LAW OFFICES OF
LUKE J. DANIELSON, P.C.

219 North Iowa Street, Suite A Gunnison, Colorado 81230 USA
www.ldanielsonlaw.com p: (970) 641-4605 f: (970) 641-4439

Luke J. Danielson, luke@ldanielsonlaw.com

Mr. Daniel Murray, AICP
Senior Planner
La Plata County
1060 E. 2nd Ave.
Durango, CO 81301
daniel.murray@co.laplata.co.us

Ms. Victoria Schmitt, PE
La Plata County
1060 E. 2nd Ave.
Durango, CO 81301
970.382.6438
victoria.schmitt@co.laplata.co.us

By email and United States Mail

January 29, 2016

GCC - King II Coal Mine Class II permit #2012- 0089
Air Quality and Dust Mitigation

Dear Daniel and Victoria:

I enclose a supplement to our air modeling study. It shows that the dangerous levels of air pollution shown in our original modeling study would largely if not entirely be mitigated by reducing truck traffic to the 2010 level.

The conclusion that we draw is that truck traffic should be limited to the 2010 level immediately and without delay, as a way to protect public health from a clearly demonstrated danger. I am convinced that the County has ample legal authority to protect public health against identified hazards. It is time to act, in my opinion.

I would like to talk with you and Adam about this and other issues and hope we will have the chance to do that.

I am sending immediately a copy of this study to GCC's attorneys as a sign of our desire to share relevant information with them.

Sincerely,

Luke J. Danielson

cc: Crosscreek Ranch
SW CO Advocates
Jeff Robbins, Esq.
D. Adam Smith, Esq.

McVEHIL-MONNETT ASSOCIATES, INC.
Air Quality ▪ Environmental Management

January 29, 2016

Mr. Luke J. Danielson
Law Offices of Luke J. Danielson, P.C.
219 N. Iowa Street
Gunnison, CO 81230

RE: Supplement #1 to the La Plata County Road 120 Air Quality Modeling Analysis,
MMA Project No. 2727-15

Dear Mr. Danielson:

This supplement to our previous modeling analysis is provided in response to your request to quantify short-term (24-hour) impacts of particulate matter less than or equal to 10 micrometers in diameter (PM_{10}) from resuspended dust generated by traffic on the northern portion of La Plata County Road 120. The methods employed in this supplemental analysis are the same as those described in our December report[1]; however, this effort provides modeled impacts from the estimated traffic level that would have occurred during Year 2010. As before, modeling was performed using both the default model settings as well as the adjust u* option. Please refer to the December report for specifics on the dispersion model and a discussion of the adjust u* option.

The traffic level in Year 2010 was estimated based on an average annual production rate of 458,550 tons at GCC during the period of August 1, 2003 through July 31, 2010.[2] Coal transport truck traffic was estimated at 92 one-way passes per day (7 days per week).[3] Other mine-related traffic passes (fuel/delivery trucks and employee cars/trucks) were scaled down from the Year 2014 traffic level provided in Table 6 of Roadrunner Engineering, LLC's Traffic Impact Assessment[4]. These other mine-related traffic passes were scaled in proportion to the number of transport truck passes in Year 2010 versus Year 2014 (ratio of 92 transport truck passes in 2010 to 225 passes in 2014). Fuel/delivery truck traffic in 2010 was calculated at 5 passes per day and employee traffic at 124 passes per day.

[1] McVehil-Monnett Associates, Inc. "La Plata County Road 120 Air Quality Modeling Analysis", December 15, 2015.
[2] Carl B. Mount. "Production rate; GCC Energy, LLC; King I and King II Mines; DRMS Permit No. C-1981-035", January 11, 2016.
[3] LSC Transportation Consultants, Inc. "King II Coal Mine Technical Memorandum", January 15, 2016.
[4] Roadrunner Engineering, LLC. "GCC Energy LLC, King II Coal Mine, County Road 120 Traffic Impact Assessment", revised July 31, 2015.

Summary of Results

Two scenarios were analyzed to generate predicted impacts from the Year 2010 traffic level. Scenario A utilized default model settings and 50% watering control of unpaved road dust while Scenario B included the adjust u* model option and 50% control. Both scenarios show lower impacts than the scenarios previously modeled for the December report. In fact, Scenario B predicts impacts at the five resident/structure locations closest to Country Road 120 will be less than the primary 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) of 150 $\mu g/m^3$. The results indicate the Year 2010 traffic level would be more protective to the health of these residents than the two traffic levels previously analyzed, since EPA's primary PM_{10} NAAQS is designed to protect public health.

