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Trinity Consultants

**VIA E-MAIL:** tpeterson@gcc.com

May 13, 2016

Mr. Trent Peterson
Vice President
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

*RE: Supplement #1 to the Air Quality Impact Analysis for Traffic on the La Plata County Road 120 and Responses to McVehil-Monnett Associates, Inc. (MMA) letter dated March 14, 2016*

Dear Mr. Peterson:

Trinity Consultants, Inc. (Trinity) was retained by GCC Energy, LLC (GCC) to review air quality impacts that may be caused by traffic due to GCC coal mine operations on the La Plata County Road (CR) 120. Since 1974, Trinity is recognized as an expert consulting services providing firm for air quality impact analyses. On behalf of Trinity, I reviewed the initial air quality impact analysis performed by MMA on December 15, 2015 and submitted a response letter on January 29, 2016 noting that MMA's analysis over predicts air quality impacts. MMA provided a response letter on March 14, 2016. I also reviewed MMA's March 14, 2016 letter and am submitting this supplemental response letter reemphasizing that MMA's analysis over predicts air quality impacts and there is no need for me to revise my initial January 29, 2016 analysis.

GCC and the La Plata County have reached a road improvement agreement, which was approved by the Planning Commission on April 14, 2016. Under this agreement, GCC will pave CR 120 in various phases as well as limit the maximum number of trucks in a single day. I have performed additional calculations and analyses for this road agreement and this supplemental letter includes the air quality impacts from the proposed road improvements and daily truck restrictions.

I am pleased to provide this supplemental letter summarizing a review of the traffic-related (including personal, delivery, and coal transport vehicles) air quality impacts on the residents along the northern portion of CR120 between State Highway 140 and the GCC facility entrance. As discussed in this letter:

- Current impacts from the unpaved road segments are already well below the applicable standard (17% of the standard).
- Current impacts due to proposed paving and traffic restrictions will provide further benefits to air quality and overall impacts will decrease to 6% of the applicable standard in Phase V and 11% of the applicable standard in Phase I.

# 1. BACKGROUND

The Law Offices of Luke J. Danielson, P.C. (Danielson) and its client Crosscreek Ranch, LLC (CC Ranch) hired MMA to perform an air dispersion modeling analysis. MMA performed an analysis using the United States Environmental Protection Agency (U.S. EPA) accepted methodologies to quantify air quality impacts on local residences due to the traffic caused by GCC operations. The December 2015 and March 2016 MMA letters assert that the traffic due to GCC coal mine operations on CR120 is causing violations of the primary short term National Ambient Air Quality Standards (NAAQS) for particulate matter less than ten micron ($PM_{10}$) on the local resident/structure located along an unpaved section of road. For model inputs, MMA used default parameters as provided by U.S. EPA's AP-42 Chapter 13.2, Introduction to Fugitive Dust Sources, and vehicle specific information as provided in Roadrunner Engineering, LLC Traffic Impact Assessment (TIA) prepared on July 31, 2015.[1] The MMA report concluded that $PM_{10}$ NAAQS exceedances occur at five local resident/structure locations along the 3.9 mile stretch due to the unpaved road segment associated with 2014 production and vehicles associated with "peak" production at 1.3 MM tons of coal per year.

MMA submitted a supplement response letter to their initial December 2015 report on January 29, 2016. The January 2016 supplement letter concluded that the traffic due to GCC coal mine operations on CR120 was not causing a violation of the NAAQS in 2010, when production at the facility was approximately 458,550 tons or at 92 coal truck trips a day. Modeling methodologies utilized by MMA are the same between the December 2015 report and the January 2016 Supplement letter; the only update between these two reviews was the amount of traffic (personal, delivery, and coal transport vehicles) traveling on CR 120.

MMA also submitted a letter on March 14, 2016 providing responses to Trinity's January 29, 2016 letter. MMA agreed with Trinity's analysis with the exception of factors used in emission calculations including silt content, natural mitigation, and control from watering. Trinity does not agree with MMA's March 14, 2016 responses and does not intend to revise the air quality impact analysis performed on January 29, 2016. This letter provides supplemental responses to MMA and rationale for not revising my initial analysis.

