

GCC ENERGY LLC

KING II COAL MINE

County Road 120

La Plata County, Colorado

TRAFFIC IMPACT ASSESSMENT



June 10, 2014

Revised and Updated July 31, 2015

Update November 19, 2015



GCC ENERGY LLC
KING II MINE OPERATIONS
County Road 120
LA PLATA, COLORADO

Traffic Impact Analysis

July 31, 2015

(Updated 11/18/15 – updates reflected by underlined italics)

Client:

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6473 County Road 120
Hesperus, CO 81326

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1.0 EXECUTIVE SUMMARY

GCC Energy LLC operates the King II Coal Mine in western La Plata County, located at Section 36, Township 35, Range 12, serviced by County Road 120, approximately 6.5 miles west of State Highway 140. The intersection of State Highway 140 and County Road 120 (north access) is about 3.1 miles south of Hesperus, CO. The mine produces coal that is transported to customers located both intra and inter-state.

Semi-trucks transport the coal product along the 6.5 miles of County Road 120 and then travel via the State Highway system to markets in New Mexico and the Front Range of Colorado. Transport operations primarily occur during the weekdays with the weekend supporting a reduced schedule. Trucking hours of operation breakdown to over 60% occurring during the 12-hours of daytime (7:00am – 6:00pm) with the balance weighted towards the evening hours (7:00pm – Midnight).

In August of 2006 La Plata County¹ made the determination that the County did not have jurisdiction to review King II permit proposal to the Colorado Division of Reclamation, Mining, and Safety (CDRMS). In 2011, this previous position by the County was corrected and as such, GCC Energy LLC would be required to apply and receive a County Class II approval. A key component warranted by the determination was properly assessing King II's mine traffic impacts to County Road 120.

Accident records – A ten year assessment (Years 2005 – 2014) was conducted with accident locations mapped so as to assist in identifying potential causal conditions. Over the 10-year duration, thirty-eight accidents were recorded on County Road 120. Of those 38 accidents, eight trips are assigned to be Mine related, reflecting 21% of recorded accidents. Evaluating the mapped records, clustering of accidents was noted at three locations. Modifications to the roadway at these locations could improve safety. The following are the locations and recommended modifications.

- a) Multiple accidents at MP 0.3, 90° corner – mitigation option: improve roadway alignment.
- b) Multiple accidents at MP 3.9-4.0, adjacent to Wiltse's Barn – mitigation option: improve sight distance and improve roadway alignment.
- c) Multiple accidents at MP 12.4, 90° curve at Big Stick Ditch – mitigation option: improve roadway alignment

ESAL Loading - The analysis period is twenty-years. Roadway impacts are evaluated utilizing 18K equivalent single axle loading (ESAL) procedures. King II coal mining operations have been isolated from overall background trips in order to identify proportionate share impacts to the roadway.

Year 2014, King II coal mine operations produce approximately 940,000 tons of coal. As defined in the Colorado Department of Reclamation Mining and Safety (CDRMS) Mining Permit C-1981-035 TR-23 (Technical Revision #23), GCC Energy LLC is permitted to mine 1.3MM tons of coal per year. Mine personnel will follow the rise in production, increasing manpower from approximately 150 employees in 2014 to 165 employees during maximum production. Accounting for fluctuations in market demand, it could be expected that a value less than 1.3MM tons of coal per year will occur.

For this analysis a conservative approach has been applied whereby developed values and findings are based on a permitted limit of 1.3MM tons of coal per year.

¹ Nancy Lauro – La Plata County Community Development Director – August 29, 2006 letter to Colorado Division of Reclamation, Mining and Safety.

Facility trip volumes by vehicle loading type (average 20-yr peak operations – 1,3MM tons/yr)

<u>Vehicle Type</u>	<u># of trips / day</u>
Car / Truck	334 trips
Single Unit Truck	15 trips
Transports	312 trips

King II Mine ESAL over a 20-year period.

<u>Vehicle Type</u>	<u>ESAL Factor</u>	<u>20-yr Trips</u>	<u>ESAL</u>
Car / Truck	0.003	2,002,880 trips	6,009
Single Unit Truck	0.249	90,034 trips	22,419
Transports	<u>1.087</u>	<u>1,869,441 trips</u>	<u>2,032,083</u>
ESAL Subtotal			2,060,510
Lane Factor		0.6	
King II Mine ESAL Design Total (ESAL x Lane Factor)		1,236,306 ESAL	

Background traffic values were developed using yearly traffic count data (yr 2014) provided by La Plata County (Table 1) and projecting the volumes at 20-years. A 20-YR growth rate of 58% was developed using a County approved document – 2030 Transportation Integrated Plan (LSA – dated June 2, 2006) – Appendix 9. Mine trips for year 2014 were backed out of the overall trip count data to develop non-mine background traffic volumes and their associated roadway impacts. Weekday average non-mine daily traffic value was 323 trips (yr 2014). Year 2034 background trip volume is calculated: 323 trips x 1.58 (growth-factor) = 510 trips. Weekend average daily traffic value was assumed to be 60% of weekday values. Table 8 of this document outline the trip values associated with background traffic loading. Restating a portion of Table 8, the background ESAL loading is as follows:

<u>Vehicle Type (non-Mine yr 2034)</u>	<u>ESAL Factor</u>	<u>20-yr Trips</u>	<u>ESAL</u>
Pass Car / Truck	0.003	3,373,603 trips	10,121
Single Unit	0.249	86,503 trips	21,539
Combination Unit	<u>1.087</u>	<u>0 trips</u>	<u>0</u>
ESAL Subtotal			31,660
X Lane Factor – 0.6 =		ESAL Design Total	18,996

(note that this is a conservative estimate since loading is based at 20-yr trip volume in-lieu of a midpoint yr 2024)

The Design ESAL value is used to develop surface structure to support impact loading. By applying the Background ESAL loading to the projected King II ESAL loading, a proportionate share value of roadway impacts can be established to evaluate assignable mitigation costs.

Total Roadway ESAL (20-yr), King II Mine + Background	1,255,302
Background Baseline ESAL (<u>year 2034</u>)	<u>18,996</u>
Percent of Background impacts ((Background) ESAL / Overall Road ESAL)	1%
Percent King II traffic impact	99%

Haul Route Option Assessment – GCC Energy performed an assessment of eight different haul route options to move coal product from the mine to the state highway. Two options were reviewed and rejected. Six options were reviewed for cost magnitude and feasibility. Upon reaching the state highway, existing highway network is assumed to adequately support haul operations. Assessment does include proposed modification to the highway to consist of intersection auxiliary lanes installation.

Options reviewed and rejected:

- a) Haul route from mine, north to US 160
 - i. Approximate eight-mile length.
 - ii. Very challenging topography (mine 7,200ft elevation, crest 8,500ft elevation).
 - iii. Highway intersection on US 160, west of Hesperus Ski Area.
 - iv. Trucking distance and cost – through Cortez is shortest distance.
 - v. Necessary for bypass at Cortez to avoid business district.
- b) Railroad spur
 - i. 20-year old feasibility placed Gallup to Farmington cost at \$99MM. More recent estimates are approximately \$400MM.
 - ii. Cost estimates do not include right-of-way acquisition.
 - iii. Depending on location of load-out, may not address CR 120 traffic concern.

Options advanced for cost magnitude and feasibility:

- 1) Option 1 – CR 120 North
 - a. 100% of in-bound and out-bound coal trucks utilize CR 120N segment
- 2) Option 2 – CR 120 Loop
 - a. In-bound coal trucks travel via CR 120S segment.
 - b. Out-bound coal trucks travel via CR 120N segment
- 3) Option 3 – CR 119/116/120 Loop
 - a. In-bound coal trucks travel via CR 119/116 segment
 - b. Out-bound coal trucks travel via CR 120N segment
- 4) Option 4 – Dedicated road
 - a. A newly-constructed haul road approximately 5.5 miles in length connects to CR 120 near King I mine and near intersection of SH 140 / CR 120
- 5) Option 5 – Dedicated haul road, conveyor to mesa top
 - a. Approximately 0.7 mile conveyor delivers coal to a loading facility on or near mesa top
 - b. A newly-constructed haul road approximately 5.3 miles in length connects to CR 120 near intersection of SH 140 / CR 120
- 6) Option 6 – Conveyor to highway
 - a. Approximately 6-miles of conveyor connects to load-out facility near intersection of SH 140 / CR 120

Haul route Opinion of Probable Cost (OPC) - The assessment represents a cost magnitude to evaluate coal transport options rather than a specific budget for respective capital improvement projects. Opinion of Probable Cost (OPC) scenarios were developed to mitigate for roadway impacts on County Road 120 associated with King II Mine operations. Option costs are based on a 20-year operational duration. The costs were developed utilizing Colorado Department of Transportation Cost Data and information provided by La Plata County Public Works. Table 1 reflects a cost summary of the evaluated options.

Note that the roadway impacts associated with the King II mine account for approximately 99% of impacts. Being that impacts are almost totally imposed by King II, costs assessment has been derived based on full costs with no adjustment to proportional share impacts.

COAL PRODUCT TO MARKET OPTIONS							
Item #	Option	(a)	(b)	(c)	(d)	(e)	OPC Cost @ 20-YEARS
		Near Term Improvements (Year 2015)	Vehicle Pull-off Improvements	CDOT Improvements	Long Term County Road Improvements	Alternate Full Term Improvements	
1	CR 120 North serves 100% of trucking	\$ 444,150	\$ 960,264	\$ 992,250	\$ 8,394,284	\$ -	\$ 10,790,947
2	Trucking inbound on CR 120S and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,124,550	\$ 18,543,705	\$ -	\$ 21,430,194
3	Trucking inbound on CR 119 and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,256,850	\$ 20,517,459	\$ -	\$ 23,536,248
4	Trucking Utilizing Designated Haul Road (Utilize CR 120 from King I to King II, no conveyor)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 4,098,738	\$ 12,887,408	\$ 19,401,710
5	Trucking Utilizing Designated Haul Road (include conveyor to load-out at top of mesa)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 27,254,241	\$ 31,748,557
6	Trucking Utilizing Conveyor (no haul road - load-out adjacent to Hwy)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 67,609,921	\$ 72,104,237

Table 1

Near Term Improvements – The Near Term Improvements are anticipated to be performed in the Year 2015.

- Extend Big Stick Ditch culvert @ 90° corner
- Roadway pavement widening @ 90° corner
- Clear vegetation along CR 120N edge of roadway so as to improve sight distance

Haul Route Pros & Cons – Table 2 represents a brief summary of the subjective analysis of the haul route options. Note that cost of a Haul Route Option is not listed as either a pro or con though cost is a significant factor in the implementation of each and every option.

Option	Description	Pro	Con
1	CR 120 N Serves 100% of trucking	*Limited length of county roadway impacted. *Reduced number of affected residents.	*CR 120N residents experience 100% of truck burden.
2	Trucking Inbound of CR 120S and Outbound on CR 120N	*Affected residents receive 50% of truck burden.	*Increased length of county roadway impacted. *Increased number of affected residents.
3	Trucking Inbound on CR 119 and Outbound on CR 120N	*Affected residents receive 50% of truck burden.	*Increased length of county roadway impacted. *Increased number of affected residents. *Increased congestion at SH 140 intersection near Fort Lewis Elementary School
4	Trucking Utilizing Designated Haul Road (Utilize CR 120 CR 120 from King I to King II, no conveyor)	*No truck traffic on segment of county road adjacent to residents. *Limited length of county roadway impacted.	*Creation & Construction of new roadway *Permitting and approval of new roadway corridor *Increased acreage impacted by roadway(s). *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Steep roadway grade from mesa top to gulch
5	Truck Utilizing Designated Haul Road (Include conveyor to load-out at top of mesa)	*No truck traffic on county road adjacent to residents.	*Creation & Construction of new roadway *Permitting and approval of new roadway corridor *Increased acreage impacted by roadway(s)/conveyor. *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Maintenance of conveyor system. *Constant noise of operating conveyor. *Construction of new load-out facility
6	Trucking Utilizing Conveyor (no haul road – load-out adjacent to Hwy)	*No truck traffic on county road adjacent to residents.	*Creation & Construction of new transport system *Permitting and approval of new conveyor corridor *Increased acreage impacted by transport system/conveyor. *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Maintenance of conveyor system. *Constant noise of operating conveyor. *Construction of new load-out facility

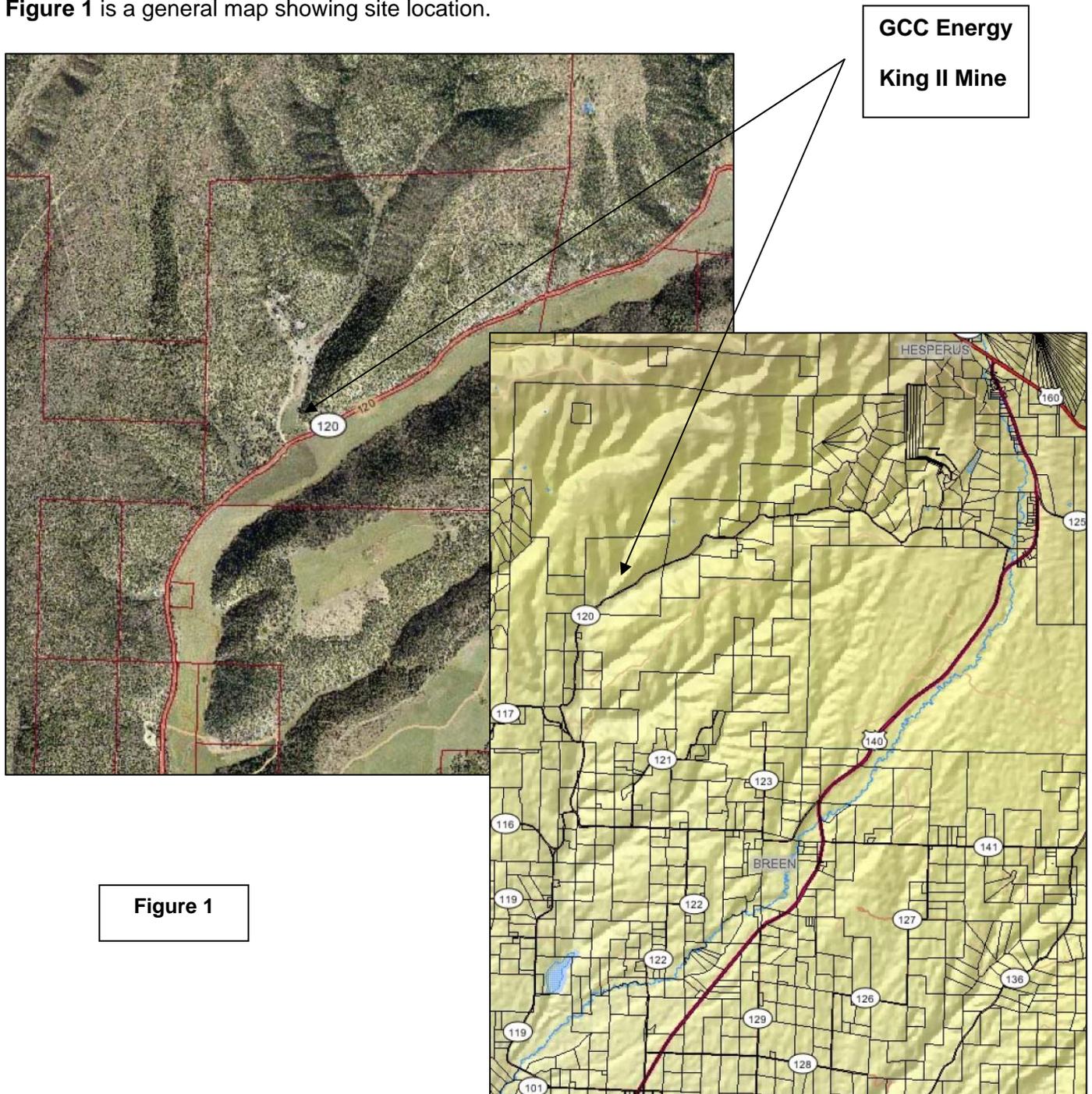
Table 2

Advancement of Option – Option 1 is expected to be advanced for implementation.

2.0 INTRODUCTION

GCC Energy LLC operates the King II Coal Mine, which is located on County Road 120. Coal material is mined and transported via semi-trucks to State Highway 140, then north and south to locations both intra and interstate.

Figure 1 is a general map showing site location.



The intent of this study is to analyze existing traffic volumes on County Road 120, along with King II site generated trips in order to define site nexus roadway impacts. Options for mitigating these impacts are provided as a basis point for discussion between representatives of La Plata County and GCC Energy LLC, which owns and operates King II Mine.

3.0 EXISTING CONDITIONS

King II Mine is located in western La Plata County, approximately 6.5-miles southwest of the intersection of State Highway 140 and County Road 120, South of Hesperus, Colorado. Primary land-use in the region is farming and ranching.

Residential Density – The general density of residential units directly adjacent to the mine is less than 5-dwelling units per square mile. Figure 2 is a Residential Density Exhibit reflecting areas of residential density within an approximate region of influence from the mine. The exhibit reflects a greater residential density south of the mine when compared to the density east of the mine.

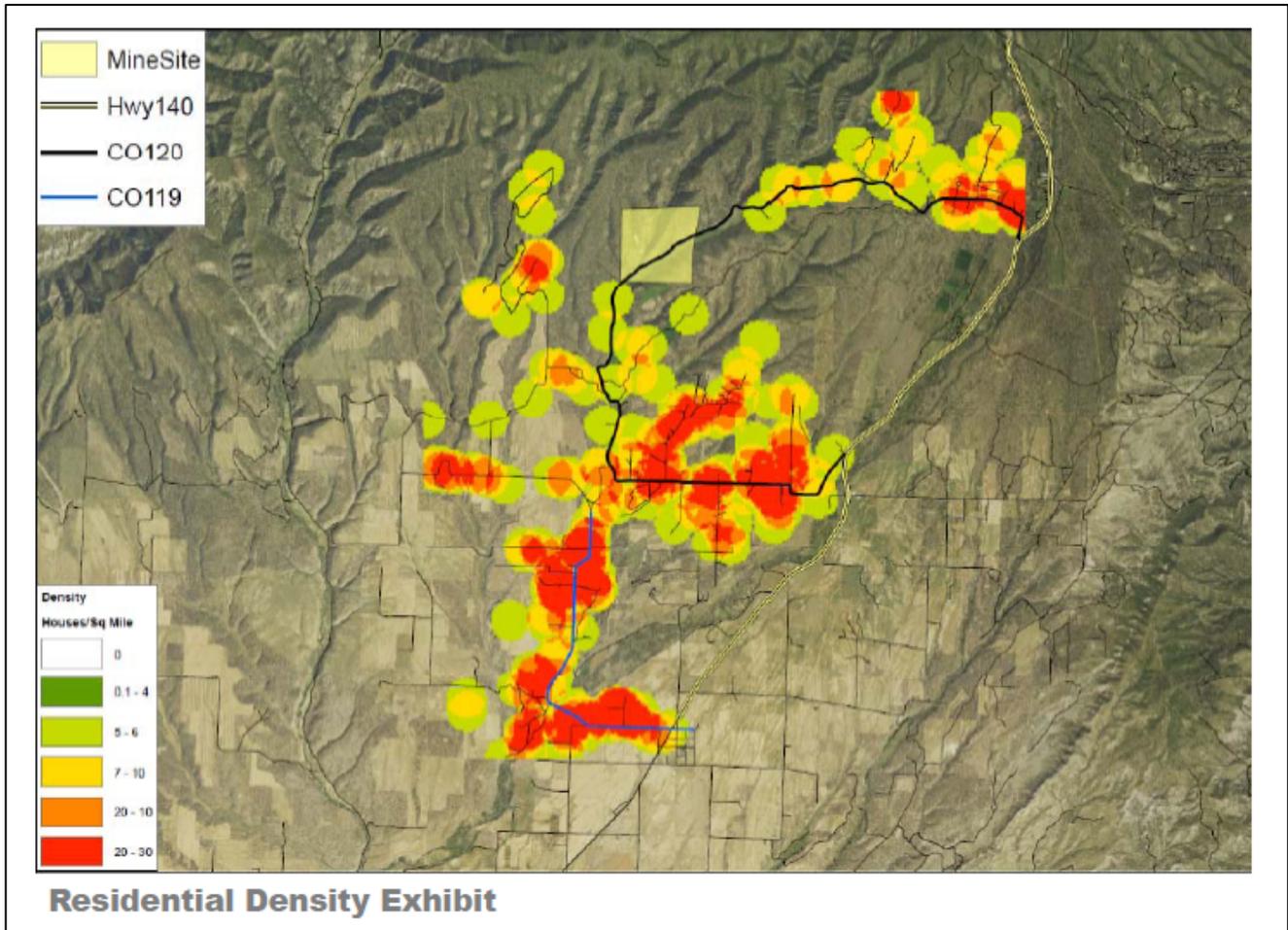


Figure 2

The county roadways serving this region reflect the surrounding density; low density roads are generally aggregate surface, areas with higher density are served with asphalted roadway sections. Area roads are classified as 'Local', local road standards call for a 24ft width and 3ft shoulders. The existing roadways are generally narrower than County standards. Field evaluation of various roadway sections reflected the following:

- Paved roadways = 22ft with 2ft shoulders each side = 26ft total
- Gravel roadways = 30ft with widening at curves (segments of roadway less than 30ft)

County Road 120 is a 'prescriptive use' roadway in which deeded right-of-way may not exist; though functionality of the roadway is generally the same. Maintenance and authority over the roadway is the responsibility of the County. Maintaining roadway condition, ditches, clear-zone, and drainage are part of operational maintenance of the road.

A summary of trip volumes² by year for the primary network roads is listed in Table 3. Note that mine generated trips primarily travel on the northern route of CR 120. Backing out mine generated trips, roadway ADT's are generally consistent with regional density map.

ROAD	LOCATION	2006	2007	2008	2009	2010	2011	2012	2013	2014
119	At CR 116 South of Y							140	nc	
119	West of Hwy 140	262	245	82	309	317	270	233	nc	245
119	West of CR 101	211	255	226	289	291	290	231	nc	258
119	East of CR 101	194	238	209	249	252	234	182	nc	194
119	East of Hwy 140	86	81	273	105	95	82	nc	nc	66
119	East CR 122	42	57	86	99	66	63	63	nc	100
120N	At Hwy 140	572	697	652	559	681	727	814	nc	870
120S	East of CR 116	245		186	164	181	148	183	164	215
120S	At CR 140	456	557	162	426	454	426	437	410	434
	Traffic Volume value used in study									
² La Plata County Traffic Data										
							@ 20- yrs			
	Approximate Breakout of traffic volume:		ADT				ADT			
	Mine Generated Trips (Approx 1.3MM tons of product)		660	trips			660	trips		
	Background Traffic		323	trips	growth factor	0.58	510	trips		
	Total Trips at Intersection of SH 140 / CR 120N		983				1170			

Table 3

Directional Distribution – King II Entrance

On May 28, 2014, traffic data was gathered for the entrance drive serving King II mine. The data was gathered during times of shift change, Night to Day (5:45AM – 7:45AM) and Day to Swing (3:00PM – 4:15PM). The total trips are represented by Figure 3:

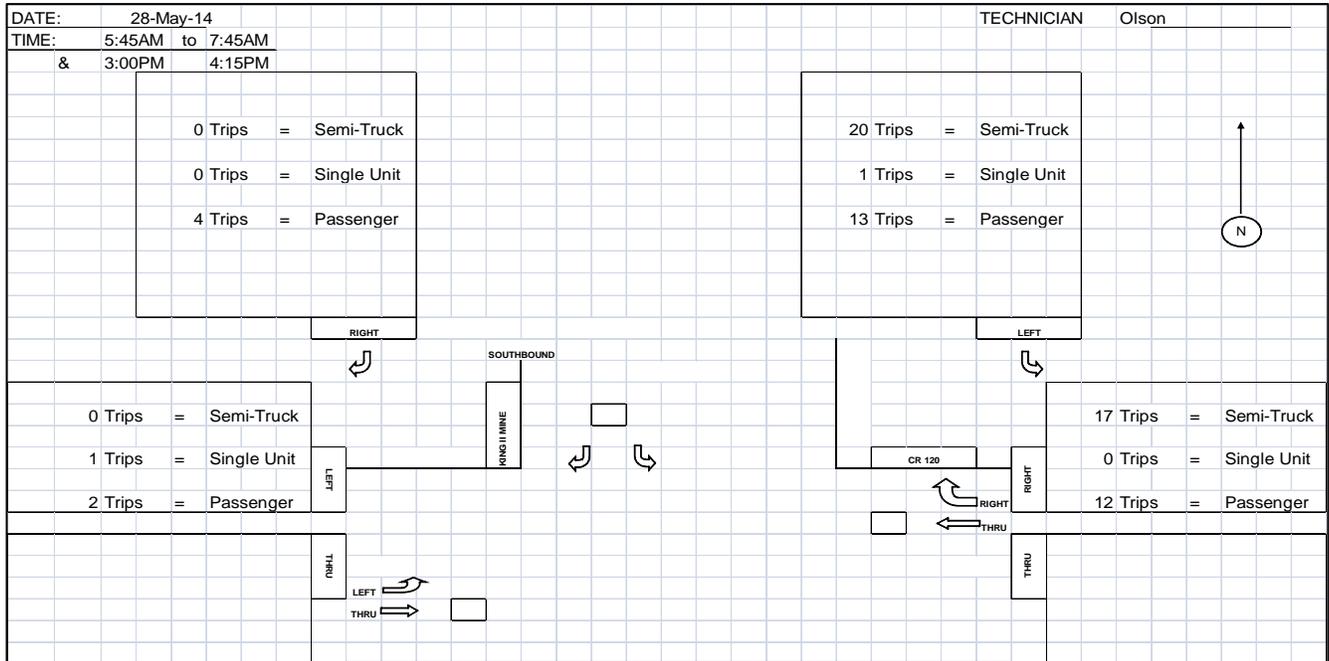


Figure 3

General summary:

- 100% of semi-trucks (combination vehicles) enter/exit to the north
- Not enough data to determine flow of single unit vehicles
- Passenger cars: 81% northbound, 19% southbound

Based on observed mine generated traffic, directional flows utilize the northern segment of CR 120.

4.0 ACCIDENT RECORDS

A key component of evaluating safety of a roadway section is to assess past accident records for causal factors. These causal factors may reflect opportunities for modification of the roadway geometry or characteristic that could lead to improvement to safety. For this assessment a 10-year period was selected and the County accident records were reviewed and mapped so as to identify possible trends and specific locations of multiple accidents.

Some findings resulting from assessing the accident records:

1. Multiple accidents at MP 0.3, 90° Curve – Option: Improve Alignment
2. Multiple accidents at MP 4.0, adjacent to Wiltse Barn – Option: Improve Sight Distance, Improve Alignment.
3. Multiple accidents at MP 12.4, 90° Curve @ Big Stick Ditch – Option: Improve Alignment

Mapping exhibits have been generated and are included as Appendix 7 of this report. The exhibits have numbered accidents that correspond to the accident records (Appendix 7). Each accident has a corresponding symbol that reflects the location of the accident and severity of event: circle = property damage only, square = injury, diamond = fatality.

5.0 HIGHWAY ACCESS

State Highway 140 serves this region of La Plata County. King II Mine accesses SH 140 via County Road 120. Once reaching SH 140, semi-trucks carrying coal proceed north and south, transporting product both intra and inter-state. The roadway classification for SH 140 along the highway segment serving County Road 120 is R-A, Regional – Arterial. County Road 120 has a Local classification.

County Road 120 has points north and south accessing State Highway 140. King II mine current operational policy requires semi-trucks hauling coal to exclusively utilize CR 120's northern intersection with SH 140.

Photo 1 is a photo of the intersection of SH 140 & CR 120.



Photo 1 – view north looking at the intersection of SH 140 & CR 120 State Highway 140 and County Road 120

The intersection was evaluated based on the State of Colorado, 1998 State Highway Access Code, with regards to turning movements and auxiliary lane warrants. Peak Hour counts were conducted for the AM and PM time periods to identify maximum trip volumes and their corresponding intersection movement. Figures 4 & 5 reflect both the AM and PM Peak Hour trip volumes and their associated movement. Noted within the figures are the break-out values of semi-truck vehicles by vehicle movement. Passenger car equivalent values for the semi-trucks would equate to 3-pass cars per 1-semi truck. Example: NB left-turn, observed vehicles = 2 pass + 2 single-axle + 7 semi-truck = 11 vehicles or 27 pass car equivalent vehicles.