As with our previous analyses, impacts from this analysis may be considered underestimated (i.e., other reasonable assumptions or methods may show higher concentrations) due to a number of factors. These factors include:

- The modeling did not include any background (i.e., local) traffic counts, but only the Year 2010 level of GCC traffic as described above. Concentrations would increase with additional background counts.
- The average traffic level was assumed to occur daily throughout the year. On days with higher than average traffic, model results may show increased concentrations.
- While we might propose to use the adjust u* model option if performing regulatory modeling for an industrial client, there is no guarantee that this option would be approved by the regulating agency. The adjust u* option generally predicts lower concentrations, and was a model setting included in this analysis.

Emission Calculations

Emission calculations were performed following methods detailed in EPA Publication AP-42[5]. AP-42 Sections 13.2.1 and 13.2.2 present the PM_{10} emission equations for paved and unpaved roads, respectively. Calculation details are provided below for both road sections.

Paved Section of County Road 120

The quantity of PM_{10} emitted from resuspension of loose material on the road surface due to vehicle travel on a dry paved road is estimated by the following equation:

$$E\,(PM_{10}) = 0.0022\,(sL)^{0.91}\,(W)^{1.02}$$ <Equation 1>

where: $E\,(PM_{10})$ = PM_{10} emission factor (pounds per vehicle mile traveled [lb/VMT])
sL = road surface silt loading (grams per square meter [g/m^2])
W = average vehicle weight (tons)

The "sL" term is conservatively estimated at 4 g/m^2 based on AP-42 Table 13.2.1-2. The average vehicle weight is calculated as follows:

[5] U.S. EPA. Compilation of Air Pollutant Emission Factors, Fifth Edition, Office of Air Quality Planning and Standards, Research Triangle Park, NC. January 1995.

92 transport truck trips @	30 tons
5 delivery truck trips @	10 tons
124 employee vehicle trips @	2.5 tons
221 total trips @	14.12 tons average

Substituting these values into Equation 1 above, the PM_{10} emission factor for this traffic level is 0.1156 lb/VMT. The following equation is then used to calculate daily PM_{10} emissions on the paved section of the road:

PM_{10} emissions (lb/day) = daily trips * road length (miles) * PM_{10} emission factor (lb/VMT)

Multiplying the number of daily trips (221) by the length of the paved section (2.554 miles) and the PM_{10} emission factor (0.1156 lb/VMT) yields 65.3 lb/day of PM_{10} emitted from the paved road.

Unpaved Section of County Road 120

The quantity of PM_{10} generated from vehicle travel on publicly accessible unpaved roads is estimated by the following equation:

$E(PM_{10}) = 1.8\,(s/12)\,(S/30)^{0.5} / (M/0.5)^{0.2}$ <Equation 2>

where: $E(PM_{10})$ = uncontrolled PM_{10} emission factor (lb/VMT)
s = surface material silt content (%)
S = average vehicle speed (miles per hour [mph])
M = surface material moisture content (%)

In the absence of site-specific surface material silt and moisture contents, default values are used for these parameters. The default silt content used in Equation 2 is 8.4%. This is a typical value for haul roads as presented in AP-42 Table 13.2.2-1. A default moisture content of 0.5% (from AP-42) is used in Equation 2. The average vehicle speed is calculated as:

92 transport truck trips @	25 mph
5 delivery truck trips @	35 mph
124 employee vehicle trips @	35 mph
221 total trips @	30.84 mph average

Substituting these values into Equation 2, the PM_{10} emission factor for this traffic level is 1.277 lb/VMT. Daily uncontrolled PM_{10} emissions from the unpaved section of the road are found by the following:

PM_{10} emissions (lb/day) = daily trips * road length (miles) * PM_{10} emission factor (lb/VMT)

The number of daily trips (221) multiplied by the length of the unpaved section (3.924 miles) and the PM_{10} emission factor (1.277 lb/VMT) results in 1,108 lb/day (uncontrolled) of PM_{10} emitted from the unpaved surface.

As in our previous analyses, a control factor of 50% was used to account for road dust mitigation resulting from periodic watering. Therefore, the controlled PM_{10} emissions from the unpaved section can be refined to 554 lb/day for the Year 2010 traffic level.

Discussion of Results

The two scenarios modeled for this supplemental analysis are:

Scenario A - Year 2010 traffic level, default model settings, 50% unpaved road dust control
Scenario B - Year 2010 traffic level, adjust u* option, 50% unpaved road dust control

As detailed in our December report, the model design concentration for 24-hour PM_{10} impacts using a five-year meteorological dataset is the highest sixth-high (H6H) concentration at each receptor. These H6H concentrations are then compared to EPA's primary 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$, which is designed to protect public health.

Figures 1 and 2 present H6H 24-hour PM_{10} concentration contours for Scenarios A and B, respectively. The figures also present the predicted concentrations at the five residents/structures nearest the road. The concentration ranges for each scenario at the five resident/structure locations are detailed below.