Additionally, as of April 14, 2016, GCC and the La Plata County have reached a road agreement, which has been approved by the Planning Commission. This road agreement requires paving and other improvements of CR 120 in various phases (Phase I starting immediately and Phase V ending in 2022) as well as restrictions on the maximum number of daily coal trucks from 96 to 144 trucks per day. I have performed additional analyses analyzing impacts of the proposed road agreement. The results of the additional analyses are also provided in this letter.

Please note that most of my January 29, 2016 conclusions remain unchanged. This supplemental letter is prepared to provide:

- Responses to MMA March 14, 2016 letter: why I disagree with MMA's March 14, 2016 comments, why I still believe that MMA over predicts air quality impacts, and why have I not revised my initial January 29, 2016 analysis demonstrating that GCC coal mining operations do not cause any violations of $PM_{10}$ 24-hour NAAQS.
- Results of additional analyses: analyzing impacts of the proposed road agreement between the County and GCC.

[1] Roadrunner Engineering, LLC, "GCC Energy LLC King II Coal Mine County Road 120 La Plata County, Colorado Traffic Impact Assessment," updated November 19, 2015.

# 2. RESPONSES TO MMA'S MARCH 14, 2016 LETTER

MMA and Trinity agree on most of the modeling methodologies, which are used to predict air quality impacts on the receptors, including the depletion option. As noted in my initial analysis, the U.S. EPA released AERMET Version 12345 which included a beta option, ADJ_U*, which allows the friction velocity (u*) to be adjusted. Since the promulgation of this option, the U.S. EPA and several state agencies have allowed use to ADJ_U* options for the modeling analysis.[2] Therefore, consistent with my initial analysis and comments, I recommend continued use of this option as well as the depletion option to allow more representative and accurate modeling results since the U.S. EPA as well as CDPHE approve use of these options for the $PM_{10}$ NAAQS compliance demonstration.

MMA and Trinity also agree on most of the emission calculation methodologies except for the inputs used in the emission factor, which are used to calculate emissions from the unpaved road segment. These inputs include silt content, dust mitigation control, and natural mitigation.

## 2.1 MMA Over-Predicts Emission Factor and $PM_{10}$ Emissions

As discussed in my initial analysis, $PM_{10}$ emissions associated with the vehicle traffic on the unpaved road are determined using the following equation from the U.S EPA AP-42 Chapter 13.2.2 for Unpaved Roads:

$PM_{10}$ Emissions (lbs/day) = Emission Factor (lbs/VMT) * Vehicular Travel (VMT/day) * (1- control applied (%))

$$\text{Emission Factor } (PM_{10})^{3} = 1.8\,(s/12)\,(S/30)^{0.5} / (M/0.5)^{0.2} - C$$

where: Emission Factor ($PM_{10}$) = uncontrolled $PM_{10}$ emission factor (lb/Vehicle Mile Traveled [VMT])
s = surface material silt content (%)
S = average vehicle speed (miles per hour [mph])
M = surface material moisture content (%)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (0.00047 lb/VMT)

It is very easy to over-predict emissions using inputs, which are not representative to the site. Table 1 summarizes MMA calculated emission factor and uncontrolled emission rates. If all the fugitive dust is assumed to be captured, Table 1 below also shows a hypothetical number of trucks required every month to transport this fugitive dust.

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[2] The U.S. EPA Modeling Clearing Information Storage House and Retrieval System: https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.home

[3] AP-42 Chapter 13.2.2 (November 2006) Equation 1b.

**Table 1. MMA Calculated Emission Factor and Uncontrolled $PM_{10}$ Fugitive Dust Emissions**

| | Emission Factor lb/VMT | Uncontrolled $PM_{10}$ Emissions (lb/day) | Uncontrolled $PM_{10}$ Emissions (ton/month) | Potential Dust Hauling (truck/month) | Uncontrolled $PM_{10}$ Emissions (ton/year) |
|---|---|---|---|---|---|
| 2014 Traffic Level | 1.277 | 2,701 | 40 | 1.5 - 2 | 493 |
| Peak Traffic Level | 1.266 | 3,283 | 49 | 2 – 2.5 | 599 |
| 2010 Traffic Level | 1.277 | 1,108 | 17 | 0.5 - 1 | 202 |

As shown above in Table 1, approximately one truck per month would have been required to haul all the fugitive dust predicted by MMA. By this rate, all of the gravel or unpaved road on CR 120 would have disappeared by this time. Also, total uncontrolled annual emissions of $PM_{10}$ range from 202 to 599 tons per year, which significantly over-predicts the unpaved road emissions compared with any other large mining or other large fugitive dust sources. Colorado Department of Public Health and Environment (CDPHE) considers any source with >100 tons per year of $PM_{10}$ emissions as a major source. Based on my previous experience and preliminary review of other similar sources, most similar type of operations with unpaved road emissions are not regulated as a major source by CDPHE. This further confirms my statement that MMA's method over-predicts total uncontrolled emissions from CR 120 because of inaccurate inputs.

