SUPPLEMENT TO ALTERNATIVES SCREENING ANALYSIS EVALUATION OF THE ASHLAND EAST VARIATION PROPOSED BY THE SURFACE TRANSPORTATION BOARD

TONGUE RIVER RAILROAD
CUSTER, POWDER RIVER, AND ROSEBUD COUNTIES MONTANA

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Prepared by

TranSystems

and

Hanson Professional Services Inc.

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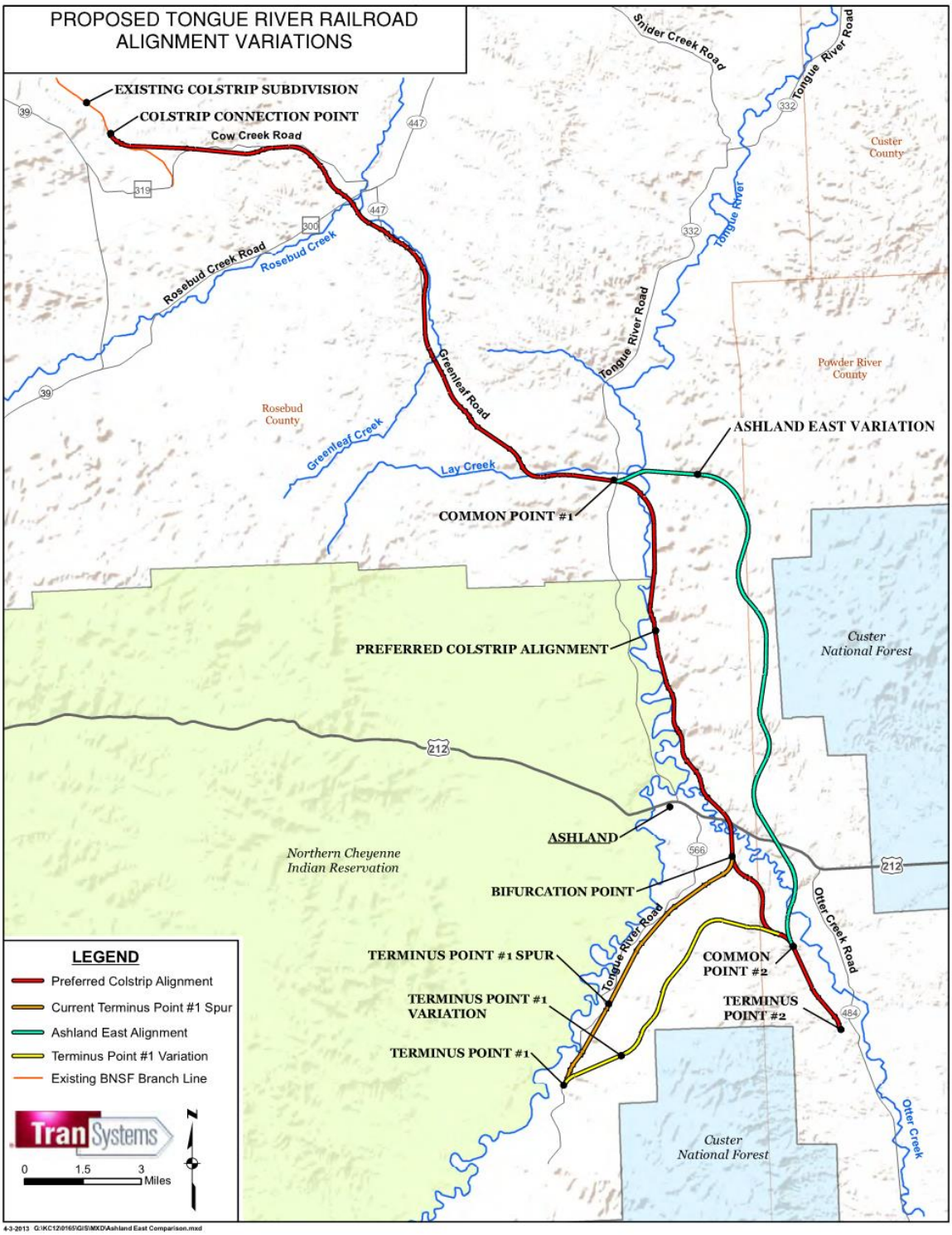
1. Introduction

The Tongue River Railroad Company, Inc. (TRRC) has prepared for OEA's consideration this Supplement to the April 30, 2013 Alternatives Screening Analysis, which discusses TRRC's concerns with the Ashland East Variation, and the Terminus 1 Variation and Decker Alternative.

