

April 7, 2023

Diane Davies
Genesee Foundation

Re: Fire Access Road Feasibility Analysis

Dear Diane,

Baseline is pleased to provide the following summary of our feasibility analysis that was prepared for Genesee Foundation. As outlined by the Board, Baseline evaluated three proposed alignments for possible emergency access roads within the Genesee Fire District connecting with Morrison Road (Hwy 74). Baseline produced conceptual grading using LiDAR topographic contours available from the County. We utilized a 24' wide typical section for a private drive-in compliance with Genesee Fire Protection District criteria and sufficient to provide emergency egress. The plans that we prepared are preliminary but were produced in compliance with Jefferson County Development Codes and Guidelines related to roadway width, alignment, slope, etc. Baseline also prepared an engineers estimate of probable construction cost for use in applying for and seeking funding for the roadway.

Final design plan preparation will be required for permitting, bidding, and construction. The scope for final design would include detailed surveying along the selected alignment for use in preparing final construction drawings. A detailed drainage analysis will also be needed to evaluate the final size, length, and location of drainage culverts. For the feasibility estimate only major drainageways were evaluated for conceptual structure sizing and assumed spacing was used for culvert placement, but additional culverts may be warranted. Final design plans, based on a detailed topographic survey, will allow for profile adjustments to ensure balanced earthwork and eliminate the need for import or export of dirt work. Because final design has not been prepared Baseline is carrying a 20% contingency in our estimates of construction cost.

Jefferson County criteria allows for a maximum cut/fill slope of 3:1. A preliminary geologic/geotechnical study was conducted to evaluate if steeper slopes would be supported rather than incorporating walls into the design. Preliminary results indicate cut slopes up to 0.75:1 and 1:1 fill slopes will be allowable. During final design additional Geotechnical investigation will be conducted to confirm these slopes at critical locations.

The location of the emergency access road connection to Highway 74 has been determined to be at the Bear Creek Tributary drainage crossing approximately a half mile east of Cold Spring Gulch Road. This was determined to be the only viable option due to steep embankment grades, limited sight distance, and property ownership constraints of the other location considered.

Route A

Route A begins on the west side of the Bear Creek Tributary, goes north following natural terrain, and crosses to the east side of the drainage to avoid a large area of exposed bedrock. Due to elevation limitations, switch backs will be needed to gain elevation to maintain the 10% grade required for fire access. After crossing the drainage, Route A continues at generally 10% to connect to the existing road at the tennis courts. The estimated construction cost for this alignment, including a 20% contingency, is \$6,212,555

Pros:

- The southern switchback valley crossing location reduces the amount of rock excavation required.
- Stays clear of high-risk fire valley located east of Daisy Lane.
- Most direct route for fire access.

Cons:

- Crosses Genesee Water and Sanitation district property.
- A larger drainage structure will be necessary for the valley crossing.

Route B

Route B deviates from route A at station 43+00 and crosses east over the ridge to continue north roughly east of Daisy Lane. This proposed alignment requires additional switchbacks, crossing through multiple potential bedrock outcrops, and is located in closer proximity to private property than options A or C. This option was provided to give an alternate access point onto Montane Drive east of Daisy Lane. The estimated construction cost for this alignment, including a 20% contingency is \$6,830,517

Pros:

- The additional length of this alignment allows the grades to be lower in portions of the alignment.
- Does not cross Genesee Water and Sanitation District Property.

Cons:

- 880 linear feet of the road is within 75 feet of a property line.
- Sharp switch backs will be needed to gain elevation.
- Two additional proposed drainage structures will be required for route B.
- This alignment is longer than the other options.
- The valley east of the GWSD is considered a higher fire risk by the Genesee Fire District.

Route C

Route C deviates from route A at station 26+00 and continues north another 900 feet before making the switchback to cross the drainage. This route crosses through bedrock in a cut condition from station 29+00 to station 34+00. The estimated construction cost for this alignment, including a 20% contingency is \$6,420,313.

Pros:

- This alignment is approximately two hundred feet shorter than option A.

Cons:

- The northern location of the valley crossing switchback is closer to the properties on both Bitterroot and Daisy Lanes and likely will be more visible to those residents.
- There will be a significant amount of rock excavation required from the valley crossing to a point roughly five hundred feet to the south.
- Crosses Genesee Water and Sanitation District property.

Tennis Court to Montane Dr. East Extension Route

This extension alignment from the tennis courts to Montane Drive is provided as an additive alternate option to consider if a scenario arises that makes crossing the Genesee Water and Sanitation District roads not possible. The estimated cost for this alternate extension, including a 20% contingency is \$418,933.

Pros:

- Does not cross the Genesee Water and Sanitation District property near their facilities.

Cons:

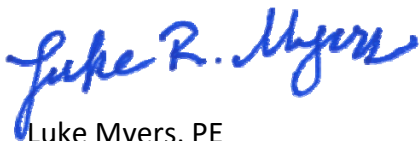
- Adds approximately 1,100 feet of roadway length and additional drainage culverts.

Disqualified Route

The western alignment, shown on the overall plan connecting Bitterroot Lane to Highway 74 near GWSD Reservoir #2, was explored and disqualified as a viable option. This option was disqualified due to required grades exceeding 15% and the alignment needing to cross into GWSD property too close to the dam.

Thank you for the opportunity to assist the Genesee Foundation.

Sincerely,



Luke Myers, PE
Engineering Manager
Baseline Engineering