Scenario A (Figure 1) - H6H impacts range from 101 to 192 $\mu g/m^3$
Scenario B (Figure 2) - H6H impacts range from 66 to 115 $\mu g/m^3$

The H6H concentrations predicted for both scenarios at the five residents/structures are less than the concentrations in our previous analyses, and most concentrations are below the 24-hour PM_{10} NAAQS. Furthermore, the adjust u* option used in Scenario B reduces predicted impacts at all resident/structure locations to levels below the primary NAAQS, indicating this level of traffic would be more protective of public health than either of the traffic levels analyzed previously.

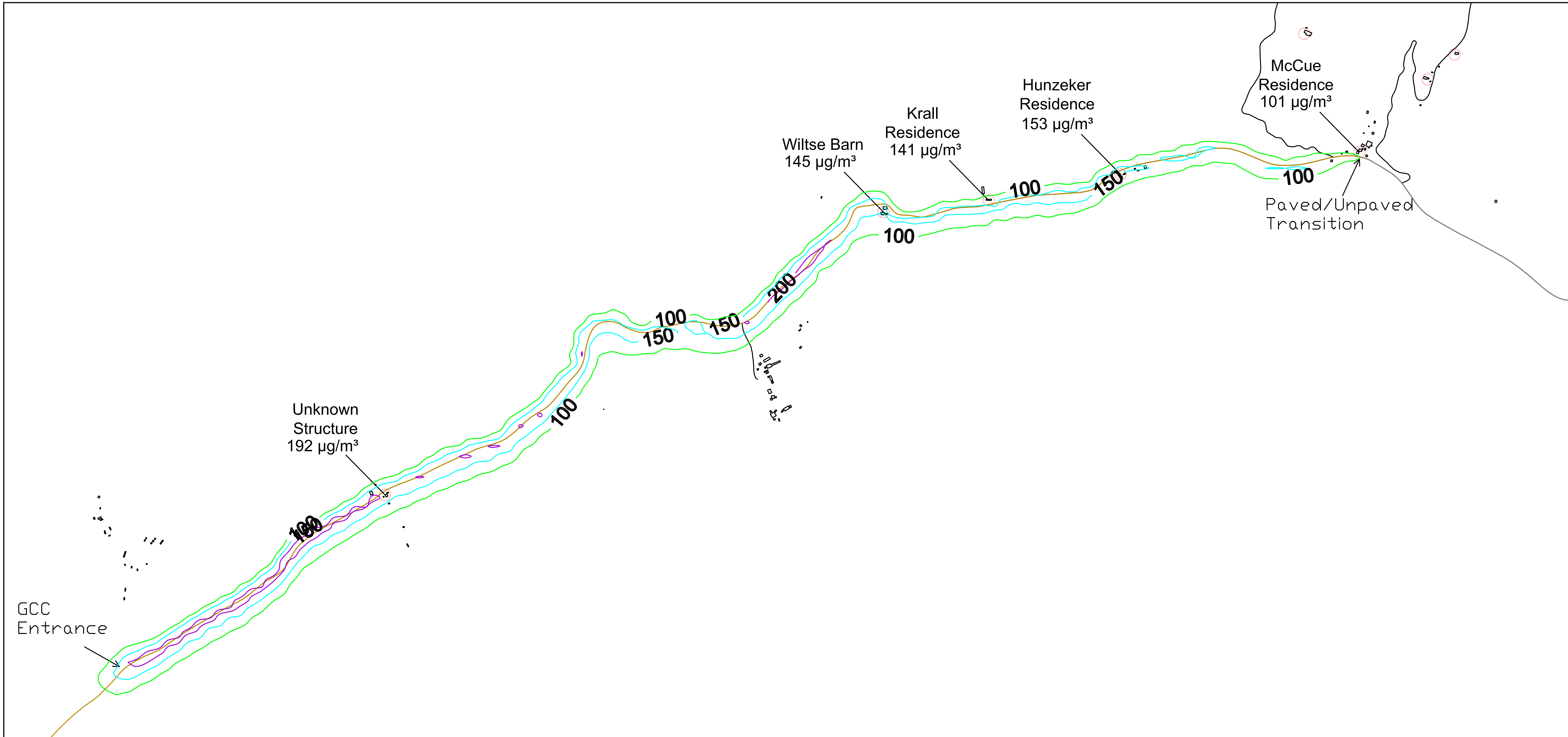
Please let us know if you have any questions.

Sincerely,

Gary Garman
McVehil-Monnett Associates, Inc.