Therefore, in order to develop accurate emission factor and predict fugitive $PM_{10}$ emissions appropriately, it is important to select appropriate inputs to the emission calculation methodology. Each of important inputs are addressed in the following sections.

### *2.1.1 Silt Content*

As described in the previous reports submitted by Trinity and MMA, the best source of information for silt content comes from actual road surface sampling during dry uncontrolled conditions. In the absence of site-specific silt sampling data, published default silt values are used to determine emissions from CR 120. MMA has not provided sufficient support for their recommendations of updating the silt content used in my analysis. I have used a silt content of 1.5%, which is specific to the state of Colorado public roadway as identified by the U.S. EPA in preparation for the Nation Emission inventory.[4] As listed in this reference, public roadway silt content ranges from 1.5 – 7.2%. MMA uses a silt content of 8.4%, which is an average of haul road in and out of a pit at various coal mines (not in Colorado but in other states). Use of this silt content is not at all representative. If U.S. EPA's data provides a Colorado-specific public roadway silt content, I suggest use of that value versus an average haul road in and out of a coal pit since soil characteristics and soil silt content varies from state to state. GCC does not operate a coal pit. Further, no state in the U.S has a silt content as high as 8.4% for the public unpaved roads, indicating that 8.4% silt content is much too high for characterizing this roadway. I will continue to use 1.5% silt content to determine emission rates for the unpaved road segment of CR 120.

This is one of the reason for the MMA's over-predictions of uncontrolled fugitive emissions from CR 120 unpaved road segment. MMA should revise this value to 1.5% or 1.8% as a Colorado-specific value listed by the U.S. EPA.

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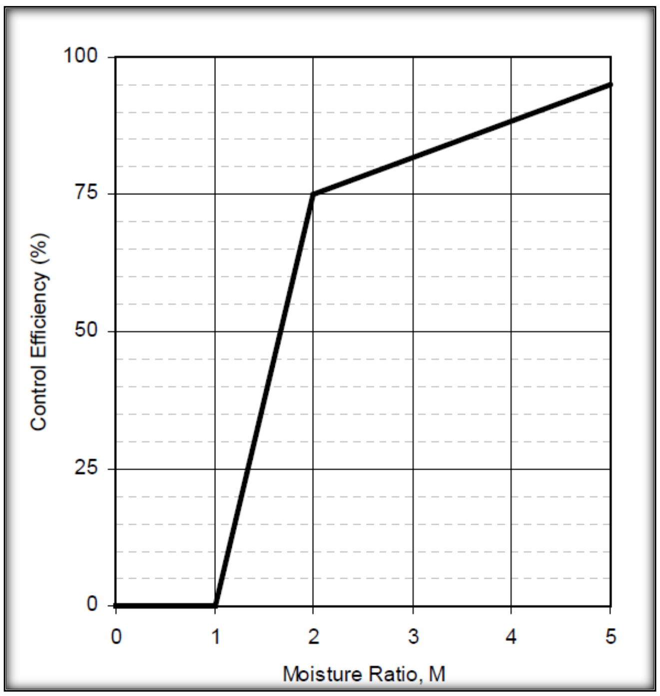
[4] AP-42 Chapter 13.2.2, Background Information: http://www3.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html