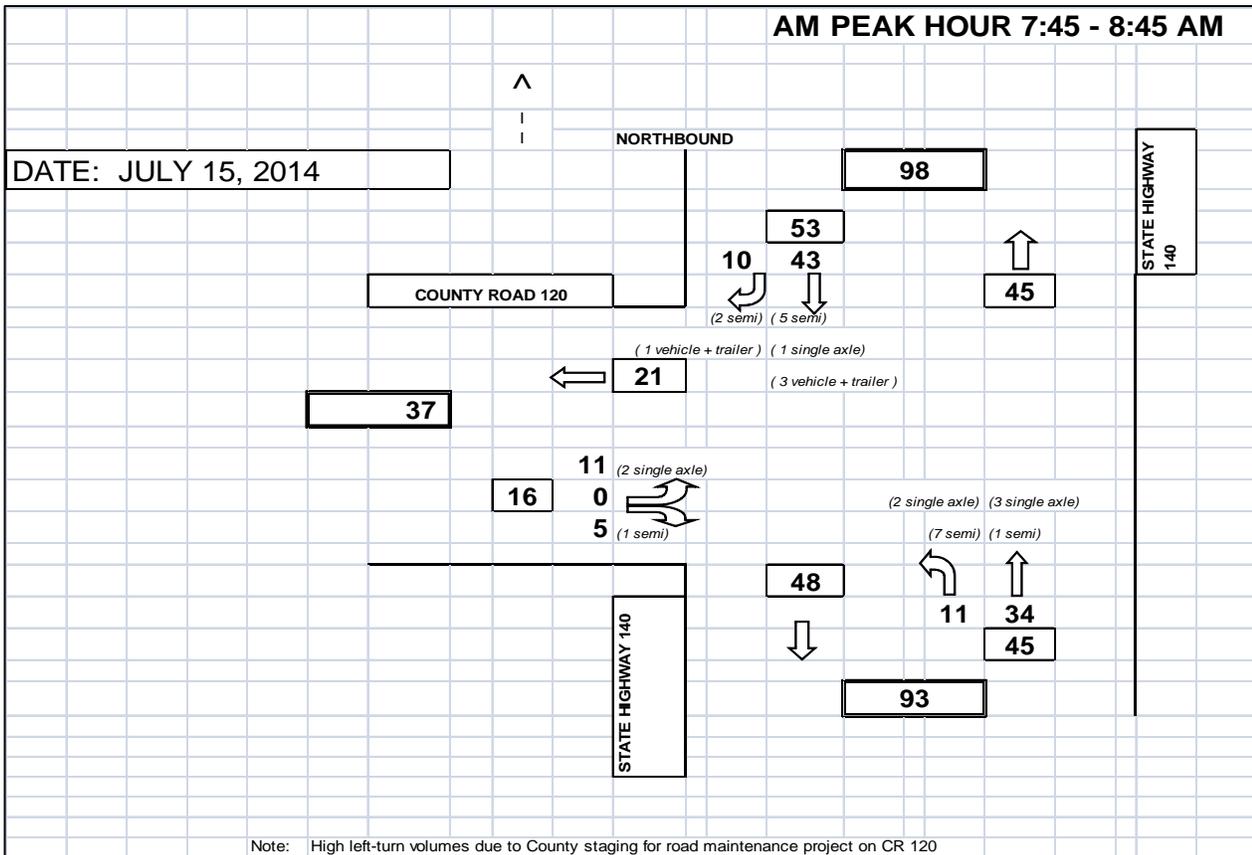


Figure 4

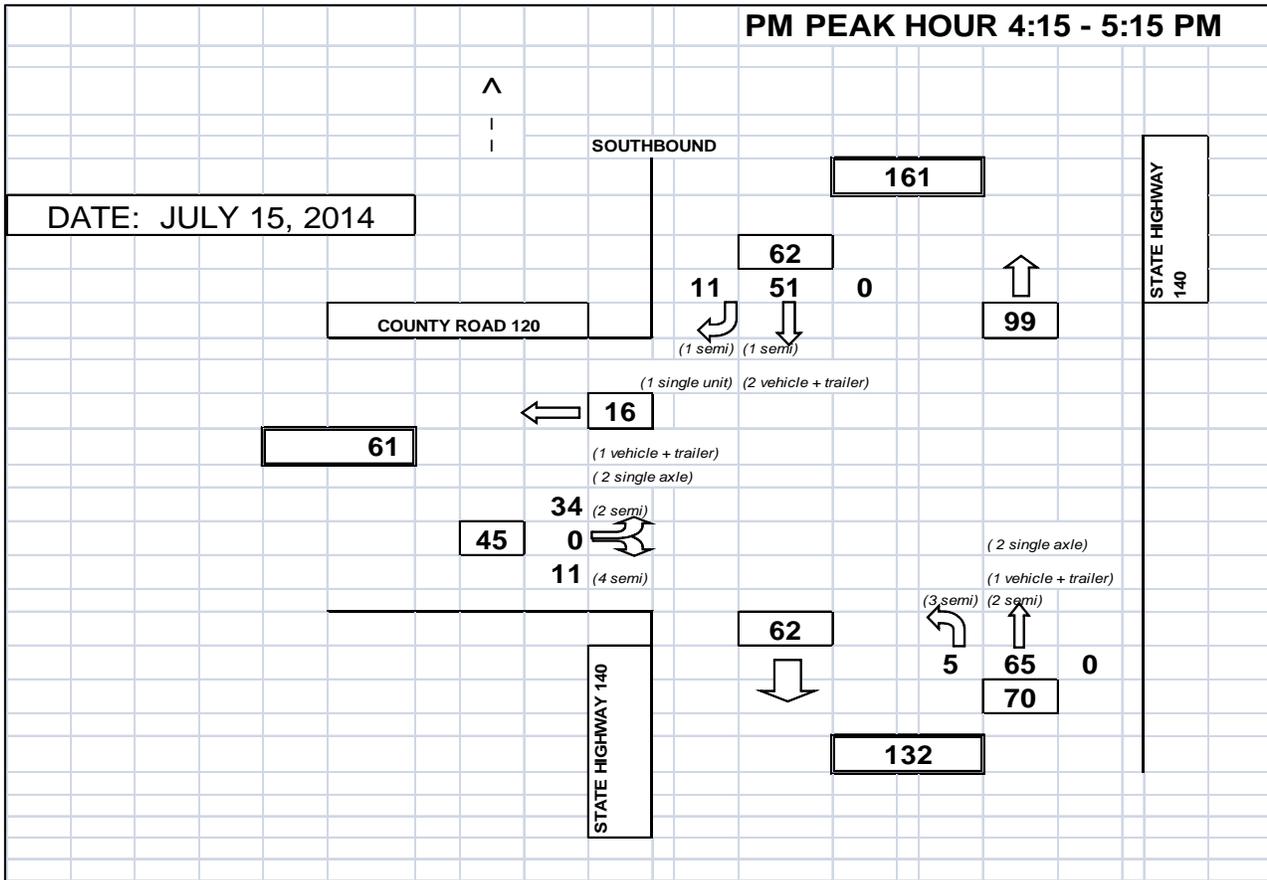


Figure 5

The CDOT - State Highway Access Code defines the left-turn deceleration lane warrant as number of trips greater than 10 trips per hour; the observed PM Peak turning movement total is 11 trips (passenger car equivalent)². There is projected to be a 38% increase in truck volumes (940,000_{Year 2014} tons to 1.3MM tons hauled). This increase would project the left-turn values to 15 passenger car equivalent trips, possibly triggering the warrants for installation of a left-turn deceleration lane.

State of Colorado – State Highway Access Code includes a provision addressing left-turn deceleration lane warrants waiver based on opposing traffic volumes:

CCR 601-1, Section 3.5 (5)

The auxiliary lanes required in the category design standards may be waived when the 20th year predicted roadway volumes conflicting with the turning vehicle are below the following minimum volume thresholds. ... The left turn deceleration lane may be dropped if the opposing traffic is predicted to be below 100 DHV.

20-yr growth rate = 1.36

Future opposing traffic volume: 62 x 1.36 = 84 trips < 100trip threshold

Conclusion: Left-turn auxiliary lane is not warranted.

GCC Energy LLC has applied for and received a CDOT access permit – CDOT Permit No. 513005. The terms of the permit, which GCC Energy LLC has agreed to, identifies the construction of a NB left-turn lane and a SB right-turn lane in Year 2016.

² AM Peak was a non-standard event, i.e. reflected staging of trucks for construction on CR 120

In May of 2015, GCC Energy improved safety of the SH 140 / CR 120 intersection. Completed projects include removal of vegetation along all quadrants of the intersection and installing flashing truck turning signs on SH 140, both north and south of the intersection.

State Highway 140 and County Road 119

The intersection was evaluated based on existing traffic volumes and geometry. The intersection has a skewed alignment with CR 119 aligned approximately 30-degrees off of perpendicular. Under CDOT's State Access Code, a 30-degree skew is within acceptable intersection limits.

Traffic data was gathered in spring of 2012, and peak hour values were determined. Figures 6 & 7 reflect existing peak hour traffic volumes for AM & PM conditions.

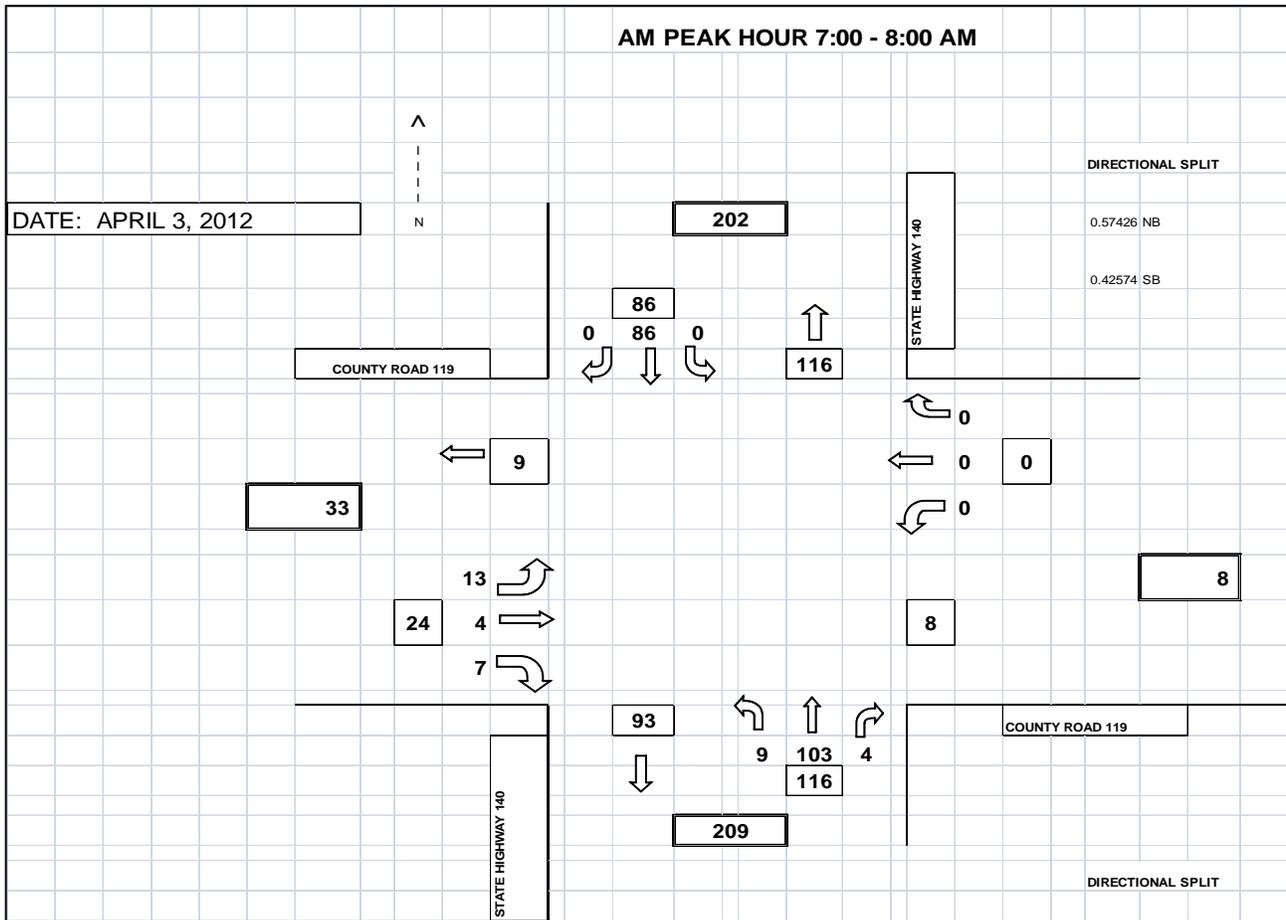


Figure 6

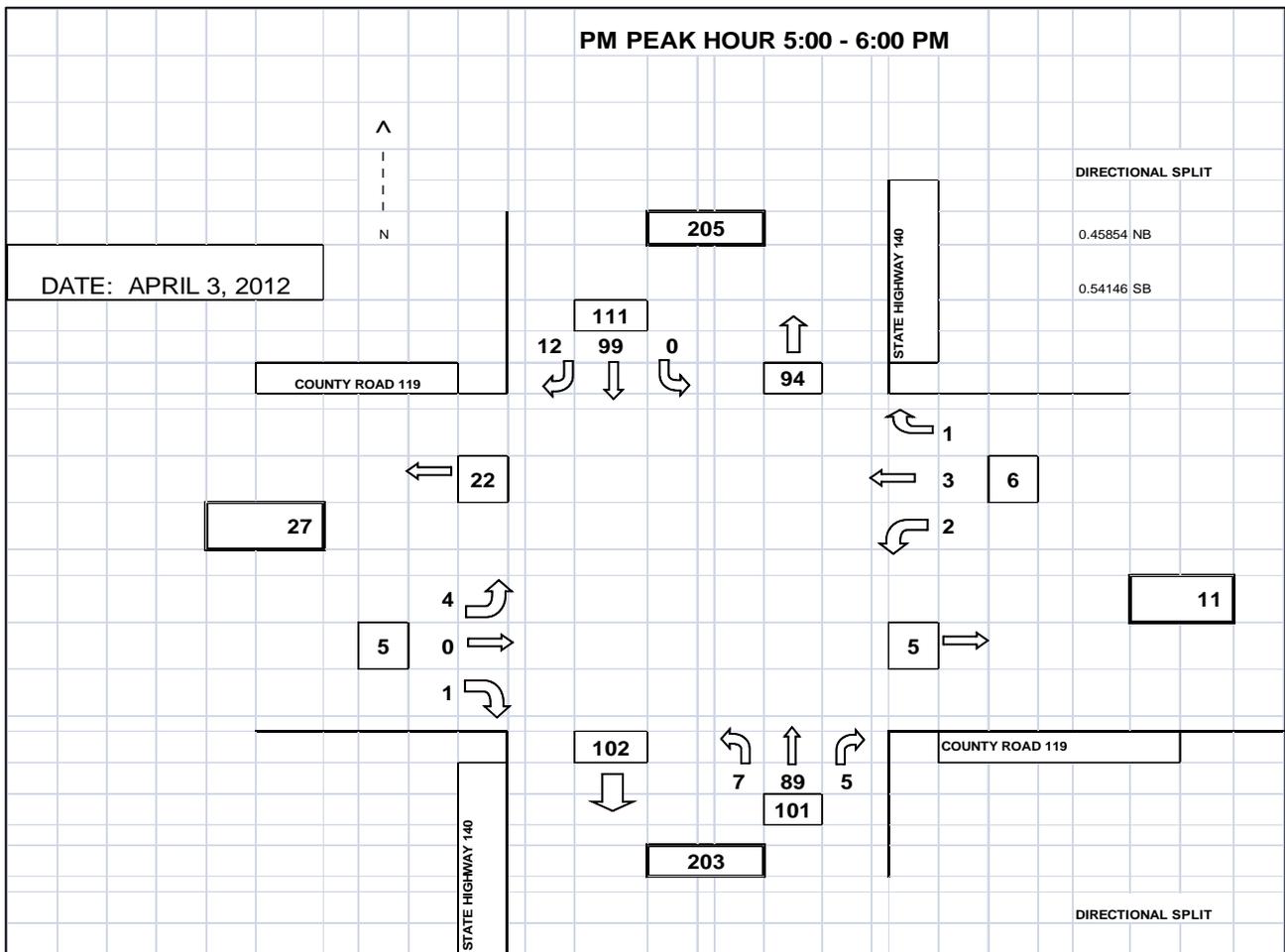


Figure 7

In each of the peak hour cases, traffic data did not support CDOT warrants for installation of an auxiliary lane.

GCC Energy has a company policy requiring all transport trucks (combination vehicles) to utilize the northern segment of CR 120. This policy was enacted in approximately 2011 after discussions were held with Fort Lewis Fire and Rescue and La Plata County personnel. A condition occurred in which haul trucks blocked two access routes at the same time (CR 119 at the intersection, CR 120 at the hill from the gulch to the mesa top). Fire and Rescue had concerns that by obstructing multiple access routes, emergency response to a potential incident would be compromised. Addressing the concern, GCC enacted a policy whereby all transport trucks are required to access the mine via the northern segment of CR 120.

GCC Energy / King II mine shift change times do not occur during either SH 140's AM or PM peak hour. Day shift is from 6:00AM to 4:00PM, Swing shift is from 3:30PM to 1:30AM and Night shift is from 11:30PM to 7:30AM. Possibly some Night shift trips may utilize the SH 140 / CR 119 intersection in the AM Peak. Recent data counts at the King II mine entrance (May 28, 2014) reflected 2 vehicles that turned south and possibly could have used the SH 140 / CR 119 intersection. Applying the previously stated 38% growth for the mine, the increased volume at the intersection would be 1 trip (changing trip value from 7 trips to 8 trips).

The projected increase mine trip volume(s) do not satisfy CDOT auxiliary lane warrants at the intersection of SH 140 & CR 119.

CR 119 skewed approach was evaluated to support single-unit trucks (ex: FedEx) and passenger cars. The minimum tracking radius for single-unit trucks is 42-ft, for passenger cars it is 24-ft. The existing intersection radius appears to support the 42-ft tracking radius (EB CR 119 to SB SH 140) though the rear tires may travel outside the paved surface. Alternate option would be single-unit truck trips could travel directly across SH 140 and navigate southbound on CR 122, and then turn right on CR 130 to intersect SH 140 at a reciprocal angle of 120-degrees. No southbound single-unit trucks were observed at the mine entrance, this evaluation was to establish the viability of the single-unit truck trip movement at the SH 140 / CR 119 intersection.

The intersection of SH 140 & CR 119 geometry supports passenger car and single-unit vehicle movements.

Figure 8 (Single-Unit) & Figure 9 (Passenger Car) reflect the vehicle tracking at the intersection of SH 140 & CR 119.

State Highway 140 and County Road 120 (south access).

In 2011, CDOT completed plans and improvements to the intersection of SH 140 and CR 120 (south). The minor street approach has a skewed alignment to the highway. The intersection improvements included the widening of travel shoulders and adjustments to the minor road centerline so as to support a more perpendicular approach to the highway. Figure 10 is a reprint of one of the highway construction plan sheets illustrating the intersection geometry. Utilizing the constructed plan intersection geometry, turning templates for passenger car and single-unit vehicles were applied to the layout (Figure 11: passenger car, Figure 12: single-unit, Figure 13: combination unit). The vehicle tracking analysis confirmed that the constructed geometry of the intersection supports the constrained movement (eastbound to southbound) of both single-unit and passenger car vehicles.

GCC Energy is requesting to be allowed to continue operations of in-bound water trucks on the southern route of CR 120. Outbound trucks will utilize CR 120 northern route. The reason for the request is due to a section of the northern route of CR 120 that has a very steep grade. In-bound water trucks are fully loaded and to navigate the downhill grade would demand considerable driving skills and excessive wear on truck systems. Utilizing the southern route of CR 120 avoids excessive wear on truck systems and is a safer option for drivers.

King II water hauling will abide by the following travel operations:

- a) In-bound (loaded) – Enter CR 120 at the southern access of SH 140. Trucks will travel on CR 120's southern route and enter the King II facility from the south.
- b) Out-bound (empty) – Exit the King II facility and navigate on the northern segment of CR 120. Trucks will exit CR 120 at the northern access of SH 140.

Included as a component of this report is an assessment that evaluates the roadway impacts associated with semi-truck water hauling operations on the southern route of CR 120. Referenced exhibits are attached and include in Appendix 6 of this report.

- a) Truck Trips (Appendix 6 - Exhibit 1) – The AADT for water hauling is: 1,846 trips / 300 days = 6.2 ADT
- b) Intersection of SH 140 & CR 120, Truck Turning (Appendix 6 - Exhibits 2 & 3) – CDOT completed the improvements to the intersection of SH 140 & CR 120 in Yr-2011. Truck turning was evaluated based on existing intersection geometry. There are sufficient paved areas for both truck and trailer to navigate without extending beyond the edge of pavement. Track of trailer encroaches on opposing lane at CR 120 stop bar. If assume CR 120 peak hour traffic is 10% of ADT ($434 \text{ trips} \times 0.1 = 43 \text{ trips}$) and 60% of trips are outbound ($43 \text{ trips} \times 0.6 = 26 \text{ outbound trips}$), spread over 60 minutes ($60 \text{ min} / 26 \text{ trips} = 2 \text{ min per outbound trip}$), there appears to be a limited condition in which a vehicle is waiting at the stop bar (CR 120) when a

water truck is exiting from SH 140 onto CR 120 ($6.2 \text{ ADT} \times 10\% = 0.62 \text{ trips}$: 60 min / 0.62 trips = 1 inbound truck every 1.5+ hours). If there is a situation in which a water truck / vehicle at stop bar occur at the same time, driver consideration should prevail.

- c) Existing vehicle trips data (Appendix 6 - Exhibit 4) – Count data is from County records. County Road 120 ADT value of 434 trips is the ADT value for Year ²⁰¹⁴.
- d) ESAL Calculations (Appendix 6 - Exhibit 5) – The evaluation duration of equivalent 18K single axle loads was for 1-year. It is assumed that after one year, King II's demand for hauled water will be satisfied. The Background ESAL = 808 was added to the water truck = 1,204, for a total of 2,012 ESAL per year.
- e) Aggregate surface roadway assessment (Appendix 6 - Exhibits 6, 7, & 8) – The southern segment of CR 120 is paved from the intersection with SH 140 to approximately MP 2.9. From end of pavement to the King II entrance the roadway has an aggregate surface. It is assumed that the depth of the existing aggregate is greater than 6-inches. The assessment evaluated a 6-inch depth of aggregate for both serviceability ($\Delta \text{PSI} = 2.0$) and allowable rutting ($\text{RD} = 1.5 \text{ inch}$) based on 1-year ESAL value and seasonal variations of roadbed Resilient Modulus. The findings met serviceability and rutting criteria based on ESAL.
- f) It is recommended that the intersection striping be modified so as to realign outbound CR 120 stopped vehicles beyond the inbound truck tracking limits. Reprinting a discussion with Jim Horn of CDOT – date Nov. 24, 2014: *My recommendation to McVaugh will be to restripe the DDY to the south to create an approximate 12 wide egress lane, and grind the existing DDY and portion of the stop bar so that the ingress width will be quite large.....Jim*

Of note: GCC Energy, King II Traffic Impact Assessment dated July 31, 2015 includes water hauling events of 6.2 ADT for the duration of the mining operations. The consideration of water hauling trips when establishing roadway ESAL loading have been included as a component of the 20-year assessment.



ROADRUNNER
 2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.749.0336

SEAL:

GCC ENERGY
SH 140 - CR 119 INTERSECTION
SINGLE UNIT TURN TRACKING

ISSUED:
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MW
 CHECKED BY: MO
 DATE:

REVISIONS:
 NO DESCRIPTION DATE

SCALE:

SHEET NUMBER:

FIG 7



ROADLINE
 2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.749.0336

SEAL:

**GCC ENERGY
 SH 140 - CR 119 INTERSECTION
 PASSENGER CAR TRACKING**

ISSUED:
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

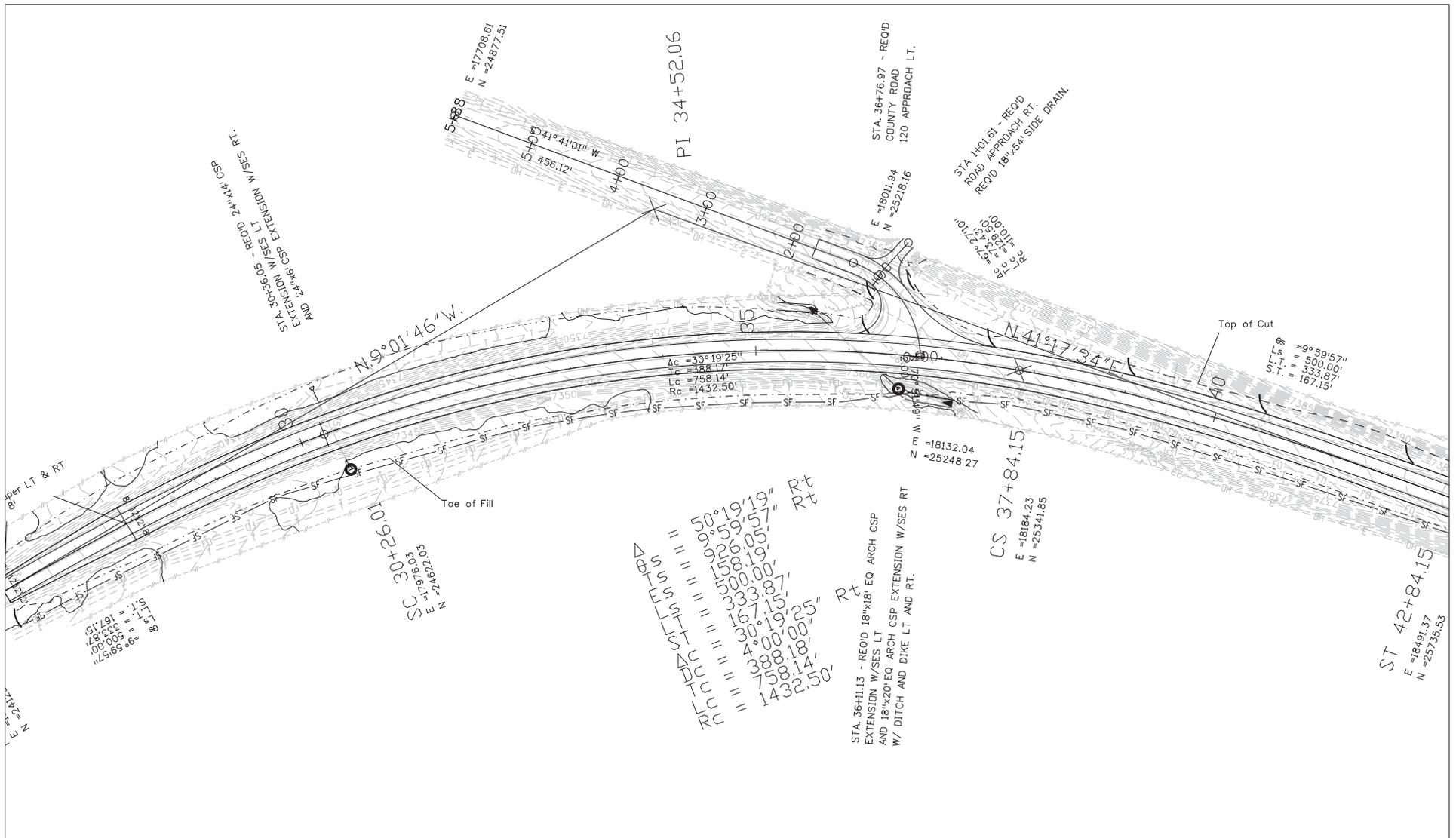
PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MW
 CHECKED BY: MO
 DATE:

REVISIONS:		
NO	DESCRIPTION	DATE

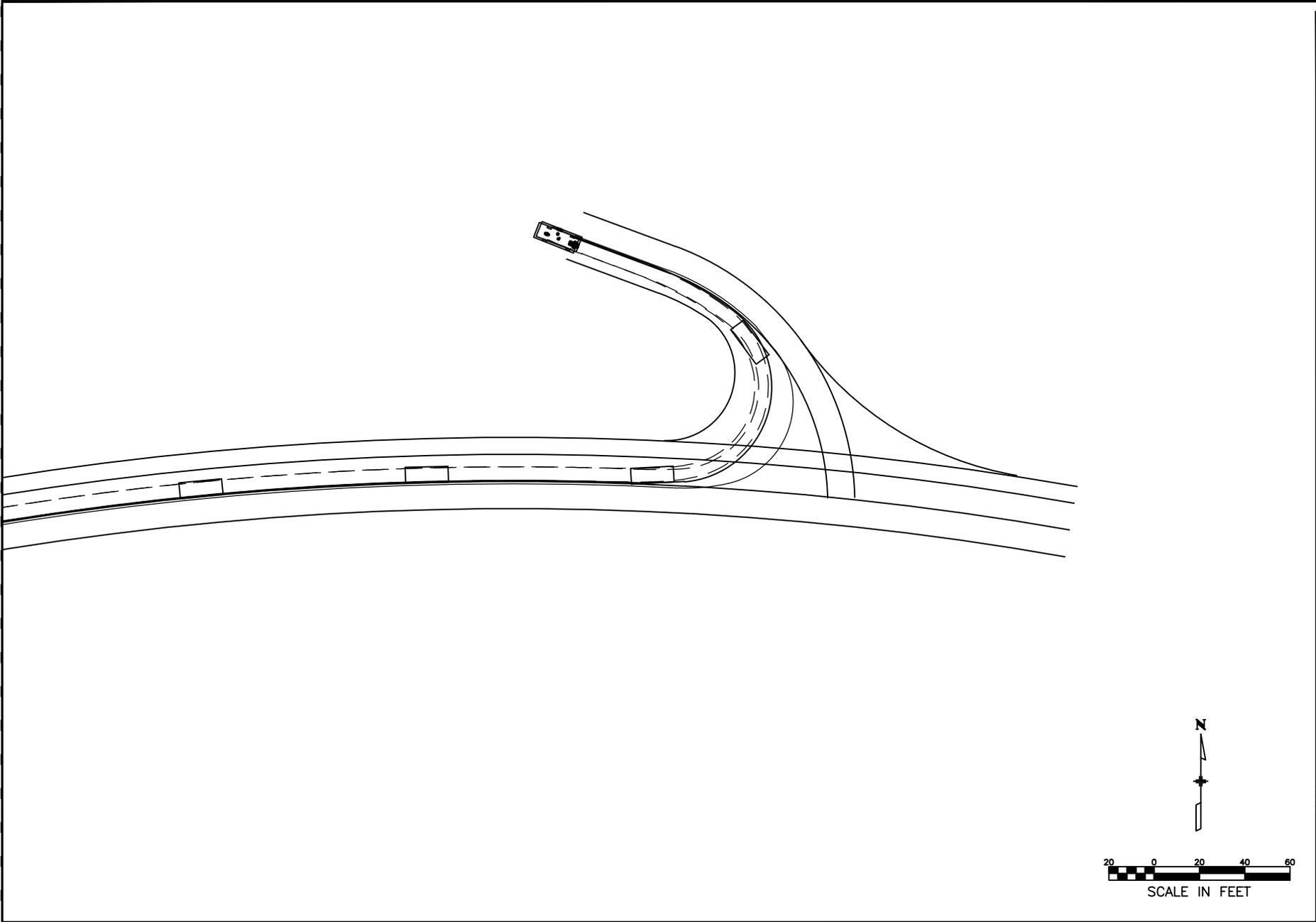
SCALE:

SHEET NUMBER:

FIG 8



Print Date: 7/18/2011	Sheet Revisions			Colorado Department of Transportation 3803 North Main Avenue Suite 108 Durango, CO 81301 Phone: 970-385-3621 FAX: 970-385-3635 Region 5 MC	As Constructed	ROADWAY PLAN		Project No./Code
Drawing File Name: p03.dgn	Date:	Comments	Init.		No Revisions:	STA 27+00 TO STA 42+00		FSA 140A-001
Horiz. Scale: 1:100					Revised:	Designer: GRS	17807	
Unit Information						Detailer: GRS		
						Sheet Subset: Plan/Profile	Subset Sheets: 3 of 4	Sheet Number FIG 9



ROADRUNNER
 2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.749.0336

SEAL:

**SH 140 - CR 120 INTERSECTION
 PASSENGER CAR TRACKING**

ISSUED: 07/31/15
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MO
 CHECKED BY: MO
 DATE: -

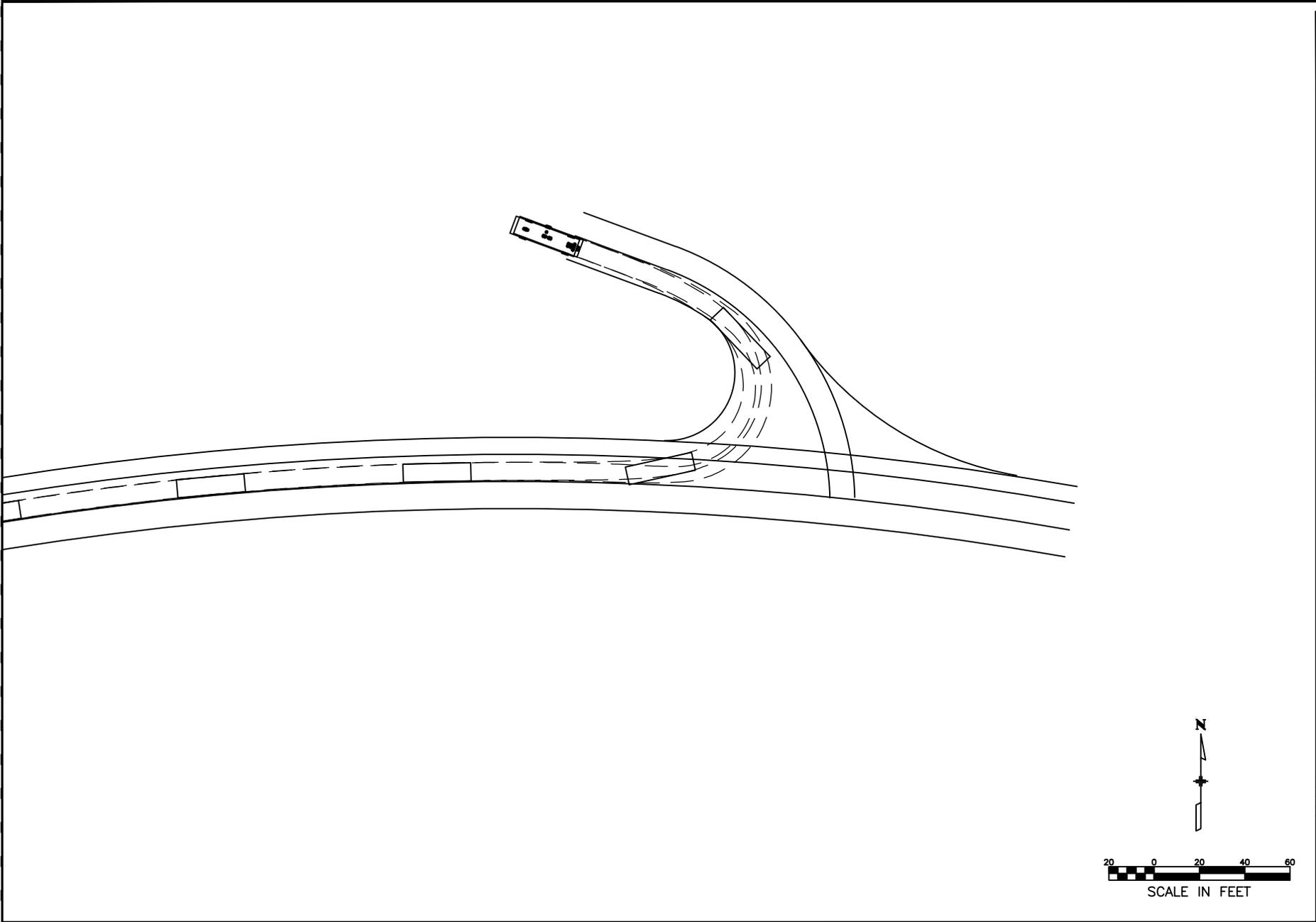
REVISIONS:

NO	DESCRIPTION	DATE

SCALE:

SHEET NUMBER:

FIG 11



ROADRUNNER
 2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.749.0336

SEAL:

**SH 140 - CR 120 INTERSECTION
 SINGLE UNIT TRACKING**

ISSUED: 07/31/15
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MO
 CHECKED BY: MO
 DATE: -

REVISIONS:

NO	DESCRIPTION	DATE

SCALE:

SHEET NUMBER:

FIG 12



2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.749.0336

SEAL:

SH 140 - CR 120 INTERSECTION
 COMBINATION UNIT TRACKING

ISSUED: 07/31/15
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

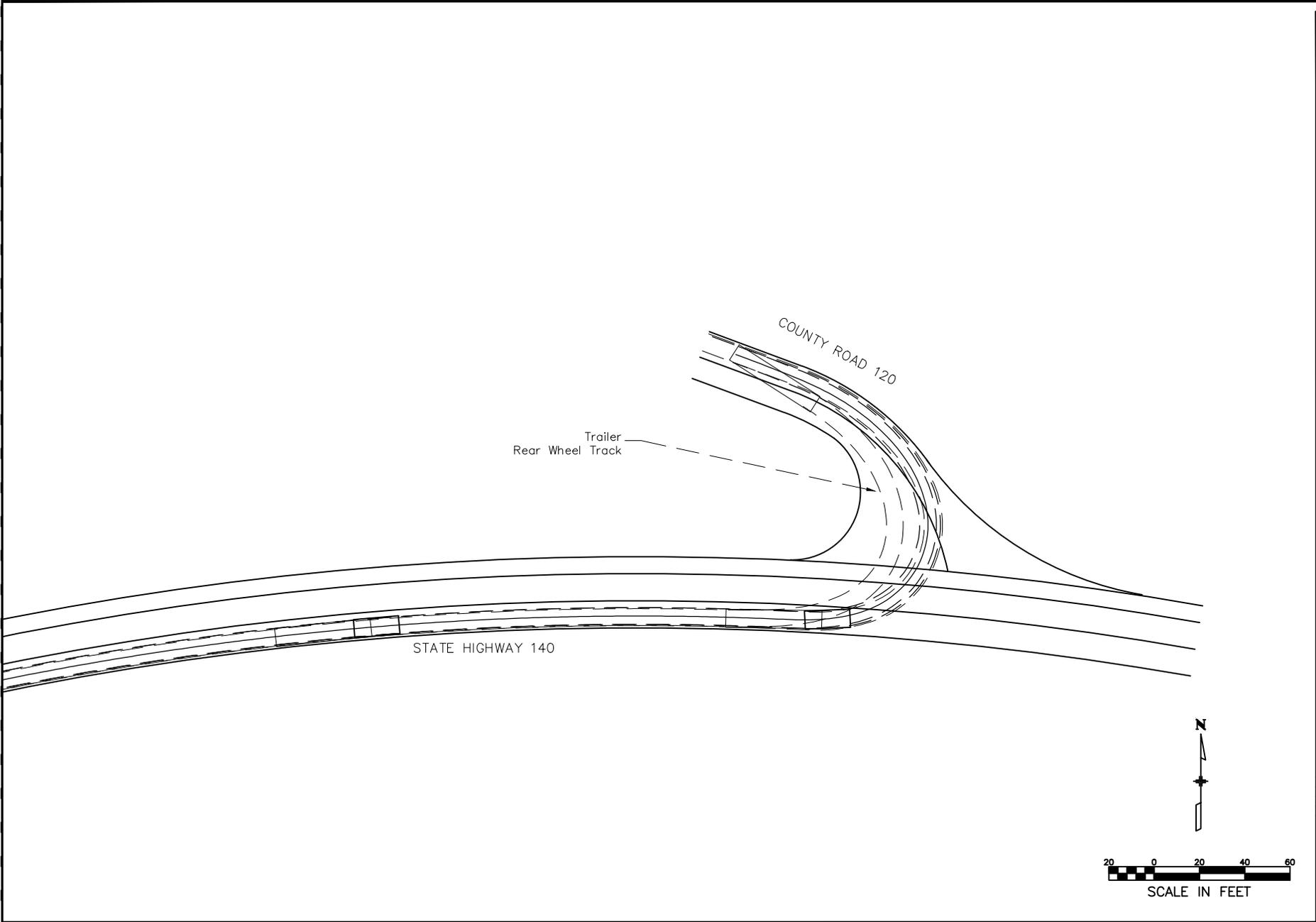
PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MO
 CHECKED BY: MO
 DATE: -

REVISIONS:		
NO	DESCRIPTION	DATE

SCALE:

SHEET NUMBER:

FIG 13



6.0 SPEED LIMIT AND STOPPING SIGHT DISTANCE

County Road 120 provides roadway connectivity to agricultural, residential, and mining land-uses. Almost 60% of the current roadway users operating along the northern 6.5 mile section of the road are coal transport trucks. The northern 2.5 miles of CR 120 is paved, with the 3.9 miles of road between the mine site and pavement start being a gravel driving surface. The gravel driving surface is typically posted at 35mph, with caution speed reductions signs posted to serve sharp roadway curves.

The majority of coal-haul truck drivers are very familiar with CR 120, specifically areas in which sight distance is obstructed or curves radiuses are too tight to easily navigate more than one vehicle. Standard operations are for truck drivers to broadcast on a common Citizen Band (CB) channel when approaching a particularly problematic section of roadway, example being the 'narrows' where roadway width is approximately 20ft. Trucker travel speeds also reflect the condition and limitations of the roadway. Observed truck travel speeds through areas of limited sight distance and/or narrow roadway width is 15-20mph.

At multiple locations along the CR 120, sight distance is obstructed by rock outcroppings, steep slopes and/or vegetation directly adjacent to the travel-way. It was apparent that the haul-drivers were familiar with these areas of limited sight distance and travelled at slower speeds than those posted to account for reduced maneuvering and or stopping distances.

Referencing AASHTO's *A Policy on Geometric Design of Highways and Streets*, stopping sight distance requirement for a 25mph design speed is 155ft (note exhibit 3-1). With two vehicles traveling in opposite directions, the total sight distance requirement at 25mph is 310ft. It appears that in various locations along CR 120, the available sight distance is close to 25mph minimums.

Metric					US Customary				
Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance		Design speed (mph)	Brake reaction distance (ft)	Braking distance on level (ft)	Stopping sight distance	
			Calculated (m)	Design (m)				Calculated (ft)	Design (ft)
20	13.9	4.6	18.5	20	15	55.1	21.6	76.7	80
30	20.9	10.3	31.2	35	20	73.5	38.4	111.9	115
40	27.8	18.4	46.2	50	25	91.9	60.0	151.9	155
50	34.8	28.7	63.5	65	30	110.3	86.4	196.7	200
60	41.7	41.3	83.0	85	35	128.6	117.6	246.2	250
70	48.7	56.2	104.9	105	40	147.0	153.6	300.6	305
80	55.6	73.4	129.0	130	45	165.4	194.4	359.8	360
90	62.6	92.9	155.5	160	50	183.8	240.0	423.8	425
100	69.5	114.7	184.2	185	55	202.1	290.3	492.4	495
110	76.5	138.8	215.3	220	60	220.5	345.5	566.0	570
120	83.4	165.2	248.6	250	65	238.9	405.5	644.4	645
130	90.4	193.8	284.2	285	70	257.3	470.3	727.6	730
					75	275.6	539.9	815.5	820
					80	294.0	614.3	908.3	910

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s² [11.2 ft/s²] used to determine calculated sight distance.

Exhibit 3-1. Stopping Sight Distance

County Road 120 graveled section of roadway is posted at 35mph. Many vehicles were observed to travel at a reduced speed limit to account for limited sight distances and narrow roadway sections. 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. GCC's policy is consistent with existing limitations of CR 120.

A visual assessment of the roadway was performed as part of this Traffic Analysis. Locations along the roadway were noted for encroaching vegetation, steep side slopes, and limited travel way widths. Table 3 is a summary of roadway observations and in some situations, recommended mitigation measures.

Roadway Assessment			
Distance From SH 140			
North Access	South Access		
WESTBOUND			
Odometer	Mileage	Description	Comment
0	13.6	Int SH 140 & CR 120	Install sign 'special', Truckers Use CB Channel ' _ '
0.3	13.3	W1-1L, W13-1 (20mph)	Pave inside corner to accommodate tractor trailer rear wheels
2.6	11.0	Pavement Ends - Gravel Surface starts	Surface width = 24ft
3.3	10.3	Limited Sight Distance	Rock outcropping or steep slope adjacent to roadway
3.8	9.8	W1-3R / W13-1 (20mph), Limited Sight Distance - right	Broadcast on CB Channel ' _ ', "Westbound approaching the curves"
3.9	9.8	W1-6R, Limited Sight Distance WB - right	Rock outcropping or steep slope adjacent to roadway
4.0	9.6	Limited Site Distance WB - right	Rock outcropping or steep slope adjacent to roadway
4.2	9.42	Limited Site Distance WB - right	Clear vegetation adjacent to roadway
4.4	9.2	Limited Site Distance WB - right	Clear vegetation adjacent to roadway (just prior to King I entrance)
4.7	8.9	Limited Site Distance WB - right	Clear vegetation adjacent to roadway (road pullout on left)
4.9	8.7	Limited Site Distance WB - right	Clear vegetation adjacent to roadway
5.0	8.6	Poor Drainage @ corner	Regrade and evaluate performance of existing culvert, R&R if necessary
5.1	8.5	Limited Site Distance WB - right	Clear vegetation adjacent to roadway
5.3	8.3	Limited Site Distance WB - right	Clear vegetation adjacent to roadway
5.4	8.2	Just prior to roadway narrowing	Broadcast on CB Channel ' _ ', "Westbound approaching the narrows"
5.7	8.0	Road Narrows (surface width = 20ft), Irrigation on south	Evaluate widening of roadway to north to the point of irrigation crossing
5.9	7.7	Limited Site Distance WB - left	Clear vegetation adjacent to roadway
6.0	7.7	Limited Site Distance WB - right	Clear vegetation adjacent to roadway
6.0	7.6	Irrigation culvert crossing from south to north	Evaluate widening of roadway to the south
6.4	7.2	Road widens (surface width = 24ft)	
6.5	7.1	King II Mine entrance	
EASTBOUND			
Odometer	Mileage	Description	Comment
0.0	6.5	King II Mine entrance	Install sign 'special', Truckers Use CB Channel ' _ '
0.1	6.4	Road Narrows (surface width = 20ft), Sight Distance - left	Broadcast on CB Channel ' _ ', "Eastbound approaching the narrows"
0.3	6.2	Limited Site Distance EB - left	Clear vegetation adjacent to roadway
0.4	6.1	Limited Site Distance EB - right	Irrigation ditch adjacent to road
0.6	5.9	Limited Site Distance EB - right	Clear vegetation adjacent to roadway
0.7	5.8	Limited Site Distance EB - right	Clear vegetation adjacent to roadway
0.8	5.7	Road widens (surface width = 24ft)	
1.1	5.4	Truck pull-off to cover load	
1.4	5.1	Limited Site Distance EB - left	Clear vegetation adjacent to roadway
1.5	5.0	Poor Drainage @ corner	Regrade and evaluate performance of existing culvert
1.7	4.8	Limited Site Distance EB - left	Clear vegetation adjacent to roadway
1.9	4.6	Limited Site Distance EB - left	Clear vegetation adjacent to roadway
2.0	4.5	King I Entrance	Clear vegetation adjacent to roadway
2.4	4.1	Limited Site Distance EB - left	Broadcast on CB Channel ' _ ', "Westbound approaching the curves"
2.6	3.9	Evaluate corner to widen road adjacent to Barn	
2.7	3.8	Limited Site Distance EB - left	Rock outcropping or steep slope adjacent to roadway
2.8	3.8	Limited Site Distance EB - left	Rock outcropping or steep slope adjacent to roadway
3.2	3.3	Limited Site Distance EB - left	Rock outcropping or steep slope adjacent to roadway
3.7	2.8	Limited Site Distance EB - left	Rock outcropping or steep slope adjacent to roadway
3.9	2.6	Pavement Starts - Gravel Surface ends	
6.2	0.3	Pave inside corner - widen paved shoulder to 6ft	Pave inside corner to accommodate tractor trailer rear wheels
6.5	0.0	Int SH 140 & CR 120	

Table 3

An updated vegetation clearing schedule (Table 4) was complete in April, 2015. GCC Energy will be contracting this work to be performed in 2015.

GCC Energy LLC - King II Coal Mine		Date of assessment: April 17, 2015
Roadway Assessment		
Distance From SH 140		
North Access		
VEGETATION REMOVAL		
WESTBOUND		
Odometer	Description	Comment
0	Limited Sight Distance WB - right	Clear vegetation between EOP and fenceline
1.4	Limited Sight Distance WB - left	Clear vegetation between EOP and fenceline - approx lineal 200ft
1.7	Limited Sight Distance WB - right	Clear vegetation between EOP and fenceline - approx lineal 100ft
2.2	Limited Sight Distance WB - right	Trim vegetation - 15ft off of fog-line
2.3	Limited Sight Distance WB - left	Trim vegetation - 15ft off of fog-line
2.4	Limited Sight Distance WB - left	Trim vegetation - 15ft off of fog-line
2.7	Limited Sight Distance WB - right	Clear vegetation to approx 10ft from edge of travel lane
3.2	Limited Sight Distance WB - right	Trim vegetation - expose rock outcrop
3.9	Limited Sight Distance WB - left	Clear vegetation to approx 10ft from edge of travel lane
4.0	Limited Sight Distance WB - right	Clear vegetation to approx 10ft from edge of travel lane
4.4	Limited Sight Distance WB - right & left	Clear vegetation adjacent to roadway (just prior to King I entrance)
4.7	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline (road pullout on left)
4.9	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
5.1	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
5.3	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
5.8	Limited Sight Distance WB - left	Clear vegetation adjacent to roadway to fenceline (approx 100ft)
5.9	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
6.0	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
6.3	Limited Sight Distance WB - right	Clear vegetation adjacent to roadway to fenceline
6.5	King II Mine entrance	
EASTBOUND		
Odometer	Description	Comment
0.4	Limited Sight Distance EB - right	Clear vegetation adjacent to roadway to fenceline
0.6	Limited Sight Distance EB - right	Clear vegetation adjacent to roadway to fenceline
0.7	Limited Sight Distance EB - right	Clear vegetation adjacent to roadway to fenceline
1.2	Limited Sight Distance EB - right	Clear vegetation adjacent to roadway to fenceline
2.4	Limited Sight Distance EB - right	Clear vegetation adjacent to roadway to fenceline, inside road radius
6.3	Limited Sight Distance EB - right & left	Trim vegetation - 10ft off of fog-line
6.5	Int SH 140 & CR 120	
Other Work		
DIRECTION NOTED UNDER DESCRIPTION		
Odometer	Description	Comment
0.4	Delineator at irrigation - EB, southside of road	GCC to install
4.6	Warning Sign - WB, Limited Sight Distance	GCC to install
4.8	Abandoned Cistern - WB, southside of road	County to remove

Table 4

7.0 PROPOSED SITE USES

Mine operations have three shift schedules; with operations occurring 7-days a week. Table 5 outlines the shift operational hours by work day:

Shift schedules	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Day Shift Start	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM
Day Shift End	7:20 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	7:20 PM	7:20 PM
Swing Shift Start		3:30 PM	3:30 PM	3:30 PM	3:30 PM		
Swing Shift End			1:30 AM	1:30 AM	1:30 AM	1:30 AM	
Night Shift Start	11:30 PM	11:30 PM	11:30 PM	11:30 PM	11:30 PM		
Night Shift End		7:30 AM	7:30 AM	7:30 AM	7:30 AM	7:30 AM	

Table 5

Transporting of coal typically occurs over a 6-days week. In order to identify projected roadway impacts, work days and transporting/hauling days have been averaged with results applied over a duration of one-year:

$$50 \text{ working weeks / year} \times 6 \text{ days in a week} = 300 \text{ days / year}$$

Production and transport is assumed to be constant over the 300-day operational period. The balance of days within the year are not included and assumed to represent holidays, weather cancellations, and reduced workforce occurring on weekends.

Based on mine operations, Table 6 reflects a comparison of the average daily trip totals for Year₂₀₁₄ to peak permitted mining operations:

	Year ₂₀₁₄ – 940,000 tons	Peak – 1.3MM tons
Miners, Superintendent, Managers & Accounting	150 individuals	165 individuals
<u>Vehicle Type</u>	<u>Trips/day</u>	<u>Trips/day</u>
Car / Truck	303 trips	334 trips
Fuel Truck / Delivery Truck	11 trips	15 trips
Transports	225 trips	312 trips
Total Trips	539 trips	660 trips

Table 6

This additional tonnage of coal reflects an approximate 30+ percent increase in marketed product. A peak yearly value of 1.3MM tons reflects a conservative estimate to the overall impacts. Traffic impacts and associated mitigation measures are based on the peak yearly of 1.3MM tons of coal shipped to market.

8.0 SITE GENERATED TRIP VOLUMES & ASSOCIATED LOADING

Trip volumes and the associated roadway impacts were evaluated over a twenty-year operating period.

Roadway impacts associated with the King II Mine operations have been calculated based on number of haul loads, and the number of days the Mine is in operation. The number of days per year the Mine transports coal product is based on market factors and assumed to be equal to 300 (50 weeks x 6 days per week). Haul loads totals described in Table 7 are based on information provided by GCC Energy LLC. Equivalent Single Axle Loading (ESAL) values are based on peak permit of 1.3MM tons coal to market values. Site generated trips volumes are outlined previously in Table 6.

Axle Loadings

Generally, highway pavements are stressed by axle and axle group loads directly in contact with the pavement rather than by the gross vehicle weight (GVW). The axle loads are determined utilizing the GVW, number and types of axles, and the spacing between the axles. Pavement wear increases sharply with increased axle loadings. The relationship is not linear. Data indicates that 100 trips across a paved surface by a 20,000-pound axle would have the same effect on pavement life as 150 passes by an 18,000-pound axle.

Load Equivalency Factors

Load equivalency factors, such as equivalent single-axle loads (ESAL), measure the relative effects of different types of loadings on pavement. By convention, an 18,000-pound single axle equals 1.0 ESAL. The ESAL values for other axles express their effect on pavement wear relative to the 18,000-pound single axle. Calculating the number of ESALs for each axle and adding the ESALs to obtain the total ESAL for the vehicle can estimate the effect of a given vehicle on pavements. For example, if the equivalent single axle load on a given vehicle is 3.0 ESALs, then one pass by the vehicle has the same effect on that pavement as three passes by an 18,000-pound single axle.

The following are flexible pavement factors utilized in this study to evaluate the loading impacts due to the product hauling and operation of the King II mine:

<u>Vehicle Type</u>	<u>ESAL Factor</u>
Passenger Car / Pickup Truck	0.0003
Single Unit Truck	0.249
Combination Unit Truck	1.087

In order to define proportional share of King II Mine operations as it relates to the baseline (year 2014) trip volumes on CR 120, roadway loading of background traffic was first identified. The baseline trips are the background traffic independent of the Mine generated trips. Total roadway loading is the sum of background loading plus year 1.3MM peak mine operations. The proportional share has been calculated by taking the year 2034 background loading and dividing this value by the sum of background and the peak year 1.3MM tons Mine loading.

Table 7 reflects peak year 1.3MM tons loading by lane – 1,236,306 18-Kip ESAL (based on avg 20-yr)

Table 8 reflects year 2034 Baseline loading by lane – 18,996 18-Kip ESAL

Total 1,255,302 18-Kip ESAL

Percent of roadway impacts allocated to Mine 99%

ESAL CALCULATIONS						
GCC ENERGY - COAL OPERATIONS (Peak 1.3M Tons)						
County Road 120						
Base Values						
Plant Operation Study Duration				20 Years		
Yearly Number of Operational Days				300 Days	(50 weeks a year / 6 days a week)	
Coal Material Tonnage / Transport				28.8 tons		
Coal Tonnage / Year - projected				1,300,000 tons		
			Vehicle Type (surface loading)	Product Load per day (average)	Trips per Day (2 trips per load)	Trips per Year (300 days of operation per year)
<u>Total Trips</u>						Trips per Study duration (20 years)
Coal Transports		Transports	(d)	150	301	90278
				# of workers	# of trips per worker (avg 2 trips per day)	
Mine Employee		Pass Car / Truck	(a)	165	330	99000
						1980000
volumes per GCC Data provided background for TIA)						
King I Employee Trips (assume included in Mine Employee line item)		Pass Car / Truck	(a)		0.0	-
						0
Sales calls		Pass Car / Truck	(a)		3.8	1,144
						22880
Coal Mine waste	Single Unit (6 Wheel)		(b)		2.2	669
						13371
Lubricants & Fuel	Single Unit (6 Wheel)		(b)		1.2	357
						7131
Garbage	Single Unit (6 Wheel)		(b)		0.7	223
						4457
Metal recycling	Single Unit (6 Wheel)		(b)		0.1	45
						891
Ball septic/Bob Johns	Single Unit (6 Wheel)		(b)		1.0	312
						6240
Delivery trucks, Mail, freight comp	Single Unit (6 Wheel)		(b)		9.5	2,853
						57051
Service trucks	Single Unit (6 Wheel)		(b)		0.1	45
						891
Water deliveries - October - April	Tractor-trailer		(d)		6.2	1,846
						36920
Roof Control supplies	Tractor-trailer		(d)		2.5	758
						15154
Rock Dust	Tractor-trailer		(d)		1.5	446
						8914
Ventilation Materials	Tractor-trailer		(d)		0.4	134
						2674
Equipment Delivery	Tractor-trailer		(d)		0.0	11
						223
				# of trips over evaluation duration		ESAL
Pass Car / Truck	(a)	0.003	x	2,002,880	=	6,009
Single Unit (6 Wheel)	(b)	0.249	x	90034	=	22,419
Combination Unit	(d)	1.087	x	1,869,441	=	2,032,083
Lane Factor						
2 lane (CDOT Pavement Design Manual - Table C-2)						0.6
				18 Kip ESAL Design Loading		1,236,306
				(2006 non-mine Background) 18 Kip ESAL Design Loading		12,023
				18 Kip ESAL Design Loading		1,248,329

Table 7

Background ESAL calc

ESAL CALCULATIONS						
BACKGROUND TRAFFIC						
County Road 120						
La Plata County Counts						
(a) Total Year 2014 (ADT)	870	trips				
(b) Total 2014 Mine Trips (ADT)	547	trips				
Background Trips (a) - (b)	323	trips				
Yr 2034 w- 20yr	0.58					
20 - Background Trips @ Yr 2034	510					
Base Values					# of days per year	# of trips per year
Study Duration			20 Years			
Weekday ADT			510 trips		300	153102
Weekend and Holiday ADT (assume 60% of Weekday)			306 trips		65	19903.26
			Vehicle Type (by vehicle)	% of trips (assumed)	Net Background Trips per year	Net Background Trips per Study Duration (20 yrs)
<u>Identify Background Trips</u>						
	Pass Car / Truck	(i)	97.5%	168680	3,373,603	
	Single Unit	(ii)	2.5%	4325	86,503	
	Combination Unit	(iii)	0%	0	-	
(Flexible Pavement)	Vehicle Type (surface)	Factor		# of trips over evaluation duration		Background ESAL
<u>18 Kip equivalency Factors</u>						
Pass Car / Truck	(a)	0.003	x	3,373,603	=	10,121
Single Unit	(b)	0.249	x	86,503	=	21,539
Combination Unit	(d)	1.087	x	0	=	0
Lane Factor						
2 lane (CDOT Pavement Design Manual - Table C-2)						0.6
	(2034 non-mine Background) 18 Kip ESAL Design Loading)					18,996

Table 8

9.0 DESIGN CRITERIA

To support King II operational and haul road requirements, this assessment uses the La Plata County Roadway Standards when evaluating existing roadway conditions and criteria for developing roadway modification cost estimates.