The TRRC's proposed Colstrip Alternative alignment ("TRRC-preferred alternative") and the Ashland East Variation are shown on Figure 1. TRRC understands that OEA developed the Ashland East Variation in response to a scoping comment from the Northern Cheyenne Tribe requesting an alternative as far as possible from the eastern boundary of the Northern Cheyenne Reservation and the Tongue River. The Ashland East could be used to replace segments of the Colstrip Alternative, Tongue River Alternative, Tongue River Road Alternative, and/or the Moon Creek Alternative. Starting at its northern end, this variation would connect to the Colstrip Alternative where it begins to curve to the south, at a location just east of its crossing of Tongue River Road, shown on Figure 1 as Common Point 1. The Ashland East Variation would connect to the Tongue River Alternative approximately 0.8 mile east of the intersection of Greenleaf Road and Tongue River Road. From there, the Ashland East Variation would continue east for approximately 3 miles before curving to the south. This variation would generally parallel the Tongue River, but would be offset to the east at distances ranging from approximately 2 miles to 4 miles. To lower the grade for the Otter Creek crossing, it would include a gradual westward bulge which would be located approximately 2 miles east of Ashland at its closest point. The variation would pass approximately 2 miles east of Ashland before connecting to the Otter Creek Spur, and either Terminus 1 Variation or Terminus 1 through a wye track approximately 2.5 miles northwest of Terminus Point 2, shown on Figure 1 as Common Point 2.

Figure 1. Proposed Alignment Variations



2. Earthwork Quantities to Construct the Ashland East Variation

In the April 30, 2013 Supplement to the Alternatives Screening Analysis, TRRC estimated the total length of new railroad construction for the Ashland East Variation would be about 15.9 miles, compared to about 13.9 miles for the corresponding portion of the proposed Colstrip alignment. TRRC also noted that the Ashland East variation does not parallel to any extent existing transportation corridors, in contrast to the preferred alternative. The TRRC-preferred alternative parallels existing corridors (including based on further analysis both public and private roads) for approximately 32% of its length. Other disadvantages of the Ashland East variation are also identified in the April 30 supplement, but will not be repeated here.

In that same supplement, TRRC estimated that the Ashland East alternative would require about 42.8 million cubic yards of earthwork, significantly more than the 12.75 million cubic yards estimate for the corresponding section of the TRRC-preferred alignment. The greater earthwork quantities, and the significantly greater degree of land disturbance, are the result of the fact that the Ashland East routing takes the line into mountains that would normally be avoided. The corresponding portion of the TRRC-preferred alignment does avoid these mountains.

It has subsequently come to TRRC's attention that in designing its version of the Ashland East variation, OEA (working with its contractor, ICF) used different design parameters that led to lower earthwork figures, namely 26 million cubic yards. While that figure is still more than twice the cubic yardage of earthwork required as compared to the corresponding section of the TRRC-preferred alignment, it is significantly lower than TRRC's estimate. The earthwork quantities and related costs are summarized in Table 1.

Table 1. Comparison of Earthwork Quantities and Costs to Construct the Ashland East Variation

	Proposed Alignment	Ashland East Variation		Ashland East Variation vs. Proposed Alignment	
Quantity	TRRC Estimate	TRRC Estimate of TRRC Version of Alignment	TRRC Estimate of OEA Version of Alignment	TRRC Estimate of TRRC Version of Alignment	TRRC Estimate of OEA Version of Alignment
Length (Miles)	13.9	15.9	N/A	+2.0	N/A
Cut (CY)	5,900,000	22,000,000	13,000,000	+16,100,000	+7,100,000
Fill (CY)	6,850,000	20,800,000	13,000,000	+13,950,000	+6,150,000
Total Earthwork (CY)	12,750,000	42,800,000	26,000,000	+30,050,000	+13,250,000
Construction Cost	$127,000,000	$275,000,000	$231,000,000	+$148,000,000	+$104,000,000

To ascertain the reason for this variation between the TRRC and OEA estimates, TRRC analyzed the horizontal and vertical design files provided by OEA for its Ashland East Variation estimates. It appears the primary reason for the differences in quantities is variation between the two vertical profiles used to estimate the quantities. After crossing the Tongue River heading east, both vertical alignments climb at maximum grade until a summit point, after which the OEA alignment more closely matches the existing ground topography through the use of six undulating maximum grades within a length of less than four miles. The TRRC vertical profile utilizes two maximum grades within the same length.

Figure 2 illustrates the existing ground topography and the TRRC and OEA vertical profiles. It appears that OEA has attempted to follow the existing ground topography in order to reduce the amounts of earthwork cuts and fills. However, TRRC and BNSF have serious concerns regarding future train operations over undulating tracks with such severe grade changes. Figure 3 illustrates the potential positions of two trains on the OEA version of the Ashland East alignment experiencing up to three maximum grades within an 8,000-foot train length (up, down, up). These multiple undulating grades within a train length can cause “bunching” and “stretching” of the trains, resulting in uneven speed control, increased wear on coupling devices, increased risk of coupling breaks at the top of the grades and increased risk of derailment at the bottom of the grades.