### *2.1.2 Dust Mitigation Control*

GCC waters the roadways on an average of three times per day and approximately 4,000 gallons (gal) per load. The water trucks spray water near the homes and buildings along the unpaved roadway segment. Watering does not need to occur on rainy days when natural mitigation occurs. Assuming a dry day, 12,000 gal of water is applied to the 3.9 mile stretch of unpaved road (conservative road segment, actual segment can be smaller). With an average road width of 7.7 yards (yds), this means that an average of 0.23 gal/yd$^2$ is applied to the roadway over the course of a day. Typically, this level of watering application equates to a day with greater than 0.01 inches of rain or doubling the moisture ratio of the road, or providing at least additional 20% control, as noted in my previous analysis (Section 6.1, Page 7, natural control discussion). If MMA contends that the natural rainy day control cannot be applied to short-term impact analysis, then, MMA should increase their watering control efficiency from 55% to 75% reflecting the water application by GCC. It is to be noted that other agencies have also allowed the use of higher efficiencies.[5]

As shown below in Figure 1, if moisture ratio is doubled, a control efficiency of 75% should be used.

**Figure 1. U.S. EPA's Watering Control Effectiveness Chart for Unpaved Road Surfaces[6]**




The MMA report includes guidance from the WRAP Fugitive Dust Handbook, that applying water twice daily provides a control efficiency of 55%.[7] The WRAP Fugitive Dust Handbook further explains that watering alone may provide up to 74% in the Fugitive Dust Control Measures Applicable for the WRAP Region Table, which is consistent with the above U.S. EPA chart. Based on GCC's frequent use of water spray and associated

[5] Per https://www.azdeq.gov/environ/air/permits/download/rcc/rosemont_emissions55223-1-13.pdf

[6] AP-42 Chapter 13.2.2 (November 2006) Figure 13.2.2-2.

[7] WRAP Fugitive Dust Handbook prepared by Countess Environmental, September 7, 2006.

enhancement of moisture ratio for the unpaved road surface, I would expect a control level of more than 55% due to watering alone. It is very reasonable to use a control efficiency of 75% for the watering alone.

The county currently also applies a dust suppressant periodically to CR120; it is expected to provide additional level of dust control upto 84% as noted by the U.S. EPA. In my previous analysis, I have used a control efficiency of 84%, which is very reasonable considering frequent use of water and chemical suppressants. Considering twice daily watering and guidance from WRAP and AP-42, I recommend that a control efficiency of 84% be used, which is a representative of control mitigation measures used by GCC, and MMA should revise its control efficiency from 55% to 84%.

This is another reason why I believe MMA over-predicts total fugitive $PM_{10}$ emissions from the CR 120 and should apply an appropriate control efficiency.

#### *2.1.3. Natural Mitigation*

MMA recommended that Trinity should not use natural mitigation control factor of 20% for 74 days per year of rainy or snow days with greater than 0.01 inches of precipitation for the 24-hour averaging period NAAQS compliance demonstration. This natural mitigation factor provides an additional 20% control or a total control efficiency of 75% for watering or rainy days. However, as discussed above, GCC applies water on the days when it is not rainy. If MMA disagrees with the use of natural mitigation control factor for non-rainy days, then MMA should increase control efficiency in their analysis.

I continue recommending use of a control efficiency of a minimum of 75% for watering alone and a total control efficiency of 84% for watering and chemicals if natural mitigation control efficiency is not used.

### 2.2 Updated Modeling Results for my January 2016 Analysis

As discussed above sections, I disagree with MMA that I need to revise silt content or control efficiency. Assuming no considerations for natural mitigation factor and using a minimum control efficiency of 75% as discussed above, I have performed a revised modeling analysis as provided in my January 2016 letter. All other modeling parameters and values for emission calculations remain the same. While these changes will slightly increase the modeled results for the peak traffic because the emission rate has been increased, but the modeled results are still well below the applicable NAAQS at 24.8 $\mu g/m^3$ (17% of NAAQS) compared to the January 2016 value of 12.12 $\mu g/m^3$ (8% of NAAQS).[8] Therefore, GCC is expected to demonstrate compliance with the 24-hour $PM_{10}$ NAAQS.

## 3. $PM_{10}$ NAAQS HAS A 24-HOUR AVERAGING PERIOD NOT AN HOURLY PERIOD

In this supplemental letter, I would also like to emphasize importance of the 24-hour averaging period for $PM_{10}$. A history of $PM_{10}$ NAAQS promulgated by the U.S. EPA is shown below in Figure 2.