Attached Figures

Figures



McVEHIL-MONNETT ASSOCIATES, INC.
Air Quality ▪ Environmental Management
9250 East Costilla Avenue, Suite 630
Greenwood Village, CO 80112

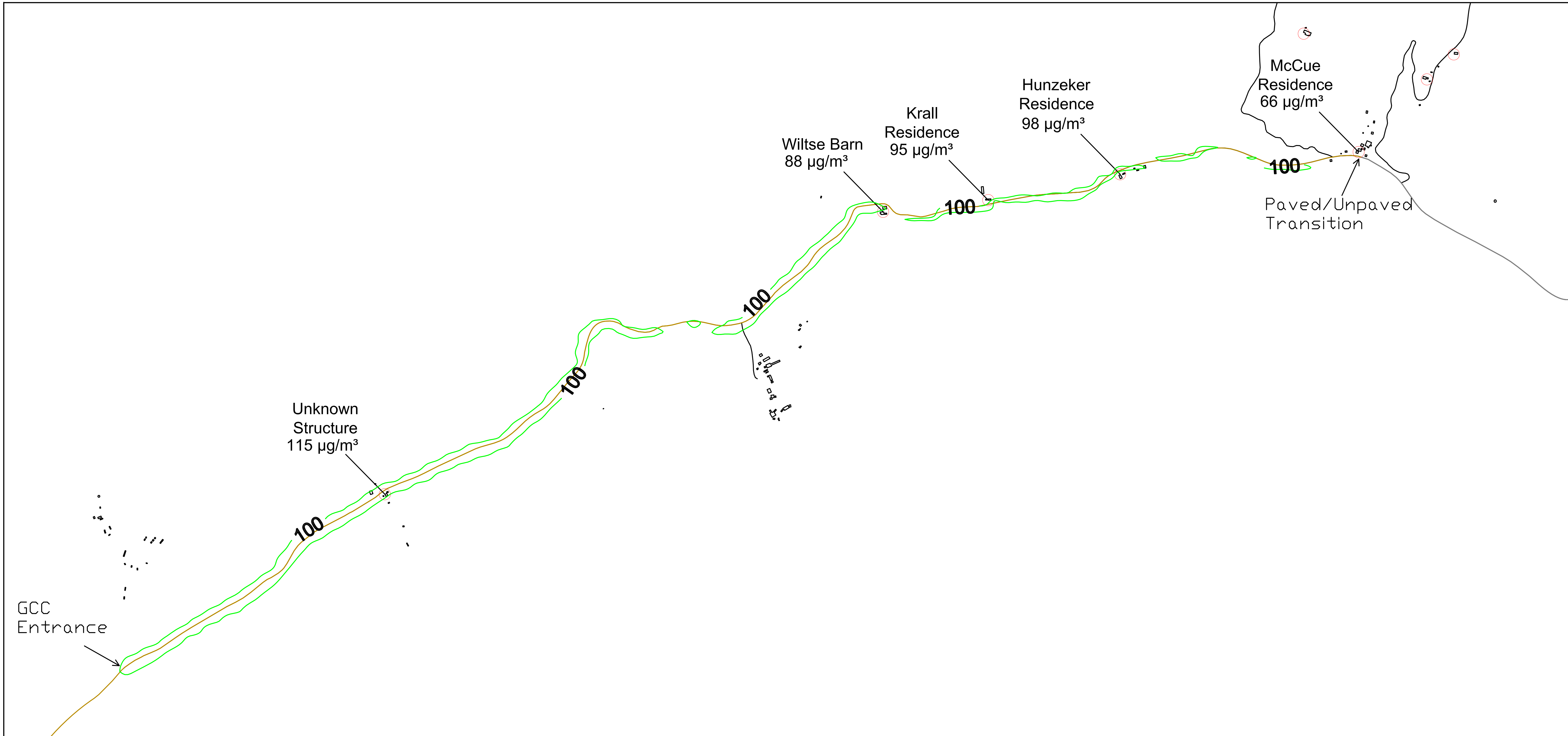
Figure 1
Highest 6th-High 24-Hour
PM_{10} Concentrations (µg/m³)
(Year 2010 traffic, default model settings with 50% road dust control)

PROJECT: 2727-15

DATE: 1/21/16

Resident/Structure Location
100 µg/m³ PM_{10} Contour
150 µg/m³ PM_{10} Contour
200 µg/m³ PM_{10} Contour

0 | 350 meters | 700 meters | 1,050 meters | 1,400 meters



McVEHIL-MONNETT ASSOCIATES, INC.
Air Quality ▪ Environmental Management
9250 East Costilla Avenue, Suite 630
Greenwood Village, CO 80112

Figure 2
Highest 6th-High 24-Hour
PM_{10} Concentrations (µg/m³)
(Year 2010 traffic, adjust u* with 50% road dust control)

PROJECT: 2727-15

DATE: 1/21/16

○ Resident/Structure Location

100 µg/m³ PM_{10} Contour

0 | 350 meters | 700 meters | 1,050 meters | 1,400 meters