By contrast, the TRRC vertical profile of the Ashland East alignment is based on current railroad engineering practices and results in smooth pulls both up and down grades. The OEA Ashland East Variation profile utilizes undulations with a total grade approximately 25% greater than the other alternatives. However, unlike other alternatives, which employ isolated undulations of lesser severity, the OEA Ashland East profile proposes six consecutive undulating maximum grades, each connected by less than a train length. This segment of the OEA profile is inconsistent with best practices for railroad engineering and safety and accordingly would not be constructed according to the design parameters used by OEA due to the increased derailment and coupling risks. In comparison, the portion of the preferred Colstrip Alignment west of Tongue River utilizes no similar undulations containing three grades within a train length.

As a result of the above analysis, TRRC believes that it would be inappropriate to rely on the OEA earthwork estimates for alignment comparison purposes. The TRRC estimates initially presented in the April 30 Supplement and shown above in Table 1 better reflect the actual impact of constructing the Ashland East alignment according to best engineering practices that would be employed by TRRC as the party constructing the line.

As noted above, the estimated earthwork quantities to construct the Ashland East Variation are substantially higher than the earthwork quantities to construct the preferred alignment. While even the OEA earthwork estimates to construct the Ashland East Variation are about 205% higher than to construct the proposed alignment, the TRRC estimates to construct the Ashland East Variation are about 336% higher than to construct the proposed alignment.

Further, TRRC estimated the cost to construct the Ashland East Variation according to TRRC’s design parameters is $275 million, compared to $127 million for the corresponding segment of the preferred alignment (2013 Cost). The substantially higher cost to construct the Ashland East Variation is due to the longer length and the topography of the alignment, requiring the substantially higher earthwork quantities described above to establish operationally acceptable railroad grades. These higher costs would have to be recouped through higher freight rates. Note too that the construction cost increases associated with Ashland East are not linear in relation to the grading quantities, primarily due to the percentage of excavation that is estimated to be rock and thus more costly to excavate. Current geotechnical information suggests that approximately 20% of the excavation required in the area northeast of Ashland will be rock excavation. In addition, construction of the Ashland East Variation (regardless of design parameters) also would result in greatly increased construction activity, traffic, noise, and overall disturbance to the natural environment consistent with constructing a rail line through mountains that can be readily avoided by favoring the preferred alternative.

3. Discussions with U.S. Forest Service

Representatives of TRRC discussed the relative aspects of the proposed alignment and the Ashland East Variation with Ms. Liz McFarland and Mr. Keith Hackbarth of the U.S. Forest Service on July 18, 2013. The discussion was held to ascertain the Forest Service's views regarding potential effects of the railroad on the Custer National Forest, the western boundary of which is located very close to the proposed Ashland East alternative. Ms. McFarland and Mr. Hackbarth agreed since neither the Ashland East nor the preferred route alternatives pass through the Custer National Forest, they do not foresee direct environmental impacts to the Forest. However, the Ashland East Variation would pass within about 0.5 mile of the Cook Mountain riding and hiking area, which is preserved in an undeveloped condition with no developed trails or facilities. Ms. McFarland and Mr. Hackbarth expressed concern about noise and viewshed impacts, and their preference for the railroad to be "farther rather than closer" to the Custer National Forest.

4. Tongue River Crossing

The Tongue River crossing angles of the OEA and TRRC versions of the alignments differ for the Ashland East Variation. The crossing angle of the OEA version of the alignment results in a span length over the river of approximately 230 feet compared with the TRRC length of approximately 200 feet. A 230-foot river crossing would require a truss span, which would add significant complexity to construction, as well as long-term maintenance issues. It would also be more costly.

5. Otter Creek Impacts

The Otter Creek crossing locations of the OEA and TRRC versions alignments differ for the Ashland East Variation. The crossing location of the OEA version of the Ashland East alignment is in such close proximity to a meander of Otter Creek that stream channel relocation is likely. Parallel stream channel impacts to a stream of this size are a significant issue associated with the OEA alignment. Further, both the TRRC and OEA versions of the Ashland East alignments result in greater impacts to adjacent Otter Creek riparian areas compared with the preferred Colstrip Alternative. The preferred Colstrip Alternative traverses the Otter Creek valley floor for a distance of approximately 2,900 feet compared to about 3,900 feet for the OEA and TRRC versions of the Ashland East Variation, which equates to an increase of approximately 34%.

6. Conclusion

The evaluations discussed in this Supplement to the Alternatives Screening Analysis support the earlier conclusions that the Ashland East Variation will result in substantial engineering, construction, and operating disadvantages in comparison to the preferred Colstrip Alternative Alignment. Further, there continues to be no apparent offsetting engineering, operational or other rail-related benefits to this alternative variation.