La Plata County Code of Ordinances Section 74-91 '*sets forth the criteria and standards for designing roadways within the jurisdiction of the County. The intent is to provide the design engineer with standards that will ensure the design and construction of roadways which will incorporate high engineering qualities and provide the public a safe and durable roadway requiring a minimum of maintenance and repairs*'.

Design Criteria:

Classification of Roadway = Local: ADT < 1000

Classification of Roadway = Collector: ADT > 1000

Roadway Width = Local: 10 + Units: 24ft width, 3ft shoulders each side = 30ft

Roadway Width = Collector: 24ft width, 4ft shoulders each side = 32ft

ADT greater than 400 trips = roadway to be paved

Asphalt (Hot Bituminous Pavement) = 5.5 inches

CL 2 Aggregate = 8 inches (as necessary depending on existing aggregate on roadway)

CL 6 Aggregate = 6 inches (as necessary depending on existing aggregate on roadway)

A flexible pavement design was completed based on typical characteristics of materials utilized within the region. The resulting pavement design supported peak permit of 1.3MM tons mine traffic plus background traffic on CR 120.

Appendix 4 of the study includes the pavement design worksheet.

Improvements to CR 120 as identified within Option 1 of the Haul Route assessment would improve safety by achieving required design criteria for sight distance and travel speed.

10.0 MITIGATING IMPACTS – HAUL ROAD ASSESSMENT

To mitigate the roadway impacts associated with King II Mine operations, GCC Energy performed an assessment of eight different haul route options to move coal product from the mine to the state highway. Two options were reviewed and rejected. Six options were reviewed for cost magnitude and feasibility. Upon reaching the state highway, existing highway network is assumed to adequately support haul operations. Assessment does include proposed modification to the highway to consist of intersection auxiliary lanes installation.

This information has been previously presented to the Citizens Advisory Panel (CAP). The CAP is an advisory panel assisting GCC Energy in identifying concerns and possible associated mitigation measures.

Reviewed and rejected:

- a) New Haul route north of facility and tie into US 160 – This option reflected the building of a dedicated haul route north and build an intersection with US 160. The length of roadway was approximately eight miles. Challenging topography included with undesirable route options (west directional hauling through City of Cortez) eliminated further review of this option.
- b) Railroad spur constructed to Farmington and south to Gallup – This option utilized the report titled 'Economic Feasibility Study for the Construction of the Proposed San Juan Railroad', dated July 27, 1993. Restated from the report, page 16: *'The best option for construction of the right of way would require an expenditure of nearly \$87 million for the 99-mile line. This does not include upfront funding for any right of way acquisition.'* *'In summary, it has been demonstrated that the heavy burden of the construction cost cannot be fully serviced by the cash flow generated by the railroad in the foreseeable future.'* An addition length of railroad spur would be required to reach the Hesperus region. More recent estimates reflect a cost of approximately \$400MM. Depending on location of load-out, traffic concerns on CR 120 may or may not be resolved.

Six options have been evaluated for this cost assessment. The scope of each option includes assumed capital projects that would address safety, operational criteria, and probable project directives that would that would be required so as to serve GCC Energy/King II operations. The following are the six options with a corresponding scope summary:

Option 1 – 100% of Coal Transport via CR 120, northern route. This option reflects that both in-bound and out-bound transport vehicles (semi-trucks) utilize the northern segment of CR 120.

Option 2 – Coal Transport, Inbound via CR 120 southern segment, Outbound via CR 120 northern segment. This option reflects in-bound (empty) transport vehicles utilize the southern segment of CR 120 with out-bound (loaded) vehicles utilizing the northern segment of CR 120.

Option 3 - Coal Transport, Inbound via CR 119, Outbound via CR 120 northern segment. This option reflects in-bound (empty) transport vehicles utilizing CR 119 with out-bound (loaded) vehicles utilizing the northern segment of CR 120

Option 4 – Development of Haul Road Alternate to existing County roadway. This option would utilize a newly constructed haul road (approximately 5.5mi) across State Board of Colorado and private lands. New haul road would support both inbound and outbound transport trucks and would tie into CR 120 in the vicinity of King I. The segment of CR 120 between King I and King II would be utilized for product transport.

Option 5 – Development of Haul Road Alternate to include Conveyor to Mesa Top. This option would utilize a newly constructed haul road (approximately 5.3mi) across State Board of Colorado and private lands. Coal would be transported by conveyor from the existing load-out to a new load-out constructed at the top of the mesa (approximately 0.7mi). Transport trucks would receive at the new load-out and haul via the new access road. The new haul route would avoid utilizing any existing County roadway.

Option 6 – Development of Conveyor from King II to new load-out adjacent to State Highway 140. This option utilizes a newly constructed conveyor from the existing King II load-out to a new load-out located adjacent to the highway (approximately 6.0mi). The new haul route would avoid utilizing any existing County roadway.

For each option, assumptions have been made on timing and scope of associated capital projects. An annual inflation factor, matching the consumer price index (CPI) of 2.5%, has been applied to the projects.

Haul route Opinion of Probable Cost (OPC) - The assessment represents a cost magnitude to evaluate coal transport options rather than a specific budget for respective capital improvement projects. Opinion of Probable Cost (OPC) scenarios were developed to mitigate roadway impacts on County Road 120 associated with King II Mine operations. Option costs are based on a 20-year operational duration. The costs were developed utilizing Colorado Department of Transportation Cost Data and information provided by La Plata County Public Works.

Note that the roadway impacts associated with the King II mine account for approximately 99% of impacts. Being that impacts are almost totally imposed by King II, costs assessment has been derived based on full costs with no adjustment to proportional share impacts.

COAL PRODUCT TO MARKET OPTIONS							
Item #	Option	(a)	(b)	(c)	(d)	(e)	OPC Cost @ 20-YEARS
		Near Term Improvements (Year 2015)	Vehicle Pull-off Improvements	CDOT Improvements	Long Term County Road Improvements	Alternate Full Term Improvements	
1	CR 120 North serves 100% of trucking	\$ 444,150	\$ 960,264	\$ 992,250	\$ 8,394,284	\$ -	\$ 10,790,947
2	Trucking inbound on CR 120S and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,124,550	\$ 18,543,705	\$ -	\$ 21,430,194
3	Trucking inbound on CR 119 and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,256,850	\$ 20,517,459	\$ -	\$ 23,536,248
4	Trucking Utilizing Designated Haul Road (Utilize CR 120 from King I to King II, no conveyor)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 4,098,738	\$ 12,887,408	\$ 19,401,710
5	Trucking Utilizing Designated Haul Road (Include conveyor to load-out at top of mesa)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 27,254,241	\$ 31,748,557
6	Trucking Utilizing Conveyor (no haul road - load-out adjacent to Hwy)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 67,609,921	\$ 72,104,237

Table 9

Haul Route Pros & Cons – The following is a brief summary of the subjective analysis of the haul route options. Note that cost of a Haul Route Option is not listed as either a pro or con though cost is a significant factor in the implementation of each and every option.

Option	Description	Pro	Con
1	CR 120 N Serves 100% of trucking	*Limited length of county roadway impacted. *Reduced number of affected residents.	*CR 120N residents experience 100% of truck burden.
2	Trucking Inbound of CR 120S and Outbound on CR 120N	*Affected residents receive 50% of truck burden.	*Increased length of county roadway impacted. *Increased number of affected residents.
3	Trucking Inbound on CR 119 and Outbound on CR 120N	*Affected residents receive 50% of truck burden.	*Increased length of county roadway impacted. *Increased number of affected residents. *Increased congestion at SH 140 intersection near Fort Lewis Elementary School
4	Trucking Utilizing Designated Haul Road (Utilize CR 120 CR 120 from King I to King II, no conveyor)	*No truck traffic on segment of county road adjacent to residents. *Limited length of county roadway impacted.	*Creation & Construction of new roadway *Permitting and approval of new roadway corridor *Increased acreage impacted by roadway(s). *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Steep roadway grade from mesa top to gulch
5	Truck Utilizing Designated Haul Road (Include conveyor to load-out at top of mesa)	*No truck traffic on county road adjacent to residents.	*Creation & Construction of new roadway *Permitting and approval of new roadway corridor *Increased acreage impacted by roadway(s)/conveyor. *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Maintenance of conveyor system. *Constant noise of operating conveyor. *Construction of new load-out facility
6	Trucking Utilizing Conveyor (no haul road – load-out adjacent to Hwy)	*No truck traffic on county road adjacent to residents.	*Creation & Construction of new transport system *Permitting and approval of new conveyor corridor *Increased acreage impacted by transport system/conveyor. *Reduction and/or modification to ranch/agriculture operations *Alignment still adjacent to a few existing residential. *Increased noise exposure to mesa top residents *Maintenance of conveyor system. *Constant noise of operating conveyor. *Construction of new load-out facility

Table 10

Advancement of Option – Option 1 is expected to be advanced for implementation.

11.0 PROPOSED SCHEDULE FOR PROJECT IMPLEMENTATION

Near Term Improvements – Some of the Near Term Improvements are anticipated to be performed by GCC Energy in the Year 2015. Projects scheduled for immediate action.

- Extend Big Stick Ditch culvert @ 90° corner
- Roadway pavement widening @ 90° corner
- Clear vegetation along CR 120N edge of roadway so as to improve sight distance

Improvements Completed by Year₂₀₁₉ (within 4-years)

GCC Energy plans to advance Haul Route Option 1 - 100% of Coal Transport via CR 120, northern route. The scope and timing of projects will be governed by items such as right-of-way acquisition, sequencing of construction, design and permitting, etc. Table 11 represents the planned list of improvements with proposed schedule of action:

GCC - PROPOSED PROJECT CONSTRUCTION SCHEDULE		Year			
Item	Project	2015	2016	2017	2018
a	Big Stick Ditch Culvert Extension	X			
b	Extend Paving at 90° corner	X			
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance	X			
d	Pavement in front of McCue & Hunzeker parcels (approx 2800lf)		X		
e	ROW Acquisition - 90° corner		X		
f	ROW Acquisition - CR 120N multiple parcels		X		
g	Re-alignment at MP 0.3 (90° corner)			X	
h	Re-align and construct @ Wiltse and Ute Mtn Ute parcels, approx 0.6-mile of CR 120N			X	
i	Full Depth Reclamation (FDR) @ year 2018 (90° corner previously completed)				X
j	Widening, Regrading and Paving of Road Section (MP 2.6 - 6.5, w/o item h)			X	X
k	County Roadway Mitigation Fee (Reflects operational costs - once paved, no ongoing mitigation \$)	X	X	X	
l	Vehicle Turn-off @ CR 120N			X	
m	Vehicle Turn-off Lease from State Lands		X	X	X
n	SH 140/ CR 120N Highway Improvements LT & RT Decel lanes		X		

Table 11

Projected cost addressing roadway maintenance – Item 'k' reflects a roadway mitigation fee. The fee is based on the cost of maintenance or the 3.9 miles of gravel road section. The fee is anticipated to be paid until the roadway becomes paved. The amount of the mitigation fee is proposed to be calculated as follows:

(from La Plata County e-mail dated 1/22/2015)

'Mike: I asked Doyle Villers to provide an update on our road maintenance costs for the 3.9 miles of gravel, since we have seen a significant increase in haul truck traffic since he originally ran these numbers. Per the attached, our annual cost per mile for the gravel section is approximately \$10,394/mile.

The cost per ton of transported coal would be calculated as follows:

Adjust the yearly maintenance cost to reflect a 10-year average:

$$\$10,394 \times 3.9 = \$40,537$$

$$\$40,537 \times (1 + (10\text{yr} \times 2.35\%/yr)) = \$50,063$$

Yearly tonnage based on Year₂₀₁₄ = 940,000 tons

$$\text{Yearly maintenance cost / tons of coal hauled per year} = \$50,063 / 940,000 \text{ tons} = \mathbf{\$0.05/ton}$$

It is anticipated that gravel roadway mitigation costs will be incurred until such time that the roadway is paved. After pavement, on-going maintenance costs will be reduced with scope consisting of snow-plowing and every 7-years, the roadway receiving a chip-seal application.

12.0 CONCLUSIONS AND SUMMARY OF FINDINGS

Specific findings of the report are as follows:

- ◆ Study is based on the King II Mine operations peak permit of 1.3MM tons of coal per year: 150 loaded truck per day, 300-days per year over 20-year period.
- ◆ The King II Mine operation is to generate 660 trips per day (breakout – 334 passenger/truck, 15 single axle loading, & 312 transport semi-trucks).
- ◆ CDOT Access Permit No. 513005 has been issued to GCC Energy LLC. Auxiliary lane construction in Year₂₀₁₆ to include northbound LT Decel and southbound RT Decel auxiliary lane(s).
- ◆ Water hauling route to in-bound using CR 120S and out-bound using CR 120N. Anticipate conclude water hauling end of year 2016.
- ◆ Haul Route – Option 1 to be advanced. All combination vehicles to operate on the northern segment of County Road 120
- ◆ Passenger car and Single-Unit vehicles to operate using available county roadway network. No restriction for passenger car and single-unit to northern segment of County Road 120
- ◆ Roadway projects schedule proposed to include near term (Year₂₀₁₅) and those projects constructed within next 4-years.

TECHNICAL MANUALS AND PUBLIC DATA UTILIZED IN TRAFFIC STUDY

- State of Colorado, State Highway Access Code - Volume2, Code of Colorado Regulations 601-1. (August 31, 1998)
- Colorado Department of Transportation – Pavement Design Manual 2012
- La Plata County Traffic Data (2014)

GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

La Plata County Letter
(Lauro)

La Plata County E-mail
(Davis)

APPENDIX 1



PLANNING DEPARTMENT
970.382.6263 • FAX 970.382.6298 • TDD 970.382.6218

August 29, 2006

Mr. Tom Kaldenbach, Environmental Protection Specialist
Colorado Division of Reclamation, Mining, and Safety
1313 Sherman Street, Room 215
Denver, Colorado 80203

Dear Mr. Kaldenbach:

Mike Savage has requested that I respond regarding La Plata County Code requirements for the King Coal operation as described below. I understand that the project involves the mining of coal by underground methods (room and pillar) from a State of Colorado coal lease and a federal Bureau of Land Management coal lease. The operation is an extension of the existing King Coal Mine that has been in operation adjacent to the extension area since 1947. All surface disturbance (approximately 22 acres) associated with the mining operation is located within State of Colorado lands for which a Colorado Division of Reclamation, Mining and Safety permit has been obtained. The federal Office of Surface Mining Reclamation and Enforcement has concurred with the issuance of this permit and is currently reviewing the permit for coal extraction under tribal lands. National King Coal LLC also holds additional permits with the federal Mine Safety and Health Administration (safety), Colorado Department of Public Health and Environment (air emissions, stormwater discharge, and construction), and the Colorado Division of Water Resources (water rights and augmentation).

Because the operations are located on State of Colorado lands, and beneath Bureau of Land Management and Ute Mountain Tribal lands and do not involve any private lands, the County does not have jurisdiction to review the proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Nancy D. Lauro".

Nancy D. Lauro
Community Development Director
Cc: [via email: tbird@NKCmine.com](mailto:tbird@NKCmine.com)
savageandsavage@earthlink.net



LA PLATA COUNTY

1060 EAST SECOND AVENUE, DURANGO, COLORADO 81301 • PHONE 303-259-4000 • FAX 259-4000. EXT. 299

September 9, 1994

Harry Ranney
Colorado Division of Minerals & Geology
1313 Sherman Street, Rm 215
Denver, Colorado 80203

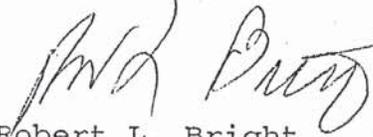
RE: King Coal

Dear Mr. Ranney:

This letter is to confirm that the King Coal operation in La Plata County conforms to county land use regulations. The extension of underground mining as proposed has been determined to have no surface impacts at present.

If you have further questions, please feel free to contact me at (303) 382-6263.

Sincerely,


Robert L. Bright
Director of Planning

cc: Tom Bird, King Coal
King Coal file

La Plata County

BUILDING DEPARTMENT

COUNTY ENGINEER

P. O. BOX 1711
DURANGO, COLORADO 81301
PHONE: 259-1086

January 22, 1979

To Whom It May Concern:

This is to verify that the coal extraction operation known as the KING COAL MINE is in an unzoned area of La Plata County and has been in existence for some time in compliance with all County land use requirements. This in no way relieves the operators from compliance with the requirements of the Colorado Land Reclamation Act.



Craig Roser
La Plata County Land Use Administrator

CR/aer

Mike Olson

From: Michael Olson
Sent: Monday, November 04, 2013 9:19 AM
To: Mike Olson
Subject: Fwd: FW CR 120 - Current maintenance.msg
Attachments: CR 120 - Current maintenance (41.6 KB)

----- Forwarded message -----

From: **Jim Davis** <Jim.Davis@co.laplata.co.us>
Date: Mon, Oct 28, 2013 at 8:50 AM
Subject: FW CR 120 - Current maintenance.msg
To: "Olson, Mike (olson.roadrunner@gmail.com)" <olson.roadrunner@gmail.com>

Mike: I revied the information we sent previously, attached, and was sure if we also shared the following. The gravel portion of County Road 120 is 8.3 miles. We took the \$207, 601 (Pub Works Report) and divided by 3.5 years (dates of report) to =\$59,315/year, then divided by 8.3 miles which = \$7,146/mile/year added \$1,200/mile/year (snow removal) for a total of \$8,346/mile/year. Multiply that, \$8,346.00 x 3.9 miles and our annual maintenance cost for this section of County Road 120 would = \$32,549 /year.

Hopefully this is what you are looking for.

Thanks

Jim Davis, P.E.

Director of Public Works

La Plata County

1060 Main Avenue, Unit 104

Durango, CO 81301

Phone: [\(970\) 382-6372](tel:(970)382-6372)

Fax: [\(970\) 375-7986](tel:(970)375-7986)

Email: jim.davis@co.laplata.co.us



Mike Olson <molson@rr-eng.com>

Updated maintenance cost for CR 120

Jim Davis <Jim.Davis@co.laplata.co.us>

Thu, Jan 22, 2015 at 4:39 PM

To: "Mike Olson (molson@rr-eng.com)" <molson@rr-eng.com>

Mike: I asked Doyle Villers to provide an update on our road maintenance costs for the 3.9 miles of gravel, since we have seen a significant increase in haul truck traffic since he originally ran these numbers. Per the attached, our annual cost per mile for the gravel section is approximately \$10,394/mile. Let me know if you have any questions.

Thanks

Jim Davis, P.E.

Director of Public Works

La Plata County

1060 Main Avenue, Unit 104

Durango, CO 81301

Phone: (970) 382-6372

Fax: (970) 375-7986

Email: jim.davis@co.laplata.co.us



2 attachments



15_CR120_Estimated Annual Maintenance Cost per Mile.xlsx

12K



15_CR120_PubWorks_Maintenance Costs.pdf

4727K

GCC ENERGY LLC KING II MINE

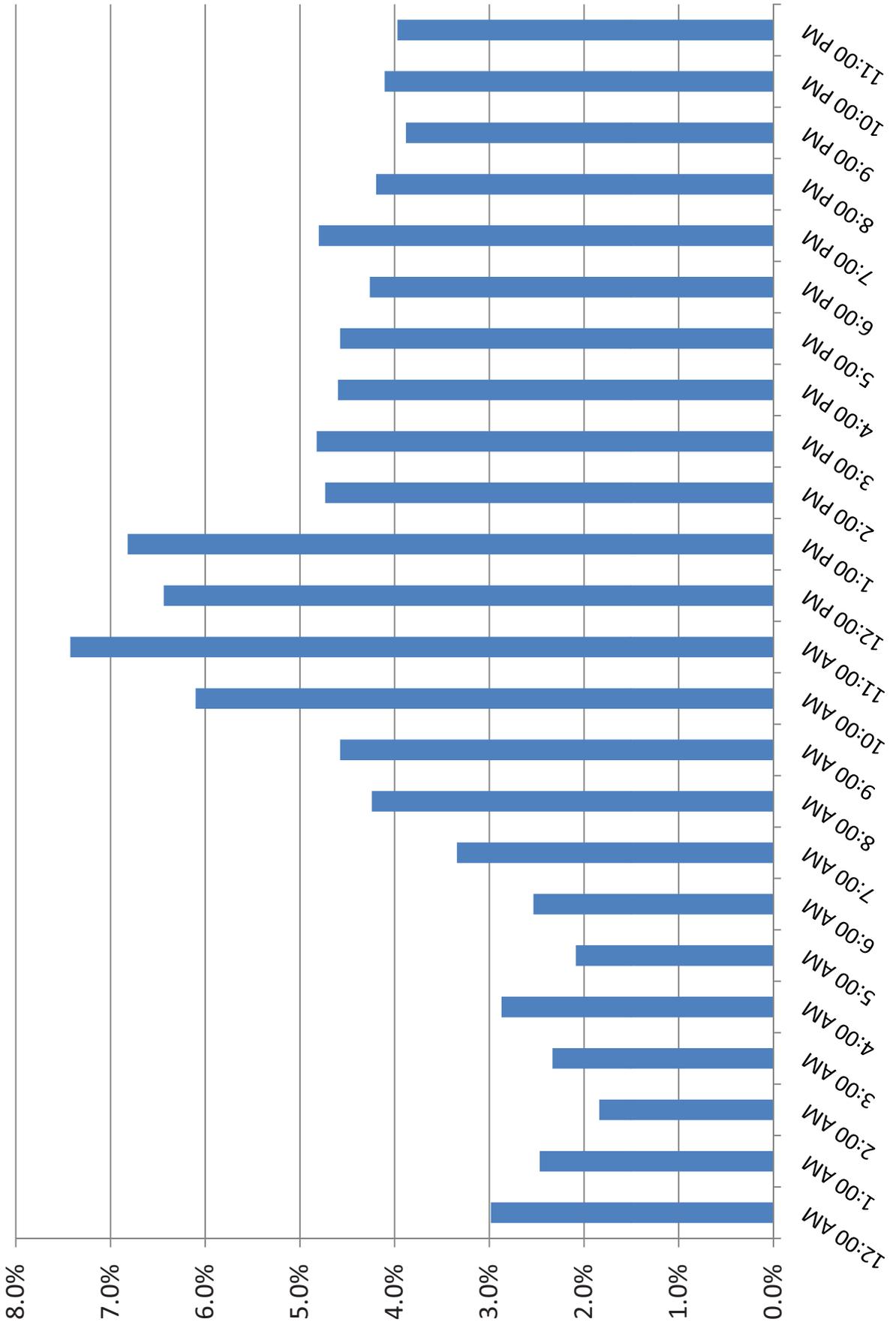
TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

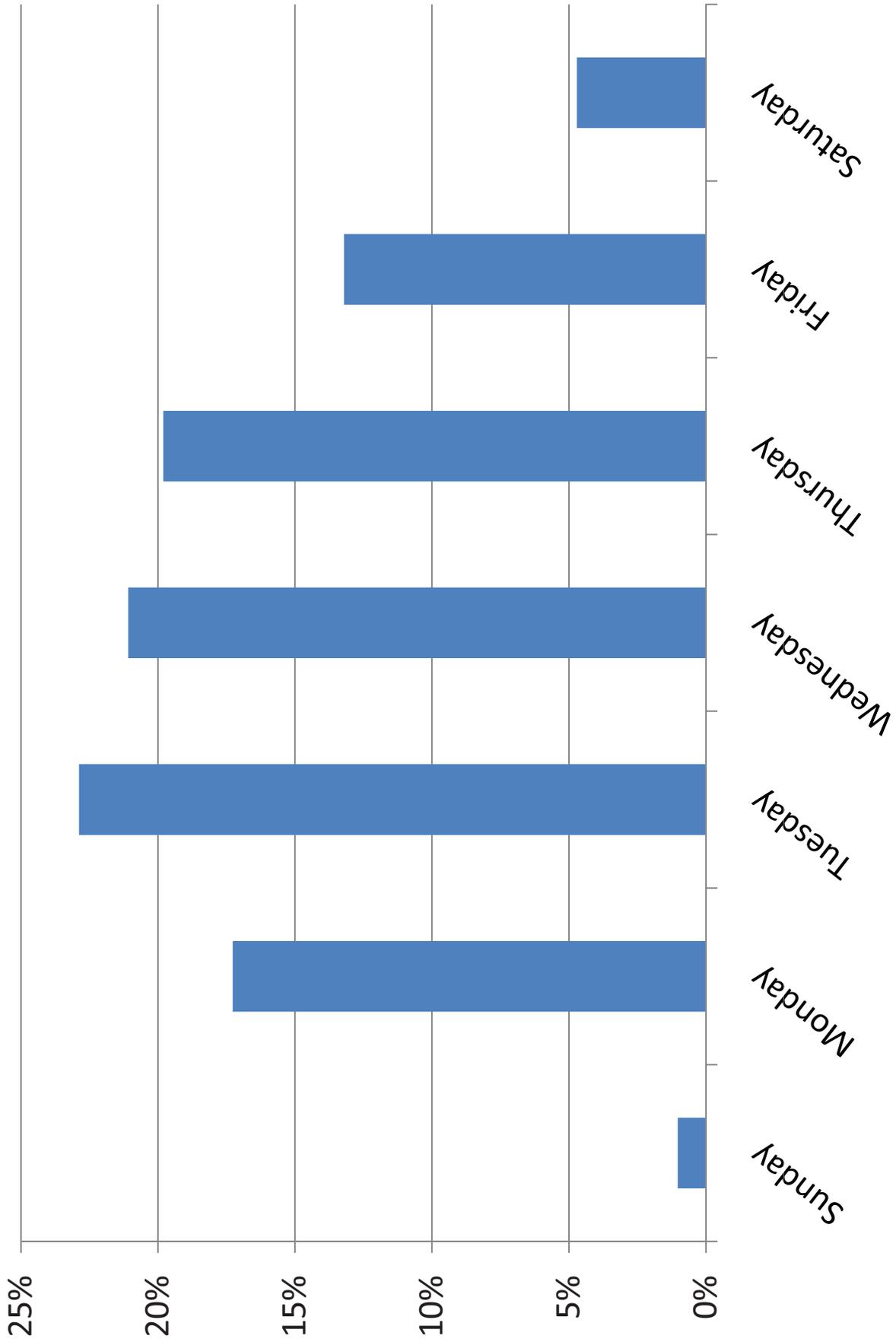
GCC Energy LLC Operational Data

APPENDIX 2

TRUCK TRAFFIC DISTRIBUTION BY HOUR



TRUCK TRAFFIC DISTRIBUTION BY DAY



Trucks / Loads

Travel to/from King I	Vehicle Type	Average Month	Average Year
Coal Mine waste	10-yard dump truck	15	180
Employee traffic	Passenger car/van	405	4860
		420	5040

Materials delivery to King II	Vehicle Type	Average Month	Average Year
Water deliveries - October - April	Tractor-trailer	71	497
Roof Control supplies	Tractor-trailer	17	204
Rock Dust	Tractor-trailer	10	120
Ventilation Materials	Tractor-trailer	3	36
Bulk materials			
Lubricants & Fuel	Local bulk truck	8	96
Garbage	Roll-off container	5	60
Metal recycling	Roll-off container	1	12
Ball septic/Bob Johns	Pick up Service	7	84
Equipment Delivery	Tractor-trailer	1 every 4 Mo	3
		122	1112

Vendor traffic to King II	Vehicle Type	Average Month	Average Year
Sales calls	Passenger car/pick up	25	308
Delivery trucks, Mail, freight companies	2/3-axle truck	64	768
Service trucks	2/3-axle truck	1	12
		90	1088

Total 7240

GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

Photos – Existing Road Conditions

APPENDIX 3

CR 120 Photos – Mile Post
distance from north access
with SH 140, (from south
access with SH 140)



CR 120 - MP 0.1 (13.6)

Add – Special , Heavy Truck Traffic

Add – W16-4, Next 6.5 miles



CR 120 - MP 3.1 (10.5)

Add – R2-1 (25)

Limited sight distance along next 3.0 miles. Recommend change speed limit to 25mph

Add – Special , Heavy Truck Traffic

Add – W16-4, Next 3 miles



CR 120 - MP 3.2 (10.4)

W1-1R

Limited sight distance, Clear vegetation from roadway edge. General observance by trucks of 20mph recommended speed.



CR 120 - MP 3.3 (10.3)

Limited sight distance.



CR 120 - MP 3.8 (9.8),
Limited sight distance, Clear vegetation
from roadway edge.



CR 120 - MP 3.9 (9.7),
Limited sight distance, Clear vegetation
from roadway edge.



CR 120 - MP 4.0 (9.7),
General truck use of full roadway width.
Good sight distance.



CR 120 - MP 4.0 (9.7),
General truck observance of W2-1
(recommended curve speed). Limited
sight distance



CR 120 - MP 4.7 (8.9),
Limited sight distance.



CR 120 - MP 4.9 (8.7),
Limited sight distance, Clear vegetation
from roadway edge



CR 120 - MP 5.0 (8.6),
Poor roadway drainage. May require
improvement to side ditch and cross
culvert.