The U.S. EPA selects an averaging period for a criteria pollutant to protect public health and environment. The Clean Air Act requires periodic review of the science upon which the standards are based and the standards themselves. Review of NAAQS level and associated averaging period is a lengthy process involving risk and exposure assessments to determine proper level and period. As shown below in the Figure 2, since 1971 till

[8] This result is the 6th highest day modeled between 2010 and 2014 at the Unknown Structure, i.e. highest modeled location.

today, the U.S. EPA has maintained an averaging period of 24-hour for $PM_{10}$. The U.S. EPA considers 24-hour averaging period to be protective of public health and environment.

Coal trucks traveling on CR 120 may cause some fugitive dust but that instantaneous dust creation itself may not cause damage to public health and environment. It is the total impact caused by the truck during a complete 24-hour averaging period. I feel it is important for the neighbors to understand this concept because during the Planning Commission Public Hearings, several neighbors displayed pictures showing truck and fugitive dust. This level of instantaneous dust has to be maintained for the whole 24-hour averaging period in order to cause any potential public health related issues.

**Figure 2. U.S. EPA's History of PM NAAQS Promulgation**[9]

**Table 1-1. Summary of National Ambient Air Quality Standards Promulgated for Particulate Matter 1971-2006**[6]

| Final Rule | Indicator | Ave. Time | Level | Form |
|---|---|---|---|---|
| **1971 (36 FR 8186)** | **TSP - Total Suspended Particles** (≤ 25-45 μm) | **24-hour** | **260 μg/m³** (primary) **150 μg/m³** (secondary) | Not to be exceeded more than once per year |
| | | **Annual** | **75 μg/m³** (primary) | Annual average |
| **1987 (52 FR 24634)** | **$PM_{10}$** | **24-hour** | **150 μg/m³** | Not to be exceeded more than once per year on average over a 3-year period |
| | | **Annual** | **50 μg/m³** | Annual arithmetic mean, averaged over 3 years |
| **1997 (62 FR 38652)** | **$PM_{2.5}$** | **24-hour** | **65 μg/m³** | 98th percentile, averaged over 3 years |
| | | **Annual** | **15 μg/m³** | Annual arithmetic mean, averaged over 3 years[7] |
| | **$PM_{10}$** | **24-hour** | **150 μg/m³** | Initially promulgated 99th percentile, averaged over 3 years; when 1997 standards were vacated, the form of 1987 standards remained in place (not to be exceeded more than once per year on average over a 3-year period) |
| | | **Annual** | **50 μg/m³** | Annual arithmetic mean, averaged over 3 years |
| **2006 (71 FR 61144)** | **$PM_{2.5}$** | **24-hour** | **35 μg/m³** | 98th percentile, averaged over 3 years |
| | | **Annual** | **15 μg/m³** | Annual arithmetic mean, averaged over 3 years[8] |
| | **$PM_{10}$** | **24-hour** | **150 μg/m³** | Not to be exceeded more than once per year on average over a 3-year period |

[9] The U.S. EPA: https://www3.epa.gov/ttn/naaqs/standards/pm/s_pm_history.html

# 4. ADDITIONAL ANALYSES FOR PAVING CR 120 DUE TO THE APRIL 2016 ROAD AGREEMENT BETWEEN GCC AND THE LA PLATA COUNTY

GCC and the La Plata County entered into a road improvement agreement, which was approved by the Planning Commission on April 14, 2016. This agreement requires paving and other improvements on CR 120 in various phases (Phase I starting immediately in 2016 and Phase V ending in 2022). In addition to the paving, GCC also proposed to restrict truck traffic for various phases. Table 2 describes the limited traffic based on the phased paving of CR 120. The various phases of the project are identified below in Table 2.

**Table 2. Phased Transport Traffic Levels**

| Applicable Time Period | Avg. # Outgoing Trucks/Day/Month (Sundays excluded) | Max. # Outgoing Trucks/Single Day |
|---|---|---|
| Project approval up to and including date of Preliminary Acceptance of Phase I, II and Phase III | 80 | 96 |
| Commencement of Phase IV up to and including date of Preliminary Acceptance of Phase V | 100 | 120 |
| Subsequent to Preliminary Acceptance of Phase V | 120 | 144 |

In my January 2016 analysis, a peak coal truck traffic of 312 transport vehicle trips per day was used. As a result of the road agreement, I have now performed additional analyses using coal truck traffic of 192 trips/day for Phase I (96 vehicles * (1 trip to facility + 1 trip out of facility)) and 288 truck trips/day once the road is entirely paved in Phase V. Based on this agreement, I have performed emission calculations for paving CR 120 and performed additional modeling analyses to obtain a maximum modeled concentration to compare against the NAAQS.

