be installed to ensure that emissions remain below the AAAQS along the entire ambient air boundary. To adequately monitor health impacts, Commenters believe that the monitoring stations should also record measurements of PM-2.5.

Commenters reiterate their comments on the previous permit application regarding monitoring the effectiveness of the Fugitive Dust Control Plan. That plan should be refined to require that (1) the vehicle used in the test is representative of mine traffic (i.e., a 150-ton haul truck, driving at its typical speed) and (2) pertinent weather variables are recorded at the time of the testing. ADEC regarded this as a request for “experiments” and “scientific investigation and research.” RTC at 29. This mischaracterizes the request. Commenters are not seeking to have ADEC impose research requirements on the permittee. Rather, Commenters seek to have the monitoring of the Fugitive Dust Control Plan further refined to improve its accuracy and believe that the suggested changes will ensure that the tests are meaningful and informative to both the permittee, the agency, and the public and to ensure compliance with applicable AAAQS.

VI. ADEC must ensure that the proposed operation does not emit pollutants that endanger human health or welfare.

ADEC must deny an application if construction and operation of a source will result in a violation of the AAAQS. *See* 18 AAC 50.542(f)(1)(B). While Alaska’s minor source permitting rules do not require modeling of numerous pollutants of concern to Commenters, ADEC may require an applicant, subject to 18 AAC 50.502(b), to provide an ambient air quality assessment for any pollutant. 18 AAC 50.540(c)(2)(D). Furthermore, ADEC regulations prohibit “any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.” 18 AAC 50.110. Given the close proximity of residences and communities to the site, the significant public concerns regarding the proposed Wishbone Hill Coal Mine, and the ongoing Health Impact Assessment (“HIA”) being conducted regarding the project, ADEC should require Usibelli to model potential 1-hour NO₂ and 24-hour and annual PM-2.5 emissions. ADEC should also delay issuing this permit until the completion of the HIA to ensure that any relevant human health impacts are addressed in the permitting process and to ensure that the HIA has a proper role in the decisionmaking process.

Thank you for the opportunity to comment on this proposed permit. Please contact me at kstrong@trustees.org or (907) 276-4244 x108 if you have any questions.

Sincerely,

/s/ _____

Katie Strong
Staff Attorney