CR 120 - MP 5.1 (8.5),
Limited sight distance, Clear vegetation
from roadway edge.



CR 120 - MP 5.3 (8.3),
Limited sight distance, Clear vegetation
from roadway edge.



CR 120 - MP 5.7 (7.9),
Roadway narrows due to constraint from irrigation ditch located on south side of roadway. Evaluate option for widening road to north.



CR 120 – MP 6.5 (7.1)

Mine entrance. Policy to have all truck operations utilize northern segment of County Road 120



CR 120 - MP 6.5 (7.1),
Truck staging on site, awaiting receipt of
coal shipment.



CR 120 - MP (7.0) 6.6,
Add – Special , Heavy Truck Traffic
Add – W16-4, Next 6.5 miles

GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

Pavement Design Worksheets

APPENDIX 4

3-Jun-15

Project: County Road 120N
GCC Energy Traffic Impact Analysis

18 Kip Equivalent Single Axle Load (ESAL) Determination

- 323 Non-mine traffic (use 2014 baseline)
- 660 Mine traffic (1.2M Tons Avg)
- 1) **983** ADT for County Road

- 2)
 - 65.9%** Cars and Trucks 648 vehicles
 - 2.4%** Single Unit Trucks 24 vehicles
 - 31.7%** Combined Trucks 312 vehicles

- 3)

648	x	0.003	=	1.94
24	x	0.249	=	5.87
312	x	1.087	=	338.72
Total				= 346.54 Equiv. Daily 18k Load Application (ADLA)

- 4) 346.54 x **0.6** = 207.92

- 5) 300 days x 20 years x 207.92 = 1.248E+06 (18k ESAL)

CDOT Pavement Design Manual
18k Equivelant Factors (Table C-1)
 0.003 Cars and Trucks
 0.249 Single Unit Trucks
 1.087 Combination
Lane Factors (Table C-2)
 0.6 (2 lanes)
 0.45 (4 lanes)
 0.3 (6 lanes)
 0.25 (8 lanes)
Design Period
 300 days per year (Focus only on work days - 50
 20 years (design life)

Flexible Pavement Design (AASHTO Roadway Design Guide)

- Zr = **-0.524** (Table 1.4 CDOT Design Manual)
- Reliability = **70%** (Local Road - Rural: 50-75%) Table 1.3, CDOT Pavement Design Manual)
- Standard Deviator = **0.44** (CDOT Default Value - Table 3.1, CDOT Pavement Design Manual)
- 18k ESAL = **1.25E+06**
- Resilient Modules, Mr = **3125** Assumed R Value = 6: Pickup ruts approx 0.5-1 in (Table 2.2 CDOT Design Manual)
- PSI = **2.5** (Sec.1.9, CDOT Design Manual)

Using Design Nomograph (CDOT Design Manual Figure 3.1)

SN = **3.5**

Using Equation 3.1 CDOT Manual

SN = **3.99** adjust this numbers so LHS = RHS

EQUATION 3.1		
LHS	=	6.096055 Change SN in equation section 3
RHS	=	6.091113

SN = (A1)(D1) + (A2)(D2)(M2) + (A3)(D3)(M3)

- A1 = **0.44** (Structural Coeff. Grading C Asphalt; Table 3.2, CDOT Design Manual)
- D1 = (Depth of Asphalt in inches)
- A2 = **0.11** (Structural Coeff. Aggregate Base Course (ABC); Table 3.3, CDOT Design Manual)
- D2 = **6** (Depth of Class 6(ABC) in inches - assumed road base)
- M2 = **1** (Drainage Coeff.; Table 5-5 CDOT Design Manual)
- A3 = **0.11** (Structural Coeff. Aggregate Base Course (ABC); Table 3.3, CDOT Design Manual)
- D3 = **8** (Depth of Class 2 (ABC) in inches - assumed base in-place)
- M3 = **1** (Drainage Coeff.; Table 5-5 CDOT Design Manual)

Solve for D1

D1 = 5.57 (Depth of Asphalt in inches)

GCC ENERGY LLC GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

Cost Estimate Market Data

CCI ITEMS USED FROM 10/1/2011 TO 12/31/2011

ITEM CODE	# OF ITEM	QUANTITY	PRICE	UNIT PRICE	INDEX
203-00000 To 203-00060 203-00062 To 203-00210 203-00400 To 203-00500 203-01020 To 203-01030 209-00000 To 209-00050	21	English (CY) 970,993.00	\$6,478,487.02	\$6.67	
	0	Metric (CM) 0.00	\$0.00	\$0.00	
UNCLASSIFIED EXCAV (CIP)	21	970,993.00^{CY}	\$6,478,487.02	\$6.67	270.0
403-00720, 403-01000, 403-01010, 403-02000, 403-09121 To 403-09500 403-31300 To 403-36447 403-91401 To 403-95353 411-03100 To 411-03355 411-10010 To 411-90010 (Gal/Lit) Gallon & Liter are converted to Ton	53	English (TON) 287,275.53	\$21,455,345.35	\$74.69	
	0	Metric (MT) 0.00	\$0.00	\$0.00	
HOT MIX ASPHALT (H A)	53	287,275.53^T	\$21,455,345.35	\$74.69	323.1
412-00000 To 412-00050 412-00700 To 412-01352 412-03000 To 412-03000	6	English (SY) 11,539.05	\$654,124.18	\$56.69	
	0	Metric (SM) 0.00	\$0.00	\$0.00	
CONCRETE PAVEMENT (9")	6	11,539.05^{SY}	\$654,124.18	\$56.69	424.4
SURFACING TOTAL INDEX					332.8
509-00000 To 509-00000	2	English (LB) 874,539.00	\$1,533,864.70	\$1.75	
	0	Metric (KG) 0.00	\$0.00	\$0.00	
STRUCTURAL STEEL	2	874,539.00^{LB}	\$1,533,864.70	\$1.75	205.6
601-01022 To 601-01022 601-01030 To 601-01060 601-03030 To 601-05064	17	English (CY) 6,542.00	\$2,910,240.85	\$444.85	
	0	Metric (CM) 0.00	\$0.00	\$0.00	
STRUCTURAL CONCRETE	17	6,542.00^{CY}	\$2,910,240.85	\$444.85	204.7
602-00000 To 602-00000 602-00020 To 602-00020	13	English (LB) 1,512,248.00	\$1,315,582.63	\$0.87	
	0	Metric (KG) 0.00	\$0.00	\$0.00	
REINFORCING STEEL	13	1,512,248.00^{LB}	\$1,315,582.63	\$0.87	212.2
STRUCTURAL TOTAL INDEX					206.3
COMPOSITE INDEX =					284.0

Sum of the 6 categories cost = \$34,347,644.73

HBP Unit Price per CY = \$147.88

Concrete Pavement Unit Price per CY = \$226.75

INDEX AND AVERAGE UNIT BID PRICES FOR 01/01/11 THROUGH 12/31/11

ITEM NUMBER	ITEM	TOTAL QUANTITY	UNIT	TOTAL COST	AVERAGE PRICE
250-00010	Environmental Health and Safety Management	12	Lump Sum	47,913.00	3,992.75
250-00050	Monitoring Technician	1,766	Hour	103,028.00	58.34
250-00100	Environmental Health and Safety	1	Lump Sum	725.00	725.00
250-00110	Health and Safety Officer	988	Hour	64,761.00	65.55
250-00120	Material Sampling and Delivery	8	Each	2,920.00	365.00
250-00200	Material Handling (Stockpile)	30	Cubic Yard	2,220.00	74.00
250-00210	Solid Waste Disposal	10	Cubic Yard	800.00	80.00
250-00220	Hazardous Waste Disposal	140	Cubic Yard	57,958.60	413.99
304-01000	Aggregate Base Course (Class 1)	132,942	Ton	2,245,125.15	16.89
304-02000	Aggregate Base Course (Class 2)	56,613	Ton	862,470.52	15.23
304-02005	Aggregate Base Course (Class 2)	22,109	Cubic Yard	641,161.00	29.00
304-03000	Aggregate Base Course (Class 3)	7,318	Ton	128,862.40	17.61
304-03005	Aggregate Base Course (Class 3)	44	Cubic Yard	1,320.00	30.00
304-05000	Aggregate Base Course (Class 5)	2,335	Ton	46,700.00	20.00
304-06000	Aggregate Base Course (Class 6)	200,423	Ton	3,319,224.29	16.56
304-06007	Aggregate Base Course (Class 6)	82,064	Cubic Yard	2,140,819.52	26.09
304-06008	Aggregate Base Course (Class 6) (Special)	2,089	Cubic Yard	55,324.69	26.48
304-07000	Aggregate Base Course (Class 7)	6,599	Ton	140,649.44	21.31
304-07005	Aggregate Base Course (Class 7)	3,862	Cubic Yard	150,393.14	38.94
304-09000	Aggregate Base Course (Special)	4,123	Cubic Yard	129,246.00	31.35
304-09014	Aggregate Base Course (Special)	11,774	Ton	194,038.05	16.48
307-00000	Hydrated Lime	1,968	Ton	310,330.00	157.69
310-00608	Full Depth Reclamation of Hot Mix Asphalt Pavement (0	45,567	Sq Yard	108,422.50	2.38
310-00610	Full Depth Reclamation of Hot Mix Asphalt Pavement (8	122,347	Sq Yard	323,020.30	2.64
403-00720	Hot Bituminous Pavement (Patching) (Asphalt)	18,537	Ton	2,041,448.84	110.13
403-00721	Hot Bituminous Pavement (Patching) (Asphalt)	1,311	Sq Yard	133,683.61	101.97
403-00800	Emergency Pothole Repair	330	Ton	89,798.50	272.12
403-02000	Hot Bituminous Pavement (Special)	4,670	Ton	347,890.00	74.49
403-09210	Stone Matrix Asphalt	23,332	Ton	2,231,705.80	95.65
403-09221	Stone Matrix Asphalt (Fibers) (Asphalt)	40,925	Ton	3,800,049.76	92.85
403-09500	Furnish Hot Bituminous Pavement	14,401	Ton	879,000.79	61.04
403-33751	Hot Bituminous Pavement (Grading S) (75) (PG 64-28)	43,285	Ton	2,463,050.23	56.90
403-33841	Hot Bituminous Pavement (Grading S) (100) (PG 64-22)	78,685	Ton	4,135,896.99	52.56
403-33851	Hot Bituminous Pavement (Grading S) (100) (PG 64-28)	1,649	Ton	103,887.00	63.00
403-33871	Hot Bituminous Pavement (Grading S) (100) (PG 76-28)	218	Ton	13,734.00	63.00
403-34701	Hot Bituminous Pavement (Grading SX) (75)	263,040	Ton	11,189,266.35	42.54
403-34721	Hot Bituminous Pavement (Grading SX) (75) (PG 58-28)	141,283	Ton	10,197,844.25	72.18
403-34731	Hot Bituminous Pavement (Grading SX) (75) (PG 58-34)	25,829	Ton	1,671,116.89	64.70

**GCC ENERGY LLC GCC
ENERGY LLC
KING II MINE**

**TRAFFIC AND ROADWAY
ANALYSIS**

La Plata County, Colorado

**Assessment of Water
Truck Operations on
CR 120S**

APPENDIX 6

ESAL CALCULATIONS
GCC ENERGY - COAL OPERATIONS (Peak 1.3M Tons)
County Road 120

Base Values

Plant Operation Study Duration	20 Years	
Yearly Number of Operational Days	300 Days	(50 weeks a year / 6 days a week)
Coal Material Tonnage / Transport	28.8 tons	
Coal Tonnage / Year - projected	1,300,000 tons	

		Vehicle Type (surface loading)	Product Load per day (average)	Trips per Day (2 trips per load)	Trips per Year (300 days of operation per year)	Trips per Study duration (20 years)
Total Trips						
Coal Transports	Transports	(d)	150	301	90278	1805556
Mine Employee	Pass Car / Truck	(a)	# of workers 165	# of trips per worker (avg 2 trips per day) 330	99000	1980000

per GCC Data provided background for TIA)

King I Employee Trips (assume included in Mine Employee line item)	Pass Car / Truck	(a)		0.0	-	0
Sales calls	Pass Car / Truck	(a)		3.8	1,144	22880

Coal Mine waste	Single Unit (6 Wheel)	(b)		2.2	669	13371
Lubricants & Fuel	Single Unit (6 Wheel)	(b)		1.2	357	7131
Garbage	Single Unit (6 Wheel)	(b)		0.7	223	4457
Metal recycling	Single Unit (6 Wheel)	(b)		0.1	45	891
Ball septic/Bob Johns	Single Unit (6 Wheel)	(b)		1.0	312	6240
Delivery trucks, Mail, freight comp	Single Unit (6 Wheel)	(b)		9.5	2,853	57051
Service trucks	Single Unit (6 Wheel)	(b)		0.1	45	891

Water deliveries - October - April	Tractor-trailer	(d)		6.2	1,846	36920
Roof Control supplies	Tractor-trailer	(d)		2.5	758	15154
Rock Dust	Tractor-trailer	(d)		1.5	446	8914
Ventilation Materials	Tractor-trailer	(d)		0.4	134	2674
Equipment Delivery	Tractor-trailer	(d)		0.0	11	223

				# of trips over evaluation duration	=	ESAL
Pass Car / Truck	(a)	0.003	x	2,002,880	=	6,009
Single Unit (6 Wheel)	(b)	0.249	x	90034	=	22,419
Combination Unit	(d)	1.087	x	1,869,441	=	2,032,083

Lane Factor

2 lane (CDOT Pavement Design Manual - Table C-2) 0.6

18 Kip ESAL Design Loading **1,236,306**

(2006 non-mine Background) 18 Kip ESAL Design Loading **12,023**

18 Kip ESAL Design Loading **1,248,329**

Projected (Avg 1.3M) Mine Trips

ROADARTISTS
 2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL. 970.748.0336

SEAL:

GCC ENERGY
 SH 140 - CR 120 INTERSECTION
 COMBINATION UNIT TRACKING

ISSUED:
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MW
 CHECKED BY: MO
 DATE: -

REVISIONS:		
NO.	DESCRIPTION	DATE

SCALE:

SHEET NUMBER:
 FIG 10

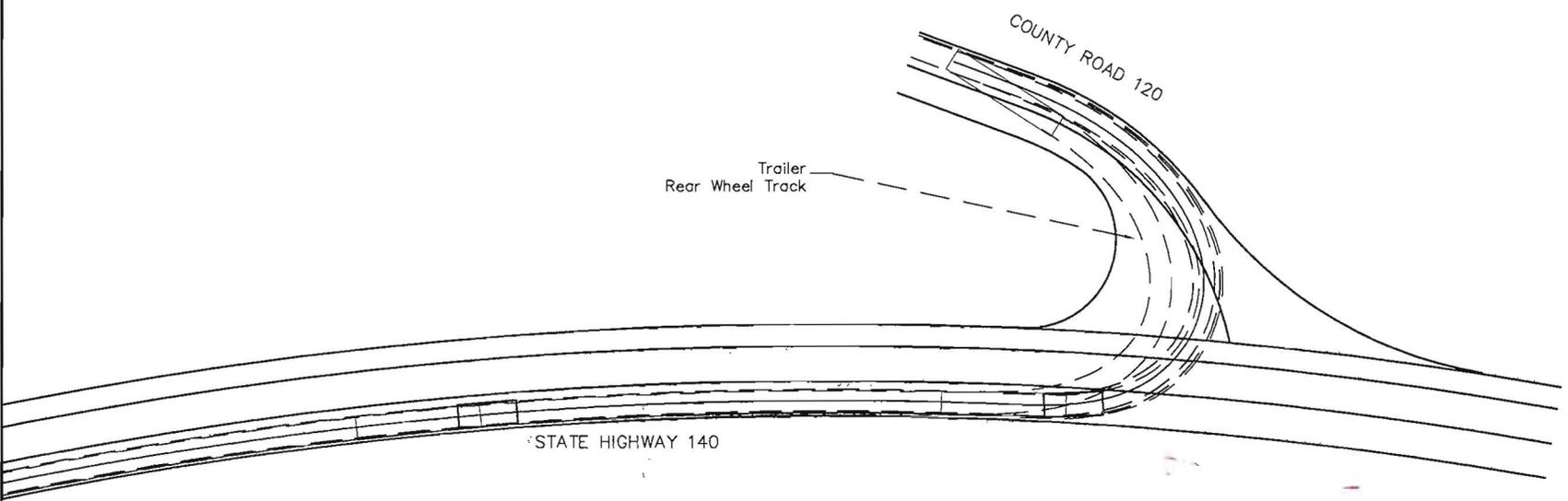


EXHIBIT 3

ROAD	LOCATION	2006	2007	2008	2009	2010	2011	2012	2013	2014
119	At CR 116 South of Y							140	nc	
119	West of Hwy 140	262	245	82	309	317	270	233	nc	245
119	West of CR 101	211	255	226	289	291	290	231	nc	258
119	East of CR 101	194	238	209	249	252	234	182	nc	194
119	East of Hwy 140	86	81	273	105	95	82	nc	nc	66
119	East CR 122	42	57	86	99	66	63	63	nc	100
120N	At Hwy 140	572	697	652	559	681	727	814	nc	870
120S	East of CR 116	245		186	164	181	148	183	164	215
120S	At CR 140	456	557	162	426	454	426	437	410	434

Traffic Volume value used in study



²La Plata County Traffic Data

Approximate Breakout of traffic volume:	ADT	
Mine Generated Trips (Approx 940,000 tons of product)	547	trips
Background Traffic	323	trips
Total Trips at Intersection of SH 140 / CR 120N	<u>870</u>	

ESAL CALCULATIONS
(Water Truck Assessment)
County Road 120 - Southern Route

La Plata County Counts

Comment

(a) Average Year ADT (12-Yr average) 434 trips

Base Values

		# of days per year	# of trips per year	
Study Duration	1 Years			Conservative 1-yr of Water Truck
Weekday ADT (data from County)	434 trips	300	130,200	Operations (300 operational haul days)
Weekend and Holiday ADT (assume 60% of Weekday)	260.4 trips	65	16,926	

Identify Background Trips

	Vehicle Type (by vehicle)	% of trips (assumed)	Net Background Trips per year	Net Background Trips per Study Duration (20 yrs)
Pass Car / Truck	(i)	97.5%	143448	143,448
Single Unit	(ii)	2.5%	3678	3,678
Combination Unit	(iii)	0%	0	-

Mine Operations

		ADT	AADT - 1-yr
Water Truck	(iv)	6.15	1,846

Note that water truck travels inbound loaded on CR 120 southern route. Outbound empty water truck utilizes CR 120 northern route.

	Vehicle Type (surface loading)	Factor	# of trips over evaluation duration	=	ESAL
(Flexible Pavement) <u>18 Kip equivalency Factors</u>					
Pass Car / Truck	(a)	0.003	x 143,448	=	430
Single Unit	(b)	0.249	x 3,678	=	916
Combination Unit (Water Truck)	(d)	1.087	x 1,846	=	2,007

Lane Factor
 2 lane (CDOT Pavement Design Manual - Table C-2) 0.6

(CR 120 South Background) 18 Kip ESAL Design Loading	808
Water Truck 18 Kip ESAL Design Loading	1,204

18 Kip ESAL Design Loading **2,012**

WATER TRUCK ASSESSMENT

Project GCC Energy - King II
 Location CR 120, Southern Route

Analysis Date November 12, 2014

TRIAL BASE THICKNESS					Serviceability Criteria, Rutting Criteria,					
Total ESAL Loading		2012			D _{BS} (inches) <u>6"</u>		Change PSI = <u>2.0</u>		RD (inches) = <u>1.5</u>	
					P _o - P _t = 4.0 - 2.0 = 2.0		Allowable 1.0 - 2.2 (Section 2.2.2, Pavement Design Manual)			
(1) Season (Roadbed Moisture Condition)	# of Months	(2) Roadbed Resilient Modulus, M _R (psi) <small>Assumed Quality of Roadbed Soil = Fair</small>	(3) Base Elastic Modulus, E _{BS} (psi)	(4) Projected 18-kip ESAL Traffic, W ₁₈	(5) Allowable 18-kip ESAL Traffic, (W ₁₈) _{PSI}	(6) Seasonal Damage, W ₁₈ / (W ₁₈) _{PSI}	(7) Allowable 18-kip ESAL Traffic, (W ₁₈) _{RUT}	(8) Seasonal Damage, W ₁₈ / (W ₁₈) _{RUT}		
Winter (Frozen)	3	20,000	30,000	503	230,000	0.00	6,200	0.08		
Spring / Thaw (Saturated)	1.5	2,000	30,000	252	2,500	0.10	800	0.31		
Spring / Fall (Wet)	3	4,500	30,000	503	6,500	0.08	1,200	0.42		
Summer (Dry)	4.5	6,500	30,000	755	11,000	0.07	2,000	0.38		
Total Traffic =				2012	Total Damage =		0.25	Total Damage =		1.19

D_{BS} (INCHES) 6"
 WINTER 230,000
 SPRING THAW 2,500
 SPRING WET 6,500
 SUMMER 11,000

Example:

$D_{BS} = 8$ inches

$E_{BS} = 30,000$ psi

$M_R = 4,900$ psi

$\Delta PSI = 3.0$

Solution: $W_{18PSI} = 16,000$ (18-kip ESAL)

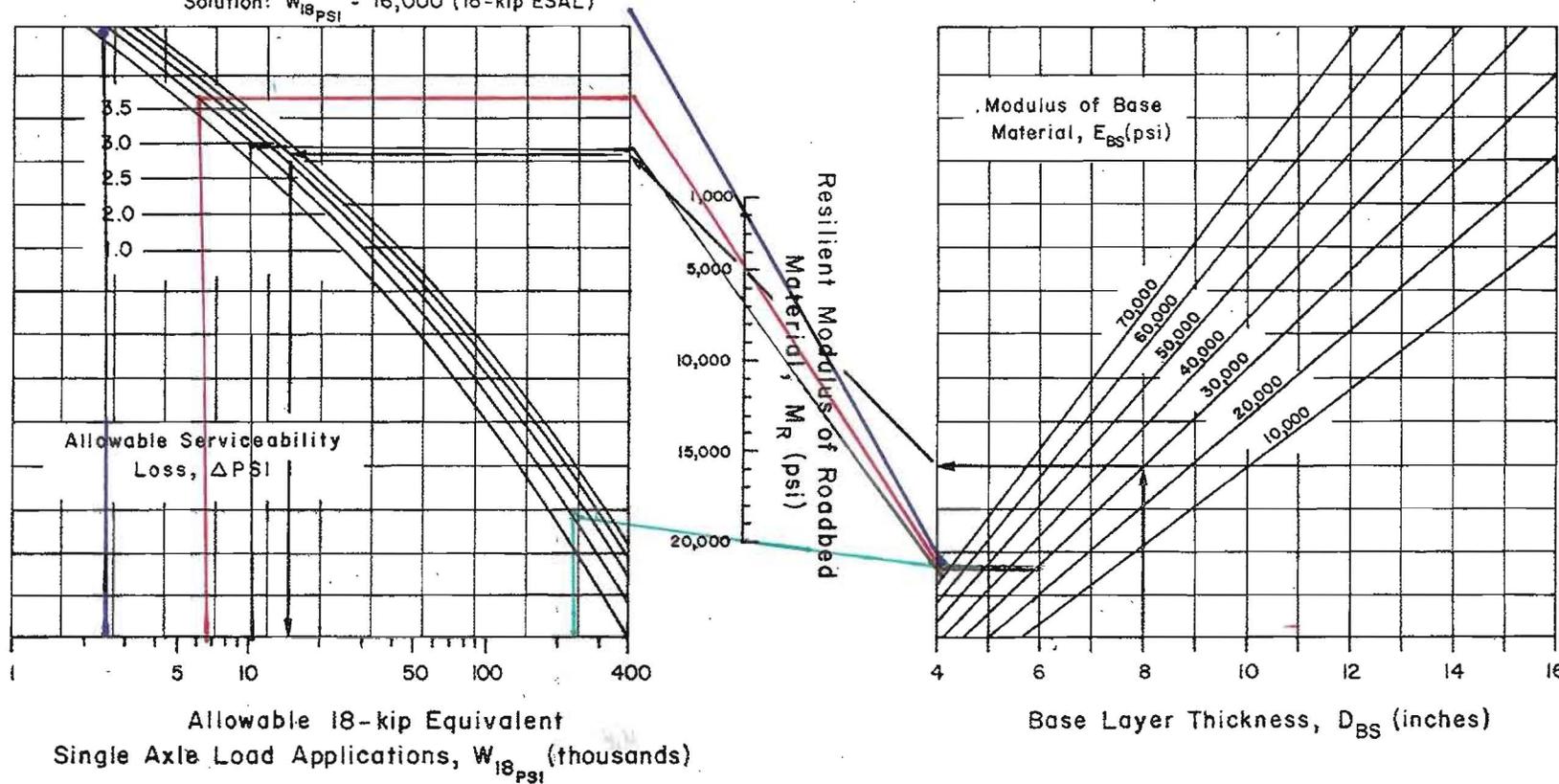


Figure 4.2. Design Chart for Aggregate-Surfaced Roads Considering Allowable Serviceability Loss

D_{BS} (INCHES) | *C_u*
 WINTER 6,200
 SPRING 1,200
 SUMMER 2,000

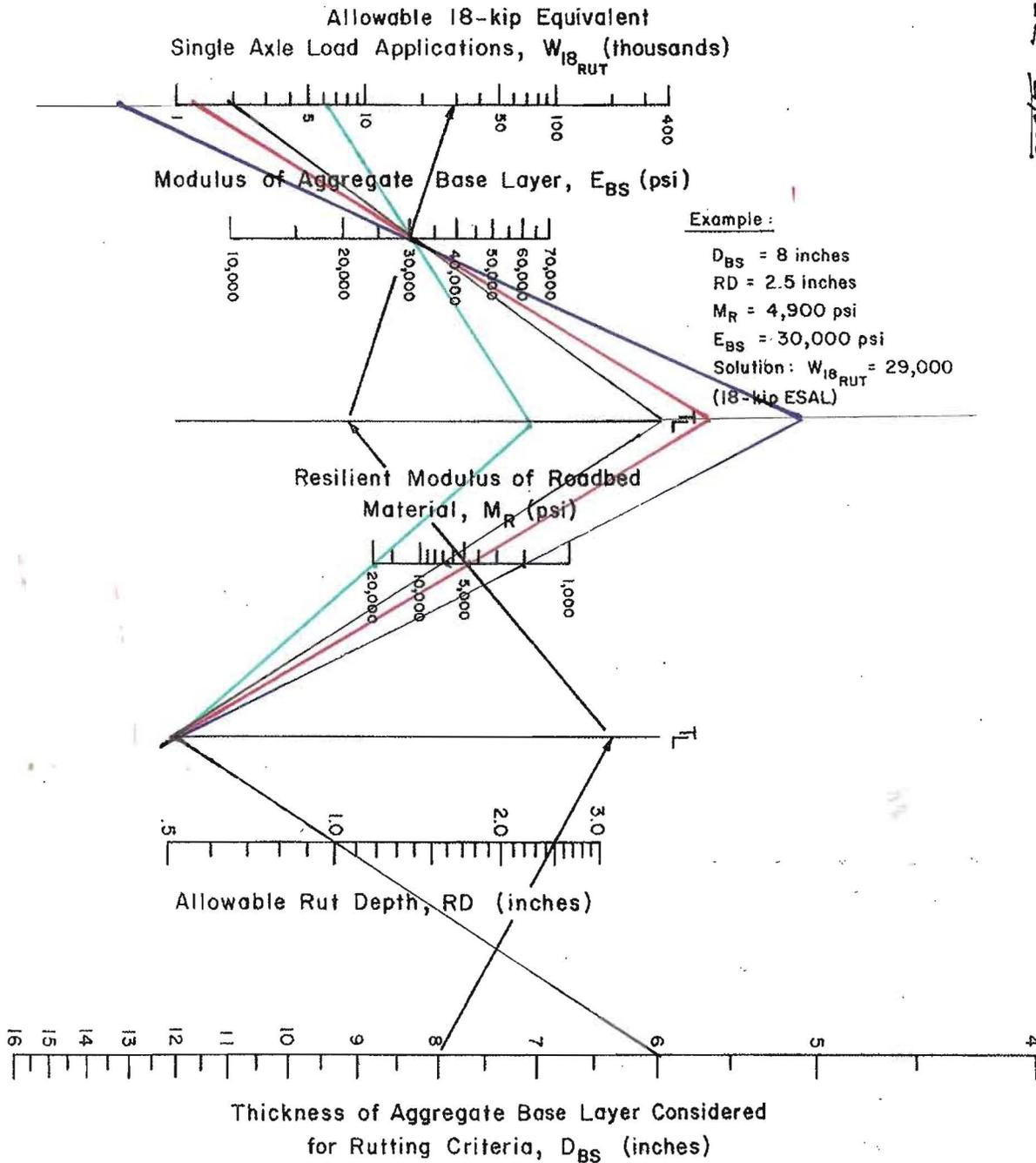


Figure 4.3. Design Chart for Aggregate-Surfaced Roads Considering Allowable Rutting