## 4.1 Paved Road Emission Calculations

Since portions of the road are being paved during different phases of the project, the paved segment of the road will be modeled as such. Per the U.S EPA AP-42 Chapter 13.2.1 for Paved Roads, $PM_{10}$ emissions associated with the vehicle traffic on the paved road are determined using the following equation:

$$\text{Emissions (lbs/day)} = \text{Emission Factor (lbs/VMT)} * \text{Vehicular Travel (VMT/day)}$$
$$\text{Emission Factor } (PM_{10})^{10} = 0.0022 * sL^{0.91} * W^{1.02} * (1-P/4N)$$

where: Emission Factor ($PM_{10}$) = uncontrolled $PM_{10}$ emission factor (lb/Vehicle Mile Traveled [VMT])
sL = surface material silt content (g/m$^2$)
W = average vehicle weight (tons)
P = number of days per year area receives greater than 0.01 inches of precipitation
N = number of days per precipitation averaging period

The road surface silt content is determined by AP 42 Table 13.2.1-2 Ubiquitous Baseline Silt Loading Default Values. A value of 0.6 g/m$^2$ is used for a roadway that has traffic of less than 500 vehicles per day. Increasing the surface material silt content will increase the overall expected emission factor. The emission factor is

[10] AP-42 Chapter 13.2.1, Equation 2.

multiplied by the number of vehicle miles traveled to determine the overall emission rate. In the December 2015 analysis, MMA used a silt content of 4, which again is not representative of baseline condition of a typical public road. MMA should revise that content and use a baseline condition of 0.6

The average vehicle weight is consistent with the MMA report methodology using a weighted average of all vehicle types using the road. Review of the meteorological data periods used for this analysis, 2010-2014, an average of 74 days/year experience precipitation of greater than 0.01 inches. Emission calculations are provided in Attachment 1. Note the length of travel on the paved road is different for different phases of the project.

## 4.2 Traffic Count for Various Phases

In the initial phases, CR 120 will be a combination of unpaved and paved road segments. Emission calculation parameters including silt content, natural mitigation (rainy days), and mitigation control efficiency for both unpaved and paved segments have been previously discussed. Additionally, the number of vehicles traveling over the 3.9 mile stretch of unpaved road will be reduced due to the road agreement. Since GCC has agreed to a lower number of coal transport vehicles/day, it is expected that the number of delivery and personal vehicles will also reduce. Trinity has used the same method as MMA's January 2016 supplement letter to determine the number of personal cars/trucks and delivery vehicles per day assuming a transport count of 96. This method assumes that the ratio of personal vehicles to transport vehicles and delivery vehicles to transport vehicles in 2014 will remain consistent at all times.

**Table 3. Traffic Counts for Phased Paving Project**

| Applicable Time Period | Maximum Transport Trips/Day | Maximum Delivery Trips/Day | Maximum Cars/trucks Trips/Day |
|---|---|---|---|
| Project approval up to and including date of Preliminary Acceptance of Phase 1, 2 and Phase 3 | 192 | 9 | 259 |
| Commencement of Phase 4 up to and including date of Preliminary Acceptance of Phase 5 | 240 | 12 | 323 |
| Subsequent to Preliminary Acceptance of Phase 5 | 288 | 14 | 388 |

Detailed emission calculations are provided in Attachment 1. Using the updated traffic counts, emissions for various unpaved and paved road segments are calculated and summarized in Table 4 below.

**Table 4. Total Roadway Emissions During Project Phases**

| Emissions | Post Phase I | Post Phase II, III | Post Phase IV | Post Phase V |
|---|---|---|---|---|
| Unpaved Road Segment Controlled Emission Rate (lbs/day) | 76 | 47 | 59 | 0 |
| Paved Road Segment Emission Rate (lbs/day) | 9 | 19 | 24 | 53 |
| Total Emissions (lbs/day) | 85 | 66 | 83 | 53 |

### 4.3. Time Cards

80% of the traffic occurs from 6 AM – 10 PM and remaining traffic occurs during 10 PM – 6 AM. Therefore, I have included time cards reflecting this traffic level in the modeling analysis.