Many of the same issues presented above regarding the Ashland East Variation also pertain to the Terminus 1 Variation. The amount of grading required to construct the Terminus 1 Variation is approximately 10.8 million cubic yards more than the proposed Colstrip Alignment between common points, which represents an increase of about 120%. This additional grading results in an increased cost of approximately $65,000,000 million, or about an 86% increase. The proposed Colstrip Alignment between common points shared with the Terminus 1 Variation parallels existing transportation corridors for approximately 62% of its length while the Terminus 1 Variation does not parallel any existing transportation corridors.

Figure 2. Comparison of Vertical Profiles (Full size hard copy provided under separate cover)

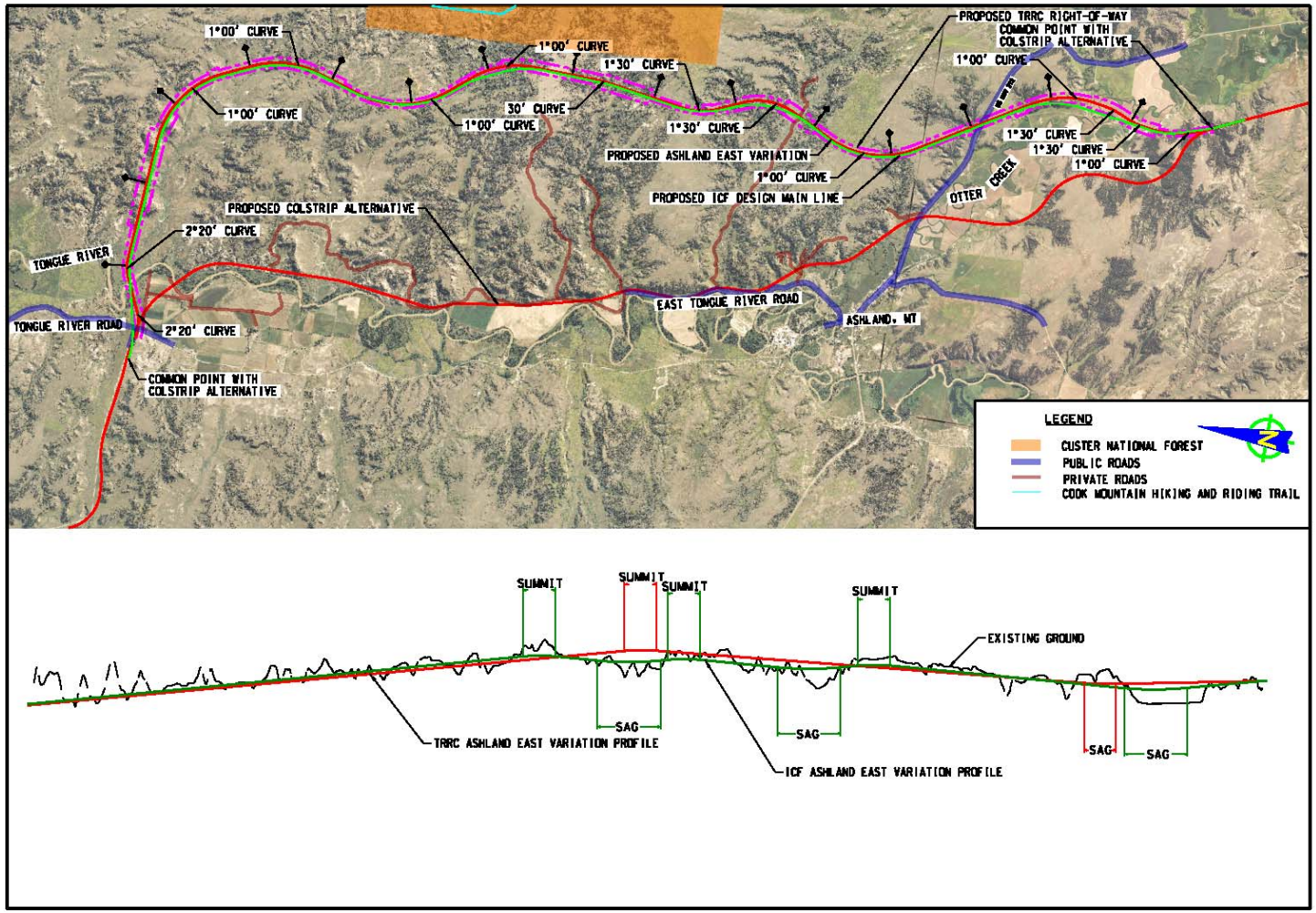


Figure 3. Illustration of Three Undulating Maximum Grades within Train Lengths (Full size hard copy provided under separate cover)