GCC ENERGY LLC GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

Accident Records Exhibits

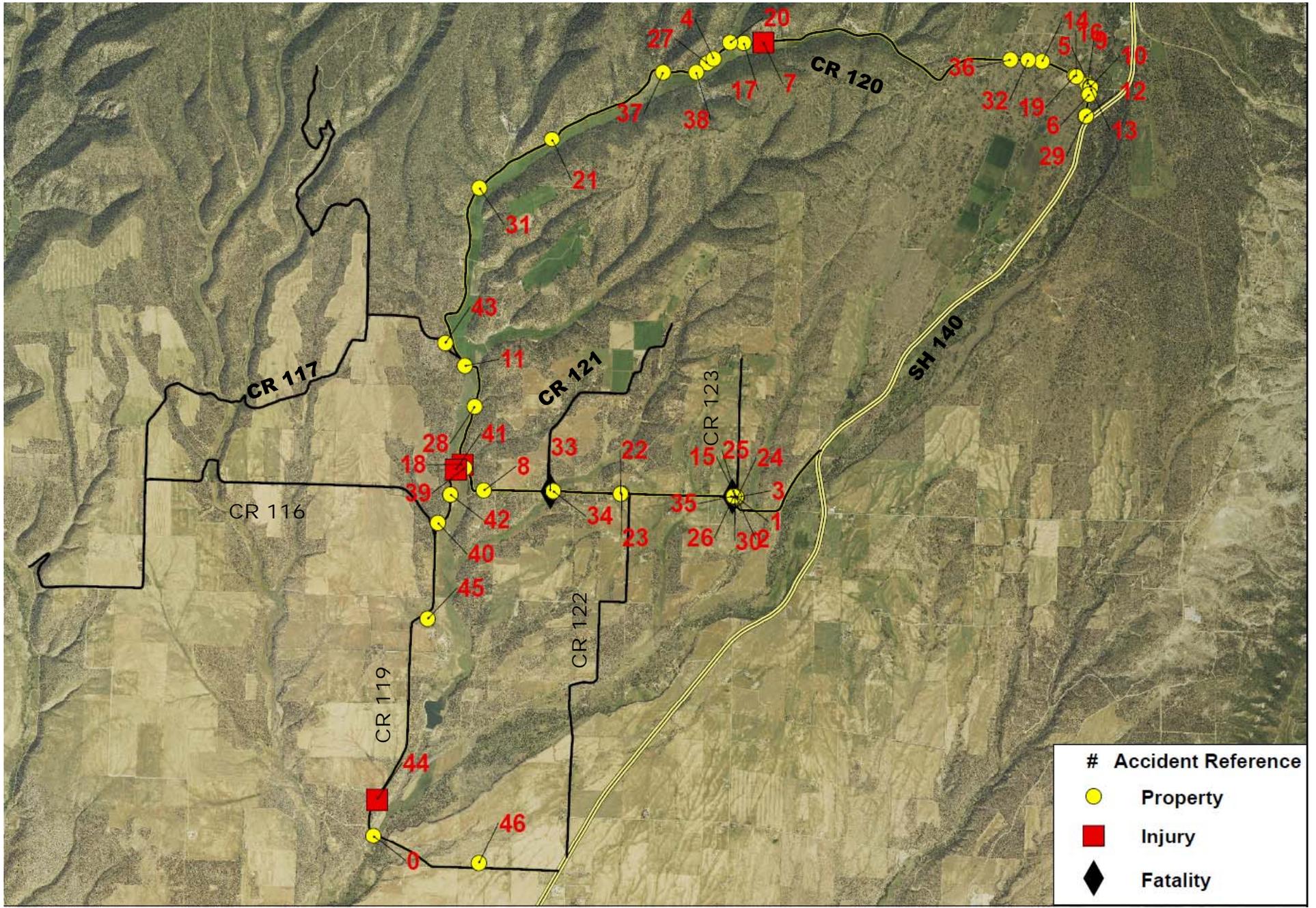
APPENDIX 7

County Road 120, 119, 117, 116
(Between State Highway 140 King Coal Mine (5652 CR 120))

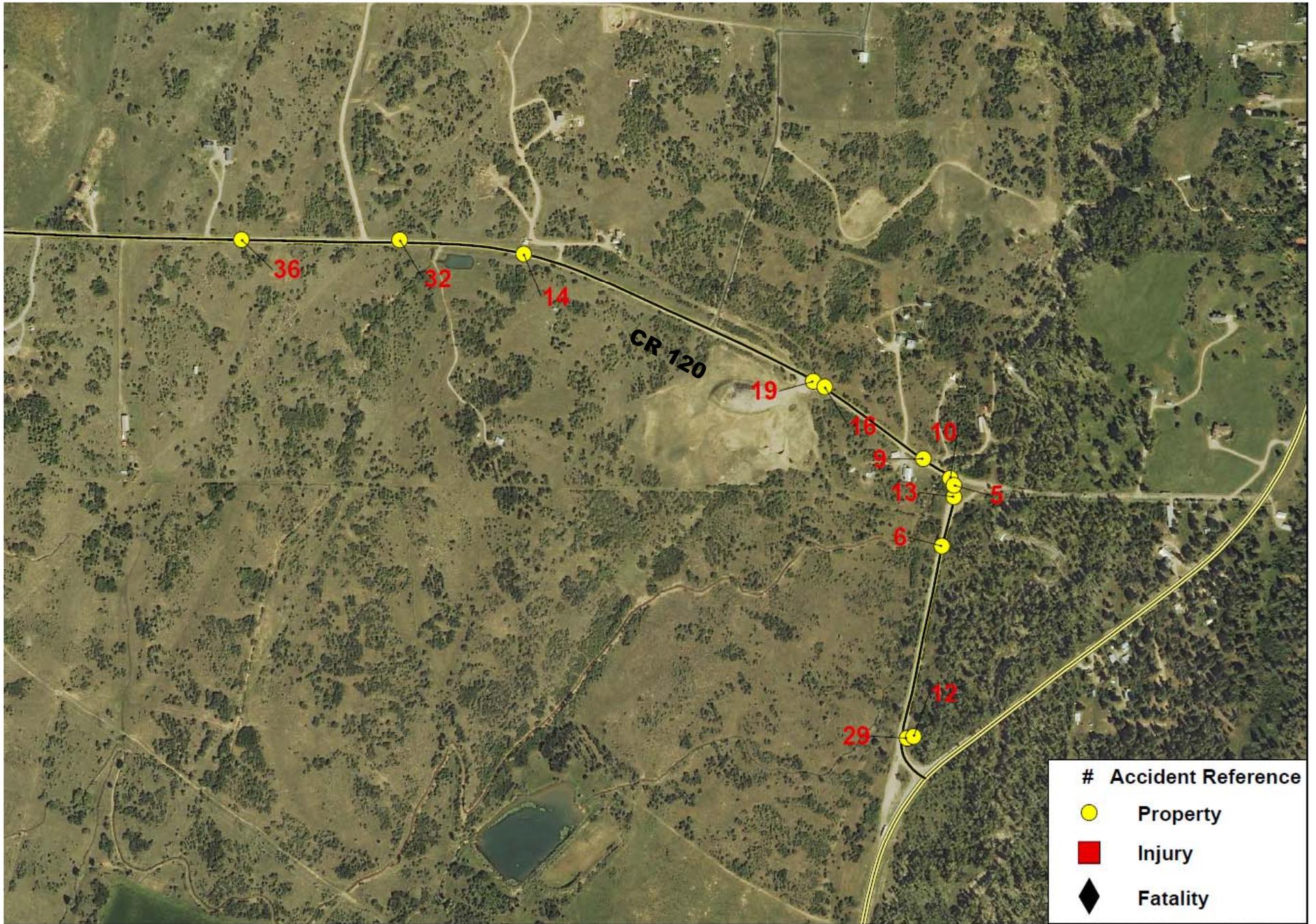
ACCIDENT RECORDS: YR 2005 - PRESENT																								
GCC Truck Transport																								
Item Number	MP	DATE	TIME	ROAD	ROAD SURFACE	ROAD CONDITION	CAUSE	EXACT LOCATION	NO. INJURED	NO. KILLED	NO. OF VECH	SPEED LIMIT	EST. SPEED	AGE OF DRIVERS			VEHICLE TYPE							TRUCKING COMPANY
														#1	#2	#3	BIKE	PED	CAR	PU	SUV	VAN	COM	
CR 116																								
Outside of Focus Area	0.5	7/8/2005	2:30 PM	CR 116	GRAVEL	DRY	FAILED TO DRIVE SINGLE LANE	.5 MILES EAST OF CR 105	1	0	1	35	10	18										
Outside of Focus Area	2.9	2/2/2007	9:50 PM	CR 116	DIRT	ICY	CARELESS DRIVING	1000 FEET s/oF 3135 CR 116	0	0	1	25	35	17										
Outside of Focus Area	0.5	12/8/2007	7:00 PM	CR 116	GRAVEL	SNOWY	CARELESS DRIVING	AT .5 MILES EAST OF CR 105	0	0	1	35	35	33										
39	6.3	7/29/2009	2:24 PM	CR 116	GRAVEL	DRY	FAILED TO DRIVE IN SINGLE LANE	AT CR 120	0	0	1	35	35	16					1					
40	5.6	10/17/2009	8:50 PM	CR 116	DIRT	DRY	CARELESS	9.5 FEET WEST OF CR 119	0	0	1	35	40					1						
41	6.2	5/1/2010	9:40 AM	CR 116	GRAVEL	DRY	OVERTURNING	432' WEST OF CR 120	1		1	35	45	16					1					
42	6.0	12/29/2012	10:35 PM	CR 116	GRAVEL	ICY	NONE	CR 116 1584 FT WEST OF CR 120	0	0	1	35	35	17					1					
CR 117	MP																							
43	4.3	1/16/2013	9:00 AM	CR 117	GRAVEL	SNOWY	GOING STRAIGHT	CR 117 @ 792 FT WEST OF CR 120	0	0	1	35	20	21					1					
		x																						
CR 119	MP																							
44	2.1	1/20/2006	1:40 AM	CR 119	BLACKTOP	ICY	UNKNOWN	.1 MILES NORTH OF MILEPOST 2	1	0	1	35	30	60										
45	1.9	7/14/2006	4:40 PM	CR 119	BLACKTOP	DRY	FAILED TO DRIVE IN SINGLE LANE	230 FEET s/o ALKALI GULCH ROAD	0	0	1	30		47					1	1				
46	0.5	7/5/2009	5:20 PM	CR 119	BLACKTOP	DRY	FAILED TO DRIVE IN SINGLE LANE	AT MP .5	0	0	1	35	40	56					1					
CR 120	MP																							
1	12.4	6/30/2005	6:45 AM	CR 120	BLACKTOP	DRY	UNKNOWN	AT CR 123	0	0	1	35	45											
2	12.4	1/13/2006	9:30 PM	CR 120	BLACKTOP	DRY	ANIMAL	AT CR 123	0	0	1	35	35	23					1					
3	12.4	6/11/2007	7:50 AM	CR 120	BLACKTOP	DRY	CARELESS DRIVING	14 FEET w/o ST 140 (BIG STICK)	0	0	2	35	35	39	39									
4	4.4	7/14/2007	7:45 PM	CR 120	DIRT	DRY	FAILED TO DRIVE IN ONE LANE	4.4 MILES NORTH OF ST 140	0	0	1	35	38	19										
5	0.3	8/29/2007	5:45 PM	CR 120	BLACKTOP	WET	FAILED TO DRIVE IN ONE LANE	AT MILEPOST 0.3	0	0	2	30	25	18	51				1	US TRANS.				

County Road 120, 119, 117, 116
(Between State Highway 140 King Coal Mine (5652 CR 120))

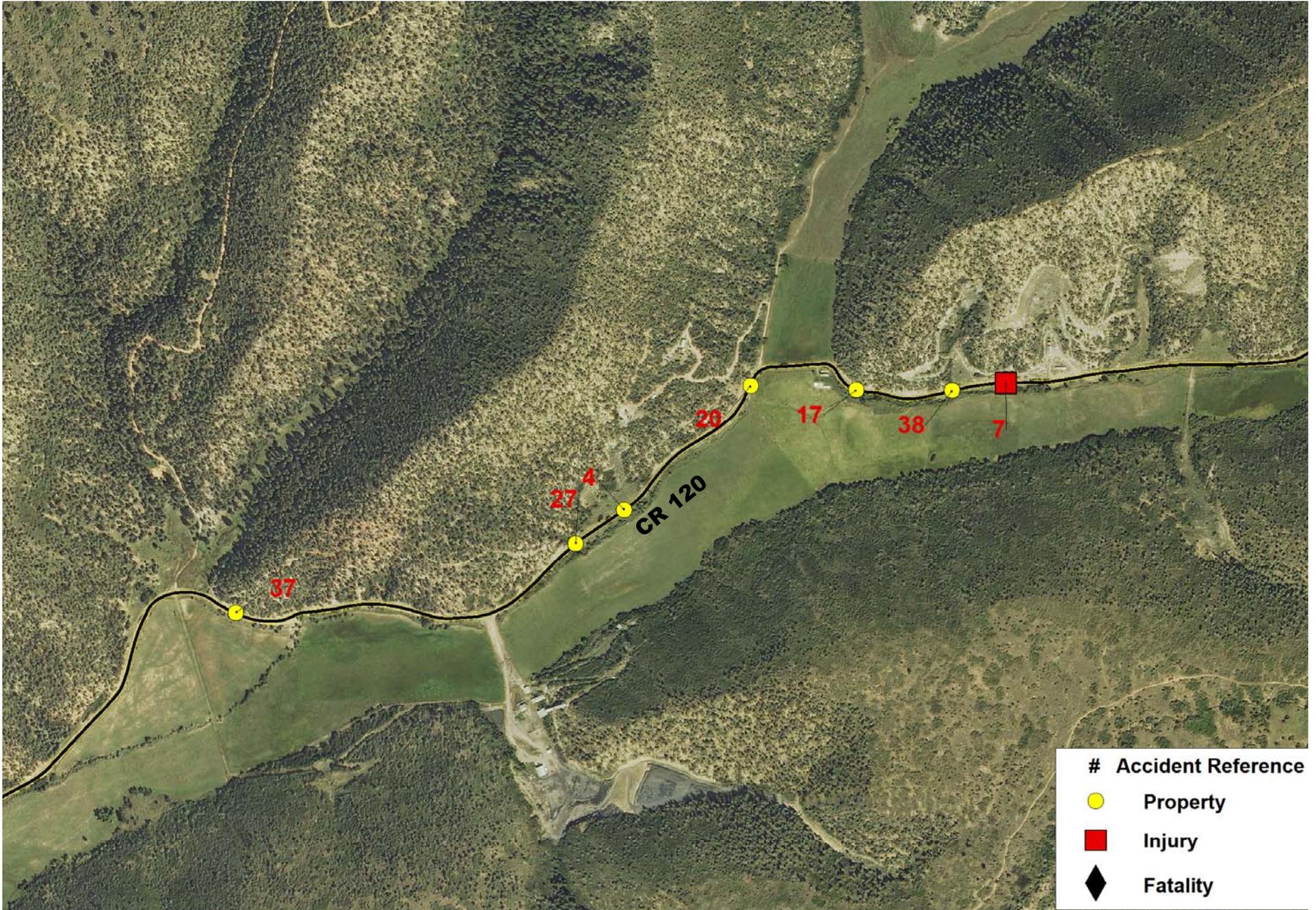
ACCIDENT RECORDS: YR 2005 - PRESENT																				
GCC Truck Transport																				
Item Number	MP	DATE	TIME	ROAD	ROAD SURFACE	ROAD CONDITION	CAUSE	EXACT LOCATION	NO. INJURED	NO. KILLED	NO. OF VECH	SPEED LIMIT	EST. SPEED	AGE OF DRIVERS			VEHICLE TYPE	TRUCKING COMPANY		
6	0.2	5/16/2008	7:28 PM	CR 120	BLACKTOP	DRY	ANIMAL	AT MILEPOST .2	0	0	1	35	35	48			1			
7	3.8	11/5/2008	8:59 AM	CR 120	BLACKTOP	ICY	CARELESS DRIVING	3.8 MILES WEST OF ST 140	1	0	2	25	25	58	46		1	1		
8	10.0	1/8/2009	11:40 AM	CR 120	GRAVEL	SNOWY	CARELESS DRIVING	.3 MILES EAST OF CR 116	0		0	1	35	25	24			1		
9	0.5	1/27/2009	8:15 AM	CR 120	GRAVEL	SNOWY	DROVE DEFECTIVE VEHICLE	.5 MILES NORTH OF ST 140	0		0	2	35	10	21	67	1	1		
10	0.3	6/4/2009	12:00 PM	CR 120	BLACKTOP	DRY	FAILED TO DRIVE IN SINGLE LANE	.3 MILES WEST OF ST 140	0		0	2	35	15	55	57		2		
11	8.9	12/7/2009	3:45 PM	CR 120	DIRT	SNOWY	CARELESS	.3 MILES WEST OF CR 117	0		0	1	35	5				1		
12	0.0	8/27/2010	1:15 PM	CR 120	BLACKTOP	DRY	HIT FENCE	WEST OF ST 140	0		1	35	35	62				1		
13	0.3	11/29/2010	10:57 AM	CR 120	BLACKTOP	ICY	HIT LIGHT POLE	.3 MILES WEST OF ST 140	0		1	35	30	21				1		
14	1.1	2/9/2011	7:36 PM	CR 120	BLACKTOP	WET	OVERTURN	1.1 MILE WEST OF ST 140	0	0	1	35	45	34			1			
15	12.4	3/19/2011	11:45 PM	CR 120	BLACKTOP	DRY	HIT FENCE	140 FEET WEEST OF CR 123	0	0	1	35	35	54			1			
16	0.8	12/10/2011	7:30 AM	CR 120	BLACKTOP	DRY	SIDE TO SIDE OPPOSITE DIRECTION	4224 FT WEST OF ST 140	0	0	2	20	20	51	60		1	1		
17	3.9	12/12/2011	10:45 PM	CR 120	GRAVEL	SNOWY	OVERTURN	3 MILES 4752 FT WEST OF ST 140	0	0	1	35	25	31			1			
18	9.6	12/20/2011	12:05 AM	CR 120	GRAVEL	ICY	OVERTURN	9.6 MILES WEST OF ST 140	1	0	1	35	15	36				1		
19	0.8	1/17/2012	7:30 AM	CR 120	BLACKTOP	ICY	HIT FENCE	4224' WEST OF ST 140	0	0	1	35	20	52				1		
20	4.25	3/23/2012	1:45 AM	CR 120	GRAVEL	DRY	HIT ROCKS	4 MILES 1320' WEST OF ST 140	0	0	1	35	40	26			1			
21	6	12/17/2012	6:18 PM	CR 120	DIRT	SNOWY	OVERTURN	CR 120 @ MP 6	0	0	1	35	10	51				1	KELLY CNTG.	
22	10.2	1/14/2013	4:34 PM	CR 120	GRAVEL	ICY	FRONT TO SIDE	CR 120 @ MP 10.2	0	0	2	35	30	47	45			1	1	MESA PROPANE
23	10.2	1/15/2013	4:34 PM	CR 120	GRAVEL	ICY	SLOWING	CR 120 @ MP 10.2	0	0	2	35	30	47	45			1	1	
24	0.25	4/23/2013	12:00 AM	CR 120	BLACKTOP	DRY	HIT FENCE	CR 120 @ 1320 FT WEST OF HWY 140	0	0	1	35	NA	NA				1		
25	12.4	5/15/2013	8:37 PM	CR 120	BLACKTOP	DRY	HIT FENCE	CR 120 @ CR 123	0	0	1	35	52	17				1		
26	12.4	6/2/2013	1:42 AM	CR 120	BLACKTOP	DRY	HOT TREE	CR 120 @ 45 FT SOUTH OF CR 123	0	0	1	35	45	18			1			
27	4.5	9/11/2013	12:30 PM	CR 120	DIRT	MUDDY	SIDE/SIDE OPPOSITE DIRECTION	CR 120 @ 4 MILES 2640 FT W/O SH 140	0	0	2	40	10	37	27			1	1	HIGH COUNTRY
28	9.1	10/1/2013	11:36 PM	CR 120	DIRT	DRY	HIT UTILITY POLE	CR 120 @ 3168 FT EAST OF CR 117	0	0	1	35	5	56				1		HIGH COUNTRY



La Plata County Accident Data – years 2005 - 2014



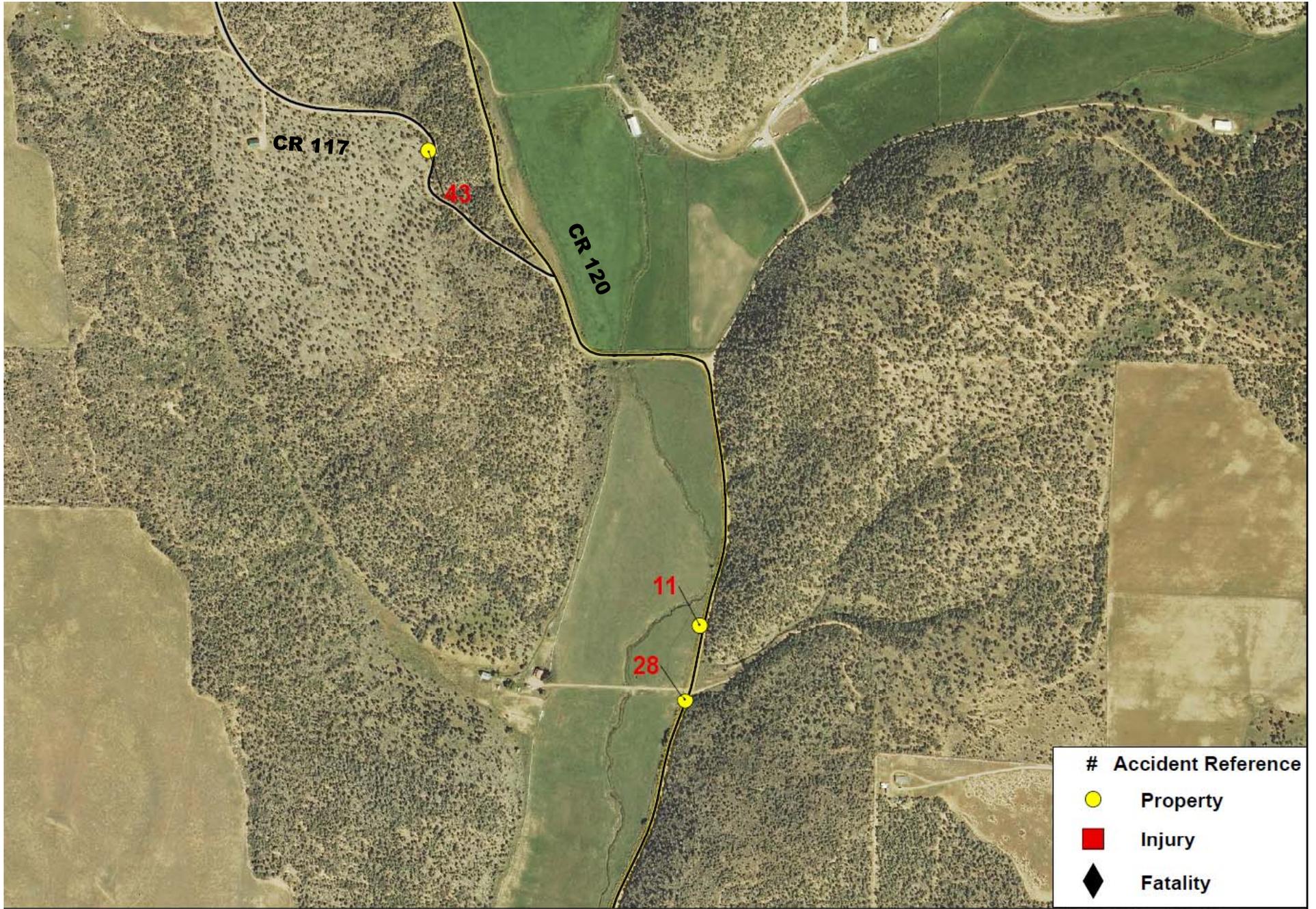
La Plata County Accident Data – years 2005 - 2014



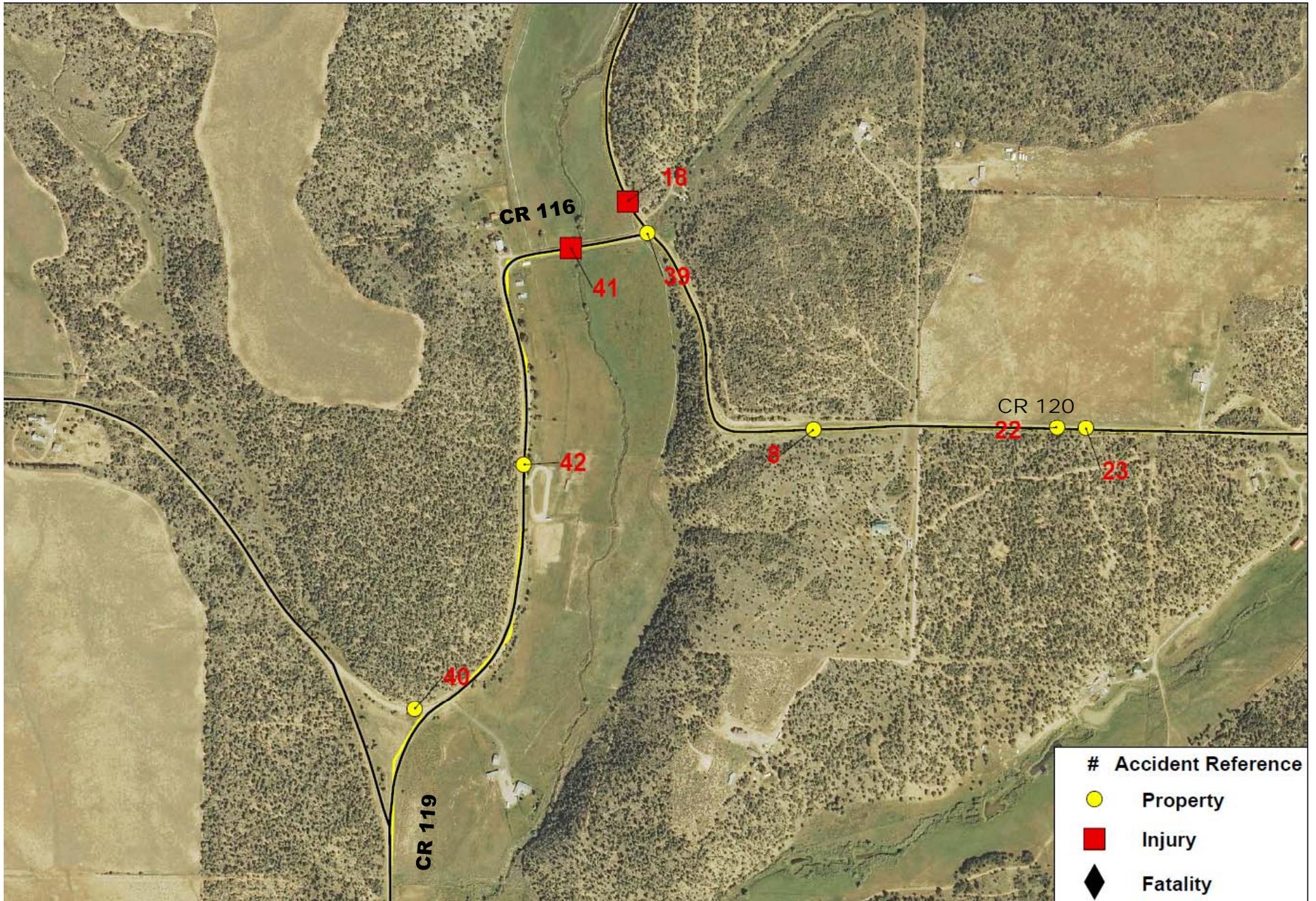
La Plata County Accident Data – years 2005 - 2014