## 5. REVISED RESULTS

Based on all the analyses discussed in the previous section, I performed additional air quality impact analysis. Consistent with the MMA report, the maximum 6$^{th}$ High (H6H) 24 hour ground level concentration for each residence along the unpaved road is identified in Table 5. The current analysis evaluates the conditions only for the Phase I and Phase V as described in section 5 of this letter. Since these two phases represent two worst-cases, there is no need to review intermediate phases. This result is the 6$^{th}$ highest day at the specified location for Phase I and Phase V scenarios.

As shown below in Table 5, all modeled concentrations are well below the applicable $PM_{10}$ NAAQS, with the highest modeled concentration approximately11% of the NAAQS in Phase –I and approximately 6% of the NAAQS in Phase V.

**Table 5. Maximum $PM_{10}$ 6$^{th}$ High 24-hr Average Concentrations after Phase I and Phase V**

| Residential Receptor | X Coordinate (m) | Y Coordinate (m) | Modeled Concentration (µg/m$^3$) Phase I | Phase I Below NAAQS of 150? (% of NAAQS) | Modeled Concentration (µg/m$^3$) Phase V | Phase V Below NAAQS of 150? (% of NAAQS) |
|---|---|---|---|---|---|---|
| #1 | 755,538.0 | 4,126,356.7 | 16.87 | Yes (11%) | 8.6 | Yes (6%) |
| # 2 | 757,710.5 | 4,127,584.1 | 15.96 | Yes (11%) | 8.5 | Yes (6%) |
| # 3 | 758,177.6 | 4,127,649.3 | 9.16 | Yes (6%) | 8.1 | Yes (5%) |
| # 4 | 758,764.2 | 4,127,747.1 | 4.23 | Yes (3%) | 6.7 | Yes (4%) |
| # 5 | 759,807.0 | 4,127,888.3 | 1.85 | Yes (1%) | 2.3 | Yes (2%) |

As shown above in Table 5, GCC expects to further reduce air quality impacts from current level of 24.8 μg/m$^3$ (17% of NAAQS) to 16.87 μg/m$^3$ (11% of NAAQS) in Phase I and to 8.6 μg/m$^3$ (6% of NAAQS) due to paving and truck restrictions on CR 120. All of the maximum modeled concentrations are well below the applicable 24-hour $PM_{10}$ NAAQS of 150 μg/m$^3$.

If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at (949) 567-9880, extension 101.

Sincerely,

Vineet Masuraha
Regional Director

Attachment

cc: Ms. Gina Nance, GCC Energy, LLC (Hesperus, CO)

# ATTACHMENT 1

## Emission Calculations for Phased Paving of CR 120

**Table A-1. Public Unpaved Road Emission Calculation Comparison**

| Parameter | Description | Post Phase I | Post Phase II, III | Post Phase IV | Post Phase V |
|---|---|---|---|---|---|
| C (lb/VMT) | Constant [1] | 0.00047 | 0.00047 | 0.00047 | 0.00047 |
| s (%) | Silt Content [2] | 1.5 | 1.5 | 1.5 | 1.5 |
| M (%) | Moisture Content [1] | 0.50 | 0.50 | 0.50 | 0.50 |
| S (mph) | Mean Vehicle Speed [3] | 30.83 | 30.83 | 30.83 | 30.83 |
| Calculated Emission Factor (lbs/VMT) [1] | | 0.228 | 0.228 | 0.228 | 0.228 |
| Cars/Trucks per Day [4] | | 259 | 259 | 323 | 388 |
| Delivery Vehicles per Day [4] | | 9 | 9 | 12 | 14 |
| Transports [4] | | 192 | 192 | 240 | 288 |
| Distance Traveled (miles) [5] | | 2.9 | 1.8 | 1.8 | 0 |
| Uncontrolled Emission Rate (lbs/day) | | 304 | 188 | 236 | 0 |
| Control [6] | | 75% | 75% | 75% | 75% |
| Controlled Emission Rate (lbs/day) | | 76 | 47 | 59 | 0 |
| Modeled Emission Rate Per Source (g/s) | | 7.29E-04 | 4.58E-04 | 5.73E-04 | 0.00E+00 |

1. Constants are default values as determined by AP-42 Chapter 13.2.2. The emission factor is determined using AP-42 Chapter 13.2.2 Equation 1b and Equation 2.

2. Silt content is determined by AP 42 Section 13.2.2 Unpaved Roads - Related Information, Unpaved Road Surface Material Silt Content Values Used in the 1999 NEI by State.

3. GCC Energy has a current policy requiring haul trucks, on gravel sections of the county road, to travel at a maximum speed of 25 mph. All other traffic is expected to average 35 mph, road speed limit. Based on agreement between GCC and the county, there will be a posted speed limit for trucks of 25 mph.

4. GCC has agreed with the county to limit transport traffic to an average of 80 transports per day with a maximum of 96 transports per day. The number of vehicles will increase as the project continues through phases. After Phase IV of the project, an average of 100 transports/day and a max of 120 transports per day will be allowed. After phase V, an average of 120 transports/day and a max of 144 transports per day will be allowed. The other vehicle traffic counts is based on a ratio of planned transport and historical 2014 transport from the King II Coal Mine Traffic Impact Assessment (TIA).

5. Google Earth map and driving directions was used to determine an unpaved road length. Road length for unpaved is changing through the phases since portions of the road are being paved. Phase IV does not include any paving in the previously unpaved areas.

6. GCC waters the unpaved road 3 times per day, for an average of 12,000 gallons/day being applied to the 3.9 mile stretch with most of the water being sprayed near homes. AP-42 Figure 13.2.2-2 shows a control efficiency of 75% if the moisture ratio of the soil has been doubled. With 12,000 gallons/day or 0.23 gallons/yd $^2$/day, the roads should be showing at least double moisture content.

**Table A-2. Paved Road Emission Calculation**

| Parameter | Description | Post Phase I | Post Phase II, III | Post Phase IV | Post Phase V |
|---|---|---|---|---|---|
| sL ($g/m^2$) | Road Surface Silt Loading [1] | 0.6 | 0.6 | 0.6 | 0.6 |
| $W_1$ (tons) | Cars/Trucks Weight [2] | 2.5 | 2.5 | 2.5 | 2.5 |
| $W_2$ (tons) | Delivery Vehicle Weight [2] | 10 | 10 | 10 | 10 |
| $W_3$ (tons) | Transport Weight [2] | 30 | 30 | 30 | 30 |
| W (tons) | Average Vehicle Weight [3] | 14.13 | 14.13 | 14.13 | 14.13 |
| P (days) | Wet Days/yr [4] | 74 | 74 | 74 | 74 |
| Calculated Emission Factor (lbs/VMT) [5] | | 0.020 | 0.020 | 0.020 | 0.020 |
| Cars/Trucks per Day [6] | | 259 | 259 | 323 | 388 |
| Delivery Vehicles per Day [6] | | 9 | 9 | 12 | 14 |
| Transports [6] | | 192 | 192 | 240 | 288 |
| Distance Traveled (miles) | | 1 | 2.1 | 2.1 | 3.9 |
| Emission Rate (lbs/day) | | 9 | 19 | 24 | 53 |
| Modeled Emission Rate Per Source (g/s) | | 2.32E-04 | 4.72E-04 | 5.90E-04 | 3.68E-04 |

1. Road surface silt content is determined by AP 42 Table 13.2.1-2 Ubiquitous Silt Loading Default Values.

2. Truck weights are assumed to be consistent with the MMA Report.

3. The average truck weight is determined by a weighted average of all vehicles traveling the paved road length.

4. Per data from National Climatic Data Center (NCDC) for Durango airport, CO. Available at http://www1.ncdc.noaa.gov/pub/data/normals/1981-2010/products/station/USC00052441.normals.txt.

5. Constants are default values as determined by AP-42 Chapter 13.2.1. The emission factor is determined using AP-42 Chapter 13.2.1 Equation 2.

6. GCC has agreed with the county to limit transport traffic to an average of 80 transports per day with a maximum of 96 transports per day. The number of vehicles will increase as the project continues through phases. After Phase IV of the project, an average of 100 transports/day and a max of 120 transports per day will be allowed. After phase V, an average of 120 transports/day and a max of 144 transports per day will be allowed. The other vehicle traffic counts is based on a ratio of planned transport and historical 2010 trasnport from the King II Coal Mine Traffic Impact Assessment (TIA).