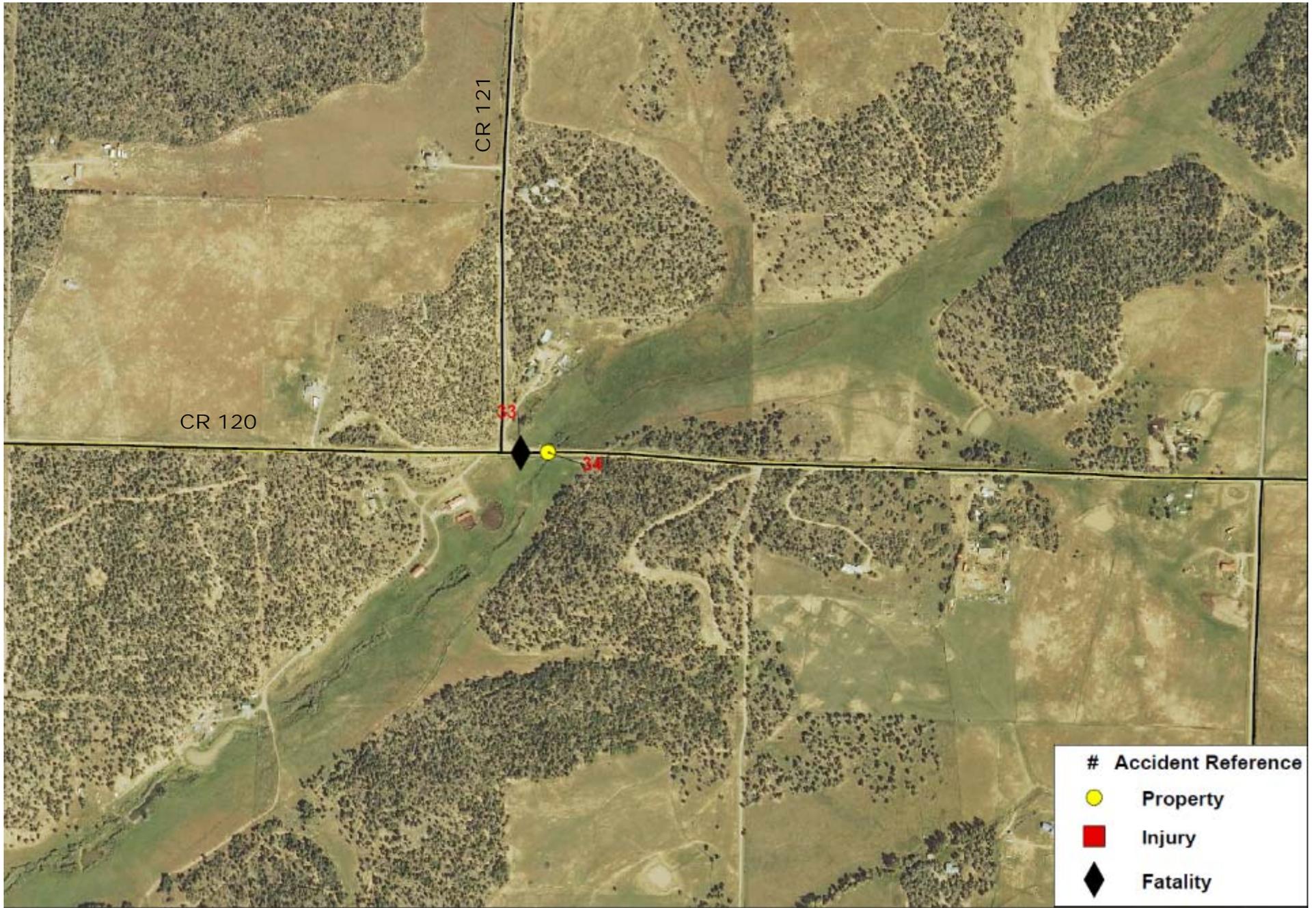
La Plata County Accident Data – years 2005 - 2014



La Plata County Accident Data – years 2005 - 2014



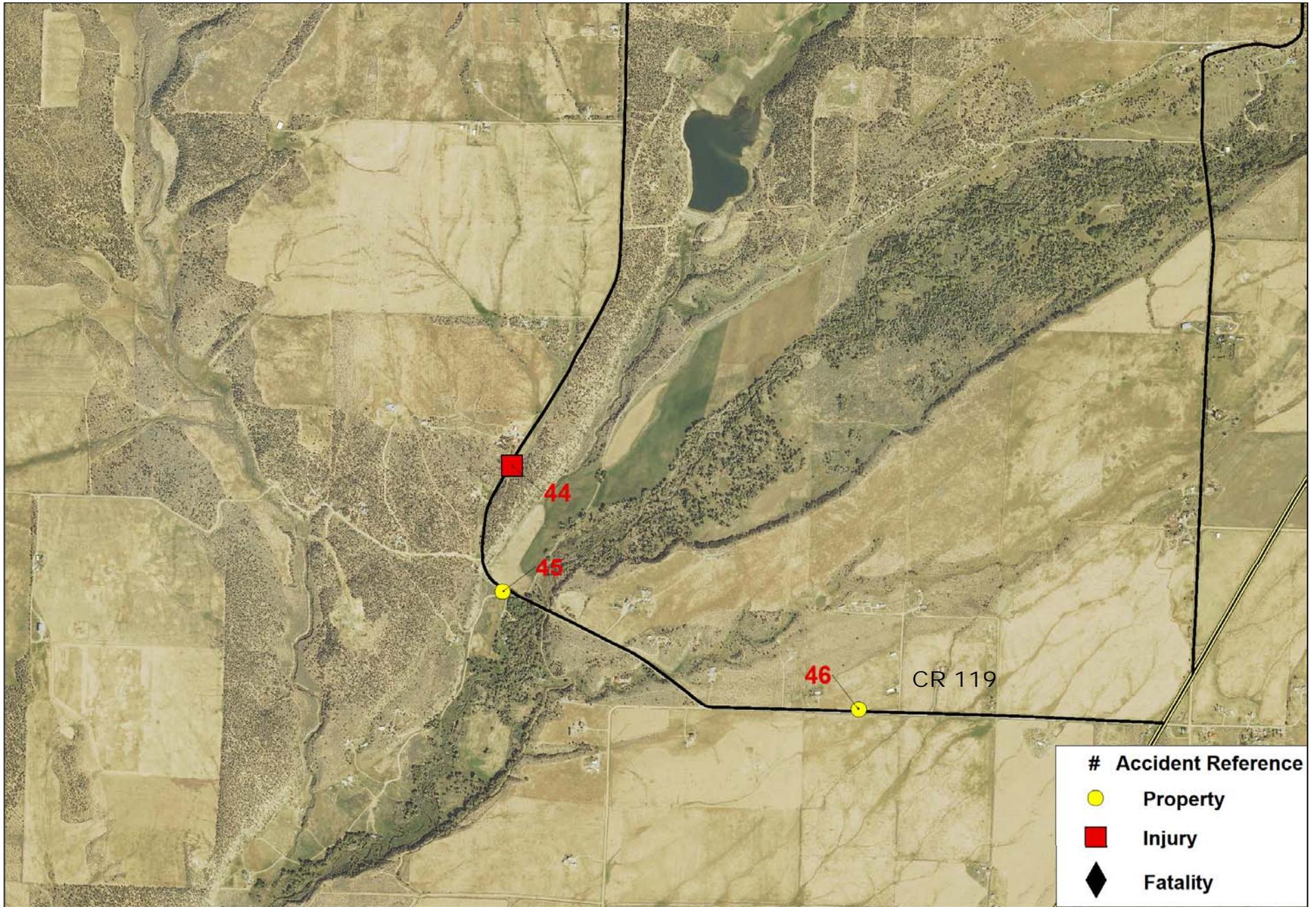
La Plata County Accident Data – years 2005 - 2014



La Plata County Accident Data – years 2005 - 2014



La Plata County Accident Data – years 2005 - 2014



La Plata County Accident Data – years 2005 - 2014

GCC ENERGY LLC GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

Haul Route OPC - Estimates

APPENDIX 8

COAL PRODUCT TO MARKET OPTIONS

Item #	Option	(a)	(b)	(c)	(d)	(e)	OPC Cost @ 20-YEARS
		Short Term Improvements (Year 2015)	Vehicle Pull-off Improvements	CDOT Improvements	Long Term County Road Improvements	Alternate Full Term Improvements	
1	CR 120 North serves 100% of trucking	\$ 444,150	\$ 960,264	\$ 992,250	\$ 8,394,284	\$ -	\$ 10,790,947
2	Trucking inbound on CR 120S and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,124,550	\$ 18,543,705	\$ -	\$ 21,430,194
3	Trucking inbound on CR 119 and outbound on CR 120N	\$ 444,150	\$ 1,317,789	\$ 1,256,850	\$ 20,517,459	\$ -	\$ 23,536,248
4	Trucking Utilizing Designated Haul Road (Utilize CR 120 from King I to King II, no conveyor)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 4,098,738	\$ 12,887,408	\$ 19,401,710
5	Trucking Utilizing Designated Haul Road (Include conveyor to load-out at top of mesa)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 27,254,241	\$ 31,748,557
6	Trucking Utilizing Conveyor (no haul road - load-out adjacent to Hwy)	\$ 444,150	\$ 979,164	\$ 992,250	\$ 2,078,753	\$ 67,609,921	\$ 72,104,237

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 1

CR 120 North serves 100% of trucking

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance, pavement (approx 2,800lf)	1	LS	\$284,000	\$284,000
Short Term					Subtotal
d	Re-alignment of 90° corner	950	FT	\$300	\$285,000
e	ROW Acquisition	1	LS	\$200,000	\$200,000
f	Full Depth Reclamation (FDR) @ year 2017	2.6	mi	\$500,000	\$1,300,000
g	Pavement additional 0.6-mile of CR 120N @ year 2016	1700	TONS	\$125	\$212,500
h	Re-alignment of corner @ MP3.9	700	FT	\$200	\$140,000
i	Widening, Regrading and Paving of Road Section (Krall parcel to mine)	14000	lf	\$165	\$2,310,000
j	Chip Seal of Pavement (every 7-yr)	6.5	mi	\$100,000	\$650,000
k	County Roadway Mitigation Fee (Reflects operational costs - once paved, no ongoing mitigation \$)	1,200,000	TONS	\$0	\$48,000
Long Term County Road Improvements					Subtotal
l	Vehicle Turn-off @ CR 120N	1	LS	\$600,000	\$600,000
m	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
Vehicle Pull-off Improvements					Subtotal
n	SH 140/ CR 120N Highway Improvements LT & RT Decel lanes	1	LS	\$750,000	\$750,000
CDOT Improvements					Subtotal
				subtotal=	\$8,564,244
				Design & Permitting: 5%	\$428,212
				Contingency 20%	\$1,798,491
CR 120 North serves 100% of trucking				TOTAL OPC	\$10,790,947

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
	\$25,000																			
	\$43,500																			
	\$284,000																			
	\$352,500	\$0	\$0																	
			\$306,375																	
			\$215,000																	
			\$1,397,500																	
		\$223,125																		
			\$150,500																	
			\$2,483,250																	
										\$812,500									\$926,250	
	\$48,000	\$49,200	\$50,430																	
	\$48,000	\$272,325	\$4,603,055	\$0	\$0	\$0	\$0	\$0	\$0	\$812,500	\$0	\$0	\$0	\$0	\$0	\$0	\$926,250	\$0	\$0	\$0
		\$630,000																		
	\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249
	\$6,000	\$636,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249
		\$787,500																		
	\$0	\$787,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$406,500	\$1,695,885	\$4,609,176	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$819,062	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$933,285	\$7,106	\$7,177	\$7,249

Notes

Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 2

Trucking inbound on CR 120S and outbound on CR 120N

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear	1	LS	\$284,000	\$284,000
Short Term					Subtotal
d	Re-alignment of 90° corner	950	FT	\$300	\$285,000
e	ROW Acquisition	1	LS	\$400,000	\$400,000
f	Full Depth Reclamation (FDR) @ year 2017 CR 120N	2.6	mi	\$500,000	\$1,300,000
g	Full Depth Reclamation (FDR) @ year 2019 CR 120S	2.8	mi	\$500,000	\$1,400,000
h	Pavement additional 0.6-mile of CR 120N @ year 2016	1700	TONS	\$125	\$212,500
i	Re-alignment of corner @ MP3.9	700	FT	\$200	\$140,000
j	Widening & Regrading (Krall parcel to asphalt CR 120S), Asphalt Paving	40000	FT	\$140	\$5,600,000
k	Re-alignment of roadway across Big Stick Ditch	1600	FT	\$300	\$480,000
l	Paving of hill adjacent to CR 120 / CR 116 @ year 2017	2050	TONS	\$125	\$256,250
m	Chip Seal of Pavement (every 7-yrs)	13.4	mi	\$100,000	\$1,340,000
n	County Roadway Mitigation Fee (Reflects operational costs - once paved, no ongoing mitigation \$)	1,200,000	TONS	\$0	\$72,000
Long Term County Road Improvements					Subtotal
o	Vehicle Turn-off @ CR 120N	1	LS	\$350,000	\$350,000
p	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
q	Vehicle Turn-off @ CR 120S	1	LS	\$350,000	\$350,000
r	Purchase of Vehicle Turn-off Parcel (10-ac portion of parcel)	1	LS	\$150,000	\$150,000
Vehicle Pull-off Improvements					Subtotal
s	SH 140/ CR 120N Highway Improvements RT Decel lane	1	LS	\$200,000	\$200,000
t	SH 140/ CR 120S Highway Improvements LT Decel lane	1	LS	\$650,000	\$650,000
CDOT Improvements					Subtotal
				subtotal=	\$17,008,090
				Design & Permitting: 5%	5%
				Contingency	20%
				TOTAL OPC	\$21,430,194

Year

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$25,000																				
\$43,500																				
\$284,000																				
\$352,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$306,375																	
			\$430,000																	
			\$1,397,500																	
					\$1,575,000															
						\$228,438														
						\$150,500														
						\$6,020,000														
						\$528,000														
						\$275,469														
										\$1,675,000									\$1,909,500	
\$72,000	\$73,800	\$75,645																		
\$72,000	\$73,800	\$8,883,926	\$528,000	\$1,575,000	\$0	\$0	\$0	\$0	\$0	\$1,675,000	\$0	\$0	\$0	\$0	\$0	\$0	\$1,909,500	\$0	\$0	\$0
			\$376,250																	
\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
		\$376,250																		
		\$161,250																		
\$6,000	\$6,060	\$919,871	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
		\$210,000																		
		\$682,500																		
\$0	\$892,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$430,500	\$972,360	\$9,803,797	\$534,182	\$1,581,244	\$6,306	\$6,369	\$6,433	\$6,497	\$1,681,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$1,916,535	\$7,106	\$7,177	\$7,249	

Notes

Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 3

Trucking inbound on CR 119 and outbound on CR 120N

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance, pavement (approx 2,800lf)	1	LS	\$284,000	\$284,000
Short Term					Subtotal
a	Re-alignment of 90° corner	950	FT	\$300	\$285,000
b	ROW Acquisition	1	LS	\$400,000	\$400,000
c	Full Depth Reclamation (FDR) @ year 20173 CR 120N	2.6	mi	\$500,000	\$1,300,000
d	Full Depth Reclamation (FDR) @ year 2019 CR 119	2.1	mi	\$500,000	\$1,050,000
e	Pavement additional 1-mile of CR 120N @ year 2017	3660	TONS	\$125	\$457,500
f	Re-alignment of corner @ MP3.9	700	FT	\$200	\$140,000
g	Widening & Regrading (Krall parcel to asphalt CR 119), Asphalt Paving	50000	FT	\$140	\$7,000,000
i	Re-alignment of roadway @ CR 119 MP4.1 & CR 120 INT	2000	FT	\$200	\$400,000
o	Chip Seal of Pavement (every 7-yr)	15.2	mi	\$100,000	\$1,520,000
p	County Roadway Mitigation Fee (Reflects operational costs - once paved, no onging mitigation \$)	1,200,000	TONS	\$0	\$96,000
Long Term County Road Improvements					Subtotal
h	Vehicle Turn-off @ CR 120N	1	LS	\$350,000	\$350,000
p	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
j	Vehicle Turn-off @ CR 119	1	LS	\$350,000	\$350,000
k	Purchase of Vehicle Turn-off Parcel (10-ac portion of parcel)	1	LS	\$150,000	\$150,000
Vehicle Pull-off Improvements					Subtotal
l	SH 140/ CR 120N Highway Improvements RT Decel lane	1	LS	\$200,000	\$200,000
m	SH 140/ CR 119 Highway Improvements LT Decel lane	1	LS	\$750,000	\$750,000
CDOT Improvements					Subtotal
				subtotal=	\$18,679,562
				Design & Permitting: 5%	\$933,978
				Contingency 20%	\$3,922,708
Trucking inbound on CR 119 and outbound on CR 120N				TOTAL OPC	\$23,536,248

Year

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$25,000																				
\$43,500																				
\$284,000																				
\$352,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$306,375																	
			\$430,000																	
			\$1,397,500																	
					\$1,181,250															
			\$491,813																	
			\$150,500																	
			\$7,525,000																	
					\$440,000															
									\$1,900,000										\$2,166,000	
\$96,000	\$98,400	\$100,860																		
\$96,000	\$98,400	\$10,402,048	\$440,000	\$1,181,250	\$0	\$0	\$0	\$0	\$1,900,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,166,000	\$0	\$0	\$0
			\$376,250																	
\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
		\$376,250																		
		\$161,250																		
\$6,000	\$6,060	\$919,871	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
	\$210,000																			
	\$787,500																			
\$0	\$997,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$454,500	\$1,101,960	\$11,321,918	\$446,182	\$1,187,494	\$6,306	\$6,369	\$6,433	\$6,497	\$1,906,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$2,173,035	\$7,106	\$7,177	\$7,249	

Notes

Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 4

Trucking Utilizing Designated Haul Road (no conveyor)

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance, pavement (approx 2,800lf)	1	LS	\$284,000	\$284,000
Short Term					Subtotal
d	Full Depth Reclamation (FDR)	2.6	mi	\$500,000	\$1,300,000
e	Widening & Regrading (King I to King II), Asphalt Paving	11000	FT	\$140	\$1,540,000
f	County Roadway Mitigation Fee (Reflects operational costs - once paved, no ongoing mitigation \$)	1,200,000	TONS	\$0	\$48,000
Long Term County Road Improvements					Subtotal
g	Vehicle Turn-off @ CR 120N	1	LS	\$600,000	\$600,000
h	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
Vehicle Pull-off Improvements					Subtotal
i	SH 140/ CR 120N Highway Improvements LT & RT Decel lanes	1	LS	\$750,000	\$750,000
CDOT Improvements					Subtotal
j	Haul Road - Seg 1 (1st number is to construct w/ gravel surface, 2nd number is to pave haul road)	1	LS	\$3,140,000	\$3,140,000
k	Haul Road - Seg 2 (1st number is to construct w/ gravel surface, 2nd number is to pave haul road)	1	LS	\$4,975,000	\$4,975,000
l	Roadway Maintenance (GCC)	4.7	mi	\$1,000	\$4,700
m	Land Easement	57.5	ac	\$1,200	\$69,000
Alternate Full Term Improvements					Subtotal
				subtotal=	\$15,398,182
				Design & Permitting: 5%	\$769,909
				Contingency 20%	\$3,233,618
				TOTAL OPC	\$19,401,710

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$25,000																				
\$43,500																				
\$284,000																				
\$352,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$1,397,500																	
			\$1,655,500																	
\$48,000	\$49,200	\$50,430	\$25,845	\$26,492																
\$48,000	\$49,200	\$3,103,430	\$25,845	\$26,492	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$645,000																	
\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
\$6,000	\$6,060	\$651,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
	\$787,500																			
\$0	\$787,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				\$1,612,500			\$1,886,000													
				\$3,561,475	\$1,828,200															
				\$5,200	\$5,330	\$5,463	\$5,600	\$5,740	\$5,883	\$6,030	\$6,181	\$6,336	\$6,494	\$6,656	\$6,823	\$6,993	\$7,168	\$7,347	\$7,531	
				\$71,802	\$72,520	\$73,245	\$73,978	\$74,717	\$75,465	\$76,219	\$76,981	\$77,751	\$78,529	\$79,314	\$80,107	\$80,908	\$81,717	\$82,535	\$83,360	
\$0	\$0	\$0	\$0	\$5,250,977	\$1,906,050	\$78,708	\$1,965,578	\$80,457	\$81,348	\$82,250	\$83,163	\$84,087	\$85,023	\$85,971	\$86,930	\$87,902	\$88,886	\$89,882	\$90,891	
\$406,500	\$842,760	\$3,754,551	\$32,027	\$5,283,712	\$1,912,356	\$85,078	\$1,972,010	\$86,954	\$87,910	\$88,877	\$89,857	\$90,848	\$91,851	\$92,867	\$93,896	\$94,937	\$95,991	\$97,059	\$98,140	

Notes

Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC
 Permitting of new haul route assumed duration of 5-years

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 5

Trucking Utilizing Designated Haul Road - incl conveyor

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance, pavement (approx 2,800lf)	1	LS	\$284,000	\$284,000
Short Term					Subtotal
d	Full Depth Reclamation (FDR)	2.6	mi	\$500,000	\$1,300,000
e	County Roadway Mitigation Fee (Reflects operational costs - once paved, or alt haul road, no onging mitigation S)	1,200,000	TONS	\$0	\$48,000
Long Term County Road Improvements					Subtotal
f	Vehicle Turn-off @ CR 120N	1	LS	\$600,000	\$600,000
g	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
Vehicle Pull-off Improvements					Subtotal
h	SH 140/ CR 120N Highway Improvements LT & RT Decel lanes	1	LS	\$750,000	\$750,000
CDOT Improvements					Subtotal
i	Haul Road - Seg 1 (1st number is to construct w/ gravel surface, 2nd number is to pave haul road)	1	LS	\$3,140,000	\$3,140,000
j	Haul Road - Seg to Conveyor (1st number is to construct w/ gravel surface, 2nd number is to pave haul road)	1	LS	\$4,975,000	\$4,975,000
k	Roadway Maintenance (GCC)	5.3	mi	\$1,000	\$5,300
l	Land Easement	72.3	ac	\$1,200	\$86,760
m	Conveyor tie-in point w/ the existing facility	1	LS	\$182,000	\$182,000
n	Conveyor - Overland Tube	1	LS	\$5,386,000	\$5,386,000
o	Conveyor - New Load Out Silos and Scale	1	LS	\$3,579,000	\$3,579,000
p	Conveyor - Engineering, Electrical, Tax, Freight, Project Mgn, GeoTech	1	LS	\$4,120,750	\$4,120,750
q	Conveyor operations and maintenance	0.7	mi	\$10,000	\$7,000
Alternate Full Term Improvements					Subtotal

subtotal=	\$29,073,770
Design & Permitting: 5%	\$1,453,689
Contingency 4%	\$1,221,098
TOTAL OPC	\$31,748,557

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
\$25,000																				
\$43,500																				
\$284,000																				
\$352,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$1,397,500																	
\$48,000	\$49,200	\$50,430	\$51,691	\$52,983																
\$48,000	\$49,200	\$1,447,930	\$51,691	\$52,983	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$645,000																		
\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
\$6,000	\$6,060	\$651,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
	\$787,500																			
\$0	\$787,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				\$1,612,500			\$1,886,000													
				\$3,561,475			\$1,911,300													
				\$5,850	\$5,996	\$6,146	\$6,300	\$6,457	\$6,619	\$6,784	\$6,954	\$7,128	\$7,306	\$7,488	\$7,676	\$7,868	\$8,064	\$8,266	\$8,473	
				\$84,111	\$86,214	\$88,369	\$90,578	\$92,843	\$95,164	\$97,543	\$99,982	\$102,481	\$105,043	\$107,669	\$110,361	\$113,120	\$115,948	\$118,847	\$121,818	
				\$200,894																
				\$5,945,136																
				\$3,950,546																
	\$750,000	\$750,000	\$1,500,000	\$1,548,537																
				\$7,875	\$8,050	\$8,225	\$8,400	\$8,575	\$8,750	\$8,925	\$9,100	\$9,275	\$9,450	\$9,625	\$9,800	\$9,975	\$10,150	\$10,325	\$10,500	
\$0	\$750,000	\$750,000	\$1,500,000	\$16,916,924	\$100,260	\$102,740	\$3,902,578	\$107,875	\$110,533	\$113,252	\$116,035	\$118,884	\$121,799	\$124,783	\$127,837	\$130,963	\$134,162	\$137,438	\$140,790	
\$406,500	\$1,592,760	\$2,849,051	\$1,557,873	\$16,976,151	\$106,566	\$109,109	\$3,909,011	\$114,372	\$117,095	\$119,880	\$122,729	\$125,645	\$128,628	\$131,680	\$134,802	\$137,998	\$141,268	\$144,614	\$148,039	

note nized scope. OPC contingency reduced so as not to inflate OPC

Notes

Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC
 Permitting of new haul route assumed duration of 5-years

GCC ENERGY - HAUL ROAD ASSESSMENT BY YEAR

CPI avg 2.5%

Project Option 6

Trucking Utilizing Conveyor

Item	Improvement	# of Units	Unit	Unit Cost	Current Year \$
a	Big Stick Ditch Culvert Extension	1	LS	\$25,000	\$25,000
b	Extend Paving at 90° corner	290	TONS	\$150	\$43,500
c	Minor Improvements: ex; gravel corners (approx 1,100 tons), clear vegetation, improve sight distance, pavement (approx 2,800lf)	1	LS	\$284,000	\$284,000
Short Term					Subtotal
d	Full Depth Reclamation (FDR)	2.6	mi	\$500,000	\$1,300,000
e	County Roadway Mitigation Fee (Reflects operational costs - once paved, or alt haul road, no ongoing mitigation \$)	1,200,000	TONS	\$0	\$48,000
Long Term County Road Improvements					Subtotal
f	Vehicle Turn-off @ CR 120N	1	LS	\$600,000	\$600,000
g	Vehicle Turn-off Lease from State Lands	5	AC	\$1,200	\$6,000
Vehicle Pull-off Improvements					Subtotal
h	SH 140/ CR 120N Highway Improvements LT & RT Decel lanes	1	LS	\$750,000	\$750,000
CDOT Improvements					Subtotal
i	Roadway Maintenance (GCC)	5.3	mi	\$1,000	\$5,300
j	Land Easement	72.3	ac	\$1,200	\$86,760
k	Conveyor tie-in point w/ the existing facility	1	LS	\$182,000	\$182,000
l	Conveyor - Overland Tube	1	LS	\$5,386,000	\$34,264,000
m	Conveyor - New Load Out Silos and Scale	1	LS	\$3,579,000	\$3,579,000
n	Conveyor - Engineering, Electrical, Tax, Freight, Project Mgn, GeoTech	1	LS	\$4,120,750	\$17,159,090
o	Conveyor operations and maintenance	5.9	mi	\$10,000	\$59,000
Alternate Full Term Improvements					Subtotal
				subtotal=	\$68,631,483
Design & Permitting: 2%				2%	\$1,372,630
Contingency				3%	\$2,100,123
					\$72,104,237

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$25,000																				
\$43,500																				
\$284,000																				
\$352,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$1,397,500																	
\$48,000	\$49,200	\$50,430	\$51,691	\$52,983																
\$48,000	\$49,200	\$1,447,930	\$51,691	\$52,983	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			\$645,000																	
\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
\$6,000	\$6,060	\$651,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628	\$6,694	\$6,761	\$6,829	\$6,897	\$6,966	\$7,035	\$7,106	\$7,177	\$7,249	
	\$787,500																			
\$0	\$787,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				\$5,850	\$5,996	\$6,146	\$6,300	\$6,457	\$6,619	\$6,784	\$6,954	\$7,128	\$7,306	\$7,488	\$7,676	\$7,868	\$8,064	\$8,266	\$8,473	
				\$84,111	\$86,214	\$88,369	\$90,578	\$92,843	\$95,164	\$97,543	\$99,982	\$102,481	\$105,043	\$107,669	\$110,361	\$113,120	\$115,948	\$118,847	\$121,818	
				\$204,750																
				\$38,547,000																
				\$4,026,375																
	\$3,000,000	\$3,000,000	\$4,000,000	\$9,303,976																
				\$66,375	\$67,850	\$69,325	\$70,800	\$72,275	\$73,750	\$75,225	\$76,700	\$78,175	\$79,650	\$81,125	\$82,600	\$84,075	\$85,550	\$87,025	\$88,500	
\$0	\$3,000,000	\$3,000,000	\$4,000,000	\$52,238,437	\$160,060	\$163,840	\$167,678	\$171,575	\$175,533	\$179,552	\$183,635	\$187,784	\$191,999	\$196,283	\$200,637	\$205,063	\$209,562	\$214,138	\$218,790	
\$406,500	\$3,842,760	\$5,099,051	\$4,057,873	\$52,297,664	\$166,366	\$170,209	\$174,111	\$178,072	\$182,095	\$186,180	\$190,329	\$194,545	\$198,828	\$203,180	\$207,602	\$212,098	\$216,668	\$221,314	\$226,039	

note Conveyor majority of cost. OPC design and permitting reduced so as not to inflate overall OPC
 note Conveyor contingency incorporated within itemized scope. OPC contingency reduced so as not to inflate overall OPC

Notes
 Estimate utilizes unit value costs from CDOT Cost Data Book (Avg Years 2011 - 2013)
 Roadway modifications to be completed within existing right-of-way/prescriptive easement. Unless as noted, no other right-of-way acquisition costs included in OPC
 Permitting of new haul route assumed duration of 5-years

SEAL:

GCC ENERGY
CONCEPTUAL HAUL ROAD
SEGMENT ACROSS MESA TOP

ISSUED: 02/10/15
PRELIMINARY:
FINAL:
CONSTRUCTION:

PROJ. NO. 12002
DESIGNER: MO
DETAILER: MO
CHECKED BY: MO
DATE:

REVISIONS:

NO	DESCRIPTION	DATE
1	CLARIFY HEADWALL	MAR 5, 2015

SCALE:

SHEET NUMBER:
FIG A



SEAL:

GCC ENERGY
CONCEPTUAL HAUL ROAD
SEGMENT FROM MESA TOP TO CR 120

ISSUED: 02/10/15
PRELIMINARY:
FINAL:
CONSTRUCTION:

PROJ. NO. 12002
DESIGNER: MO
DETAILER: MO
CHECKED BY: MO
DATE:

REVISIONS:		
NO	DESCRIPTION	DATE
1	CLARIFY HEADWALL	MAR 5, 2015

SCALE:

SHEET NUMBER:
FIG B





2610 ARROYO DRIVE
 DURANGO, CO 81301
 TEL 970.749.0336

SEAL:

**GCC ENERGY
 CONCEPTUAL HAUL ROAD
 SEGMENT TO CONVEYOR**

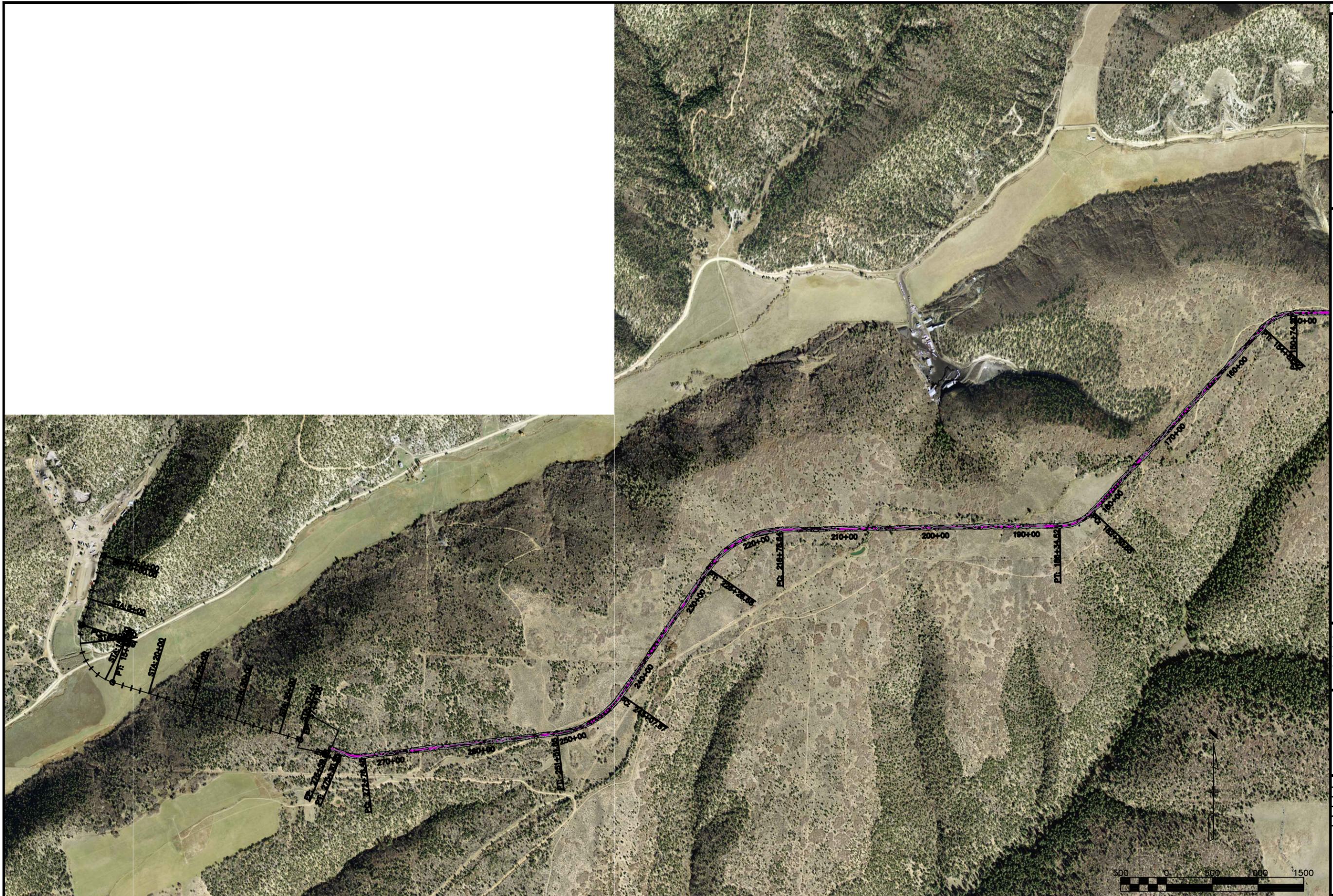
ISSUED: 02/10/15
 PRELIMINARY:
 FINAL:
 CONSTRUCTION:

PROJ. NO. 12002
 DESIGNER: MO
 DETAILER: MO
 CHECKED BY: MO
 DATE: -

REVISIONS:		
NO	DESCRIPTION	DATE
1	CLARIFY HEADWALL	MAR 5, 2015

SCALE:

SHEET NUMBER:
FIG C



SCALE IN FEET

GCC ENERGY LLC GCC ENERGY LLC KING II MINE

TRAFFIC AND ROADWAY ANALYSIS

La Plata County, Colorado

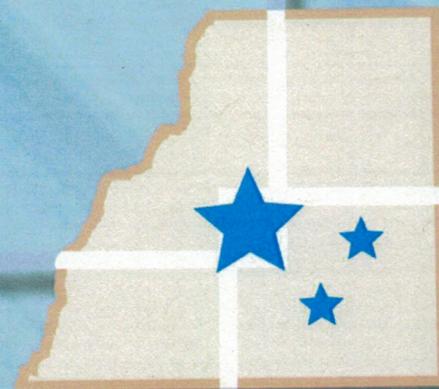
**2030 Transportation
Integrated Plan, excerpts
used in assessing growth rate**

APPENDIX 9

La Plata County and the City of Durango

2030

Transportation Integrated Plan



2030 TRIP

TRansportation Integrated Plan

June 2, 2006

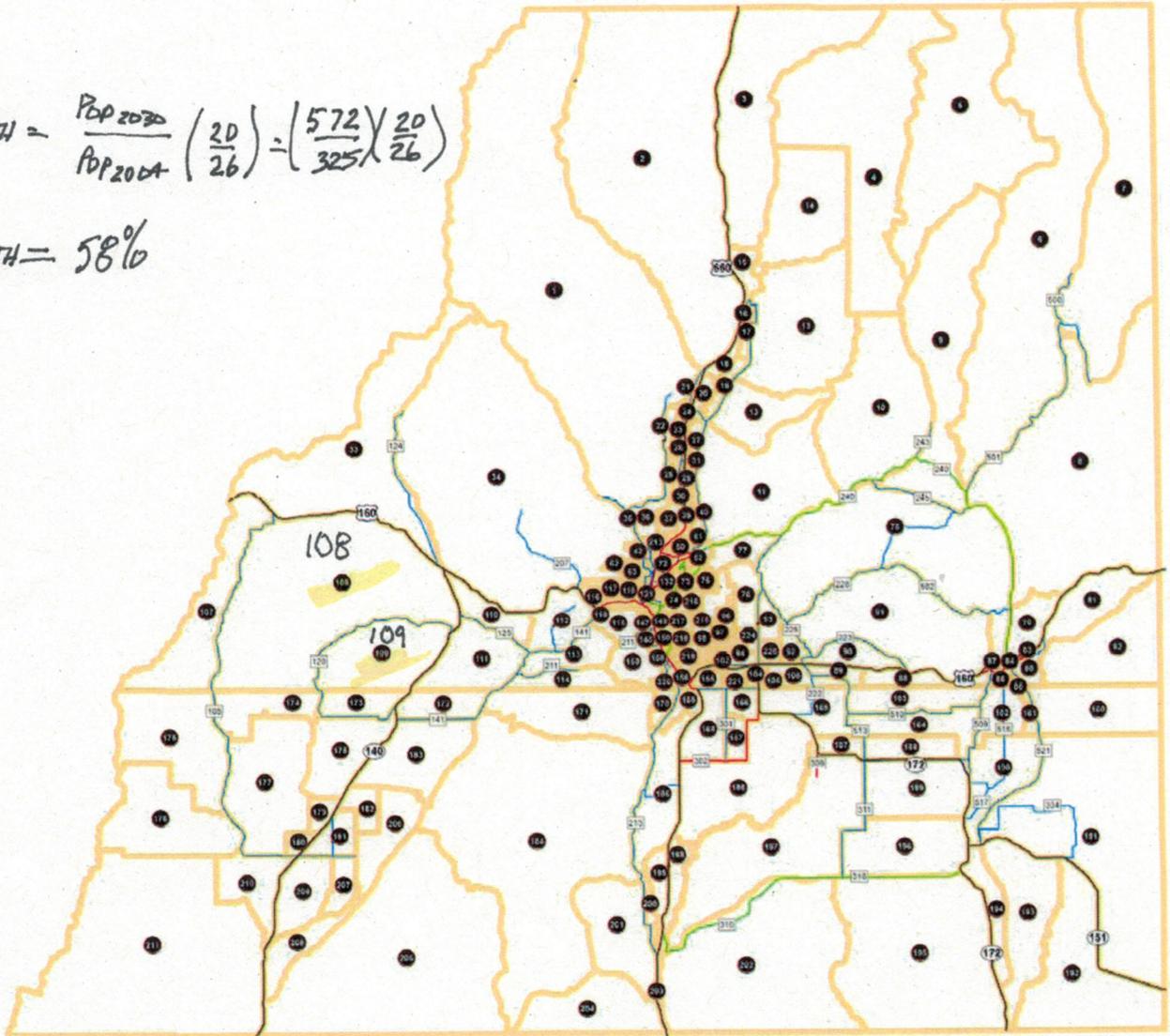
LSA



FIGURE A1: LA PLATA COUNTY TRAFFIC ANALYSIS ZONES

$$20\text{YR \%GROWTH} = \frac{\text{POP}_{2020}}{\text{POP}_{2004}} \left(\frac{20}{26} \right) = \left(\frac{572}{325} \right) \left(\frac{20}{26} \right)$$

$$20\text{YR \%GROWTH} = 58\%$$



LEGEND

Facility Type	Zones
Highways	City Limits
Principal Arterial	Zone ID
Minor Arterial	
Collector	
Local	

N

0 2 4
Miles



Table A2: La Plata County Forecast Year (2030) Socioeconomic Data

TAZ	IGA	Population	Households by Income Level				Employment by Type			
			Low	Medium	High	Total	Basic	Retail	Service	Total
64	1	919	112	183	79	374	20	10	40	70
65	1	164	26	41	16	83	93	4	236	333
66	1	50	7	12	4	23	100	0	198	298
67	1	234	27	53	13	93	5	0	10	15
68	1	226	30	59	14	103	5	0	42	47
69	1	560	81	158	37	276	50	48	82	178
70	1	423	79	79	49	207	11	1	22	34
71	1	250	32	35	60	127	0	0	6	6
72	1	137	21	19	11	51	8	1	41	50
73	1	1,081	168	180	152	500	42	25	45	112
74	1	461	82	82	14	178	0	45	45	90
75	1	19	2	3	2	7	0	0	3	3
76	0	207	25	38	19	82	31	0	0	31
77	0	936	109	173	136	418	30	2	9	41
78	0	1,763	183	365	158	708	211	147	148	508
79	0	2,367	233	485	209	927	68	478	466	1,012
80	0	570	71	112	25	208	100	116	198	412
81	0	268	25	57	25	107	31	0	3	34
82	0	95	10	25	10	45	16	0	1	17
83	0	184	21	38	12	71	0	34	83	117
84	0	275	37	60	14	111	4	4	4	12
85	0	380	56	85	17	158	26	11	47	84
86	0	84	11	18	8	37	24	0	9	33
87	0	76	10	18	7	35	0	14	23	37
88	0	738	87	147	67	301	5	39	76	120
89	0	609	65	114	52	231	15	0	4	19
90	0	373	41	74	32	147	170	32	28	230
91	0	1,480	158	282	128	568	190	309	362	861
92	0	229	34	47	23	104	12	42	63	117
93	0	113	13	20	11	44	22	2	2	26
94	1	988	89	336	29	454	100	200	499	799
95	1	66	8	14	6	28	0	3	32	35
96	1	219	25	45	19	89	3	0	1	4
97	1	1,113	119	187	172	478	1	25	119	145
98	1	285	35	60	25	120	0	0	0	0
99	1	0	0	0	0	0	42	476	156	674
100	1	15	2	2	1	5	24	188	104	316
101	1	336	38	65	30	133	18	258	248	522
102	1	524	60	104	48	212	70	215	200	485
103	1	248	28	47	23	98	11	90	198	297
104	1	155	17	29	14	60	5	85	113	203
105	1	149	17	23	13	53	5	0	2	7
106	0	486	58	93	44	195	18	6	55	79
107	0	59	6	10	7	23	27	0	0	27
108	0	448	45	82	56	183	208	29	27	264
109	0	124	12	21	14	47	109	8	3	120
110	0	1,282	119	214	143	476	45	48	18	111
111	0	387	42	76	51	169	46	20	33	99
112	0	1,176	119	212	145	476	150	35	52	237
113	0	29	3	5	3	11	1	0	0	1
114	0	31	3	5	5	13	4	0	0	4
115	0	0	0	0	0	0	1	0	1	2
116	1	199	34	42	15	91	30	0	100	130
117	1	107	17	20	8	45	50	45	50	145
118	1	258	22	19	72	113	101	19	41	161
119	1	477	18	18	166	204	70	67	115	252
120	1	19	4	4	1	9	110	20	20	150
121	1	94	12	16	6	34	116	30	405	551
122	1	282	41	66	29	136	55	5	62	122
123	1	333	50	83	31	164	47	0	26	73
124	1	125	20	35	11	66	101	4	92	197
125	1	273	41	68	22	131	100	0	600	700
126	1	31	5	9	3	17	0	0	4	4

572C



Table A1: La Plata County Base Year (2004) Socioeconomic Data

TAZ	IGA	Population	Households by Income Level				Employment by Type			
			Low	Medium	High	Total	Basic	Retail	Service	Total
64	1	919	112	183	79	374	0	0	14	14
65	1	164	26	41	16	83	32	4	232	268
66	1	38	5	9	3	17	4	0	187	191
67	1	234	27	53	13	93	0	0	43	43
68	1	213	28	56	13	97	5	0	42	47
69	1	560	81	158	37	276	50	6	82	138
70	1	423	79	79	49	207	11	1	22	34
71	1	79	17	18	10	45	0	0	6	6
72	1	137	21	19	11	51	8	1	41	50
73	1	841	188	164	64	396	42	25	45	112
74	1	312	54	54	2	110	0	0	2	2
75	1	11	1	2	1	4	0	0	3	3
76	0	98	13	17	10	40	25	0	0	25
77	0	641	80	117	115	312	30	2	9	41
78	0	1,004	104	218	96	418	211	4	45	260
79	0	987	79	191	82	352	68	71	118	257
80	0	450	61	92	16	169	100	2	82	184
81	0	170	15	38	17	70	31	0	3	34
82	0	47	5	15	6	26	16	0	1	17
83	0	69	8	13	2	23	0	0	18	18
84	0	181	26	37	5	68	4	0	1	5
85	0	266	45	64	8	117	26	11	47	84
86	0	60	8	14	6	28	24	0	9	33
87	0	38	6	10	4	20	0	0	0	0
88	0	136	15	25	11	51	5	5	0	10
89	0	402	44	75	35	154	15	0	4	19
90	0	216	25	43	19	87	170	0	17	187
91	0	1,125	124	219	100	443	190	9	40	239
92	0	68	10	14	7	31	6	0	6	12
93	0	113	14	21	11	46	22	2	2	26
94	1	217	33	44	25	102	198	22	51	271
95	1	0	0	0	0	0	0	0	0	0
96	1	23	3	4	2	9	3	0	0	3
97	1	9	1	2	1	4	1	0	0	1
98	1	7	1	1	0	2	0	0	0	0
99	1	0	0	0	0	0	42	0	0	42
100	1	9	1	1	1	3	24	0	15	39
101	1	124	15	18	13	46	18	9	14	41
102	1	124	15	20	13	48	105	50	0	155
103	1	213	26	36	23	85	11	0	26	37
104	1	81	9	13	8	30	5	1	56	62
105	1	135	15	20	12	47	5	0	2	7
106	0	100	12	17	9	38	18	6	55	79
107	0	35	3	5	5	13	27	0	0	27
108	0	253	25	43	40	108	208	5	27	240
109	0	72	7	11	10	28	109	0	3	112
110	0	771	86	114	102	282	45	2	18	65
111	0	208	23	41	36	100	46	0	11	57
112	0	900	86	146	132	364	150	35	52	237
113	0	21	2	3	3	8	1	0	0	1
114	0	31	3	5	5	13	4	0	0	4
115	0	0	0	0	0	0	0	0	0	0
116	1	5	1	1	0	2	22	8	250	280
117	1	64	12	11	4	27	5	0	2	7
118	1	57	10	9	3	22	101	9	20	130
119	1	41	6	7	2	15	0	57	38	95
120	1	19	4	4	1	9	4	27	34	65
121	1	55	7	9	4	20	108	18	268	394
122	1	282	41	66	29	136	55	5	62	122
123	1	333	50	83	31	164	47	0	26	73
124	1	125	20	35	11	66	11	4	23	38
125	1	230	34	58	19	111	9	1	1,296	1,308
126	1	31	5	9	3	17	0	0	4	4

325 <

**GCC ENERGY LLC GCC
ENERGY LLC
KING II MINE**

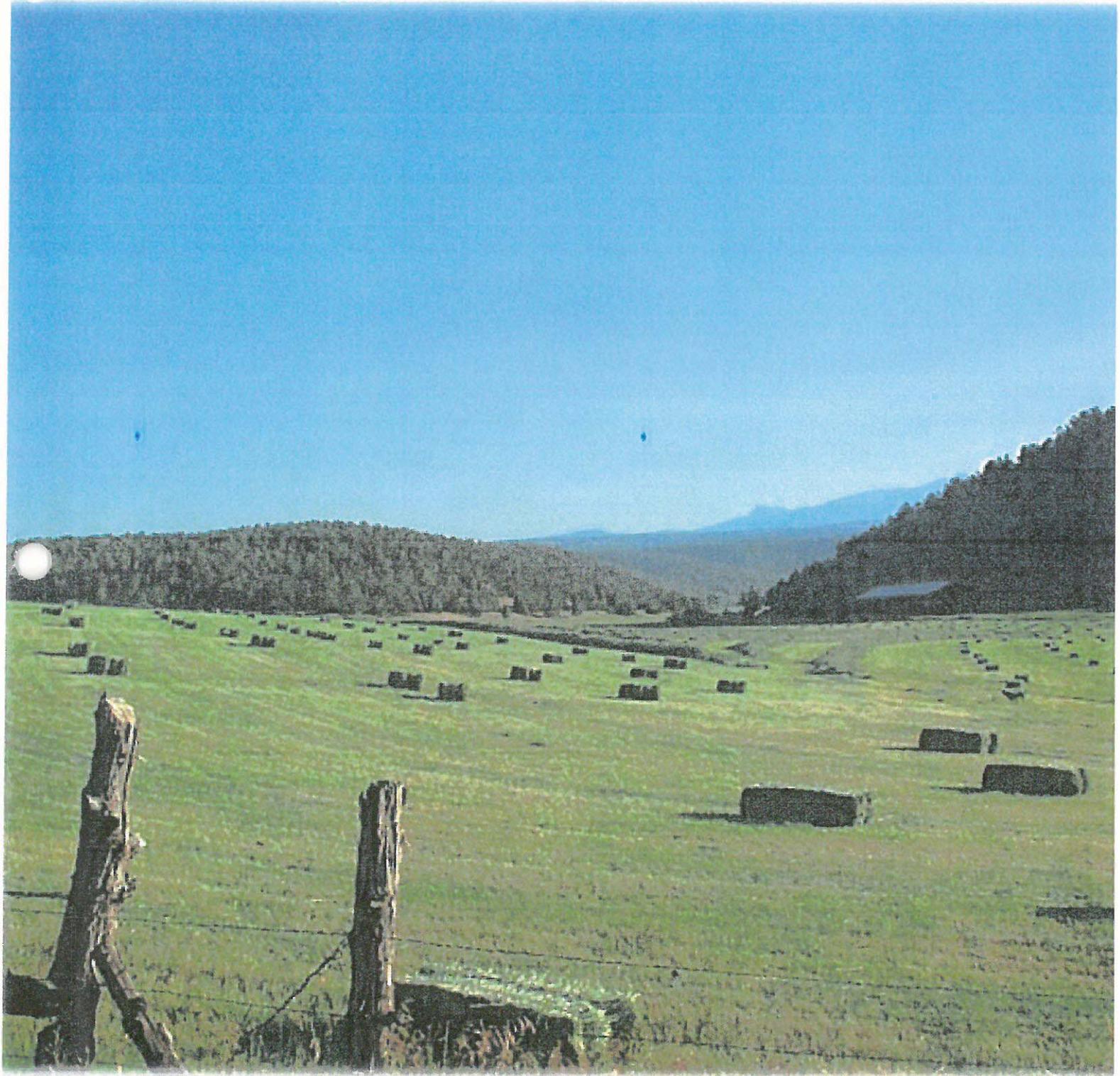
**TRAFFIC AND ROADWAY
ANALYSIS**

La Plata County, Colorado

**Report – Hay Gulch
Citizen’s Advisory
Panel (Cover Letter) – Dated July
8, 2015**

APPENDIX 10

Hay Gulch Citizen Advisory Panel



Recommendations for Approval of Class II Land Use Permit
GCC Energy / King II Coal Mine

July 8, 2015

Mr. Damian Peduto
Director, La Plata County Planning Department
1060 E. 2nd Avenue
Durango, CO 81301

Re: Recommendation on GCC Energy request for Class II Land Use Permit

Dear Mr. Peduto,

The La Plata County Strategic Plan has a clear mission statement. In part it reads: "To foster a safe, healthy, viable, self-sustaining community through wise stewardship of public and natural resources." It is with that strategy in mind that members of the Hay Gulch Citizen Advisory Panel (HGCAP) base the recommendations stated in this document on after months of in-depth research regarding the history and un-checked growth of the King II coal mine in Hesperus.

The HGCAP is comprised of several concerned, volunteer community members that were requested to serve on the advisory panel with a specific mission to identify any and all issues related to the impacts created by the King II operations. The 10- member HGCAP has spent an untold amount of hours researching public records and technical documents, attending 25 plus meetings and speaking to most citizens living in the Hay Gulch area regarding their concerns about the impacts and their suggestions for improvements.

Throughout this process the HGCAP has identified several areas of concern and has done extensive research in these areas in an attempt to develop reasonable recommendations for minimizing future negative impacts to the health, safety and quality of life for area residents and the natural environment of SW Colorado. The areas of concern and related recommendations are listed below.

Traffic

1. Effective immediately GCC Energy shall reduce impacts to CR 120N by decreasing the number of coal haul truck using 120N to 2010 levels until improvements to CR 120N have been completed.
2. Effective immediately coal haul trucks will cease operations on CR 120 from 10pm – 6am Mon. – Sat. and from 10pm Sat. until 6am Mon. for the life of the coal mine.
3. If / when the number of coal haul trucks exceed 144 per day a separate coal haul road shall be installed and maintained at GCC Energy's expense. The haul road must address our desire to alleviate the negative impacts associated with the coal haul trucks.
4. As a contingency to approval of the Class II Land Use permit the applicant shall immediately begin the upgrades and improvements, including replacing culverts, to CR 120 N in compliance with current design and construction standards to ensure the safety of residents as well as drivers. This includes widening and paving CR 120N from the mine entrance to SH 140. All upgrades shall be complete no later than Jan. 1, 2017 at the applicant's expense.
5. Additional measures shall be taken to reduce truck noise levels to 80 dB or less with continuous noise level monitoring to ensure compliance.
6. LPC officials establish a 25 MPH speed limit for trucks having a GVW of greater than 20,000 pounds, on gravel and leaving the mine loaded with coal and 35 MPH for all other traffic using CR 120. Additionally, GPS monitoring and increased speed enforcement should be required.

7. Effective immediately GCC Energy should establish a dedicated phone number to report safety concerns or violations.
8. Impose road use fee on GCC Energy for the expensive, annual costs associated with keeping CR 120 N out of disrepair and safe for residents to travel on.

Water

1. Bureau of Land Management (BLM) should conduct a full Environmental Impact Study (EIS) including a hydrological study to establish a baseline for quantity and quality of the aquifers surrounding the King II mine and the Hay Gulch area.
2. As part of water the monitoring plan GCC Energy shall establish a minimum of six monitoring wells for the purpose of identifying contamination and depletion of aquifers below the mine and in the surrounding areas.
3. Baseline establishment and continuous monitoring of water quality shall use guidelines established by the CO Mined Land Reclamation Division, Table 1 (Ground Water) Section A (Suggested Water Quality Parameters). Additionally, the results of the chemical analysis shall be posted on a public access web site at least monthly.
4. All regulatory agencies including LPC, DRMS, OSM and the BLM should strongly consider the impacts of GCC's current plan for draw down of nearby non-tributary water zones.

Health

1. To ensure the health and safety of nearby residents, GCC Energy shall install a minimum of four continuous air monitors at various locations along 120N that will identify unhealthy air quality including particulates, dusts, fumes, vapors and gasses. Action levels consistent with NIOSH recommendations shall be established and specific action shall be taken to reduce thresholds to below accepted levels. Results shall be recorded and posted on a public access web site.

Noise

1. Reduce noise levels of mine operations and truck traffic to acceptable limits of no more than 80 dB during the hours of 6am – 10pm. Residential noise level limits of no greater than 50 dB should be enforced between the hours of 10pm and 6am. The use of "Jake Brakes" by truck drivers on CR 120 shall be restricted.

Vibration

1. GCC Energy shall establish an operations policy to ensure that vibration caused by the continuous miner and drilling is minimized so as to not impact near-by residents.

Subsidence

1. To ensure that near-by residents' property is not impacted by the potential for subsidence, the boundaries of Tract E of the proposed expansion should be reduced to no less than 1000' from the nearest residential structure.

Regulatory Compliance

1. As a contingency for approval of the permit, GCC Energy shall ensure that all local, state and federal laws and regulations are in compliance and full transparency and

availability of filings are made public. Any expansion of the mine operations shall require a new Class II Land Use permit.

2. La Plata County should immediately adopt CO DOLA 1041 policies to allow LPC greater control over particular development projects.
3. Effective immediately GCC Energy shall be required to pay appropriate road impact fees to pay for damage caused by the trucking operations. These road impact fees shall be allocated directly to CR 120N. HGCAP recommend LaPlata County implement appropriate financial penalties for non-performance of any conditions to Land Use Permit or interim conditions set.

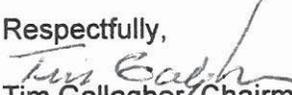
Quality of Life

1. There can be no doubt about the negative impacts the unchecked growth has caused to the health, safety and quality of life of near-by residents. At a minimum GCC Energy should do everything reasonably possible to mitigate those negative impacts to the surrounding community with focus on the above-mentioned issues.
2. GCC Energy should begin immediate discussions and negotiations with residents living on CR 120 N regarding compensation for causing a decrease in property values and quality of life for those residents impacted the most.

As stated earlier, the members of the Hay Gulch Citizen Advisory Panel have given an extraordinary amount of time and energy in the last four months to research the facts surrounding the operations and impacts created by the King II mine. HGCAP members have met with countless numbers of subject matter experts, including environmental specialists and attorneys, elected officials and regulatory agency personnel to become as sufficiently informed as possible to meet our objective of bringing forth reasonable recommendations to La Plata County officials. Additionally, we have met with many area residents to understand their concerns and listen to their suggestions for balancing the economic benefits of GCC operations with the impacts on residents.

Recognizing our very thorough investigation into all of the above-mentioned issues gives the HGCAP the confidence to put forth these reasonable recommendation based on community input. We appreciate the support that GCC Energy and LPC officials have given the HGCAP to gather and disseminate the relevant information necessary to develop these recommendations. We request strong consideration on the part of county officials for all the above listed reasonable recommendations.

Respectfully,


Tim Gallagher, Chairman
Hay Gulch Citizen Advisory Panel

Attachments:

- Hay Gulch Citizen Advisory Panel Members
- Recommendations rationale document
- Attachment # 1 Surface water quality parameters
- Attachment # 2 Expansion area request map
- Attachment # 3 Cross section sketch of subsidence
- Community Meeting PowerPoint presentation
- Community Meeting Attendance Sheets and comments

Hay Gulch Citizen Advisory Panel (HGCAP) Membership and Voting Record

Paula Mathias Representing CR 120 N

I, Paula Mathias, a resident of CR 120 north, oppose the continued use of 120 north being the primary route utilized by GCC Energy for several reasons: quality of life, noise and air pollution, safety, and property value. I am in favor of returning to 2010 truck volume as well as quiet hours.

I am in support and favor all of the remaining recommendations put forth by the HGCAP.

Frank McCue Representing CR 120 N

I, Frank McCue, CR 120 north resident, strongly oppose the continued use of 120 north being the primary route utilized by Grupo Cementos de Chihuahua (GCC) Energy. The reasons include quality of life both inside and outside my home, noise and air pollution, safety, and property value.

I am in support and in favor all of the remaining recommendations put forth by the HGCAP.

Guy Stees Representing CR 120 S

I, Guy Stees, a resident of CR120 south do support and favor all of the recommendations set forth by the HGCAP.

I do oppose any coal hauling trucks coming south of the coal mine on CR120 south or CR119.

Dusty Beals Representing CR 120 S

I, Dusty Beals, support these recommendations and vote yes to present them as written.

J. T. Coyne Representing CR 117

I vote to submit all the HGCAP recommendations as written. JT

Tim Gallagher Representing CR 117

I, Tim Gallagher, am in support of and vote yes to all recommendations as written.

Margaret Kral Representing CR 119

I am in support and favor of the recommendations put forth by the HGCAP, as presented in today's document. Margaret

Paul Schmitz Representing CR 119

I am in support and favor of the recommendations put forth by the HGCAP, as presented in today's document. Paul

Sharon Orr Representing CR 119

This email is my official vote in support of all the recommendations made to La Plata County by HGCAP. I vote yes on all recommendations. Sharon Orr

It should be noted that the original Hay Gulch Citizen Advisory Panel consisted of 11 members. Two of the original members submitted letters of resignation from the Hay Gulch Citizen Advisory Panel. Mr. Mark Schultz submitted a letter of resignation on May 6th and Ms. Jean Graham submitted her resignation on July 2, 2015.