



Tongue River Proceeding -- TRRC's Supplemental Alternatives Analysis
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1 Attachment



TRR_Supplement_to_Alternatives_Screening_Analysis_2013_04_30.pdf

Ken, Alan – Please find attached TRRC's supplemental alternatives screening analysis addressing the Decker Alternatives and the two route variations identified in the STB's March 22, 2013 final scoping notice.

I would be pleased to respond to any questions that you might have.

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**SUPPLEMENT TO ALTERNATIVES SCREENING ANALYSIS
EVALUATION OF ADDITIONAL RAIL ALTERNATIVES
UNDER CONSIDERATION FOR DETAILED STUDY**

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

STB FINANCE DOCKET NO. 30186

Prepared by



TranSystems

and



Hanson Professional Services Inc.

April 30, 2013

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1. Introduction

The Tongue River Railroad Company, Inc. (TRRC) filed a Revised Application for Construction and Operation Authority with the Surface Transportation Board (STB) on December 17, 2012, proposing to construct and operate a rail line between the BNSF Colstrip Subdivision line at Colstrip, Montana and proposed and potential mine sites at Ashland/Otter Creek, Montana. The STB is preparing an Environmental Impact Statement (EIS) on the proposed project, including analysis of feasible alternatives to the proposed route. To assist the STB and its contractor, TRRC provided an Alternatives Screening Analysis dated January 11, 2013 summarizing evaluations of alternative rail alignments and other transportation options that were considered by TRRC. The Analysis identified four feasible alternatives that TRRC recommended to be carried forward for further environmental study by the STB and also identified other alternatives that TRRC advised are not feasible based on applicable screening criteria and therefore do not, in its view, warrant further detailed study.

During development of the scope of the EIS, the STB's Office of Environmental Analysis ("OEA") identified two additional rail alternatives and two alternative variations. These are being considered to determine if more detailed analysis in the EIS is warranted.¹ TRRC has prepared for OEA's consideration this Supplement to its previous Alternatives Screening Analysis, which evaluates the relative merits and feasibility of the additional identified rail alternatives and alternative variations.

2. Rail Alternatives under Consideration

TRRC recommended the following four rail alternatives to be carried forward for further study:

- Colstrip Alternative (the proposed route);
- Tongue River Alternative;
- Tongue River Road Alternative; and
- Moon Creek Alternative.

In addition to the four rail alternatives listed above, STB identified in a final scoping notice issued on March 22, 2013 two rail alternatives going south from Ashland, Montana and connecting to the BNSF network near Decker, Montana. STB also developed alternative variations for certain segments of the alternative alignments. The additional alternatives and alternative variations are as follows:

- Decker 1 Alternative;
- Decker 2 Alternative;
- Ashland East Variation; and
- Terminus 1 Variation.

The alternative alignments and variations to be considered are shown on Figures 1 through 3.²

¹ Surface Transportation Board Notice of Availability of the Final Scope of Study for the Environmental Impact Statement, Served March 22, 2013.

² Map for Figure 1 obtained from the Surface Transportation Board Tongue River Railroad Environmental Impact Statement website, http://www.tonguerivereis.com/documents/final_scope_maps.pdf, accessed March 29, 2013.

Figure 1. Final Scope Alternative Alignments

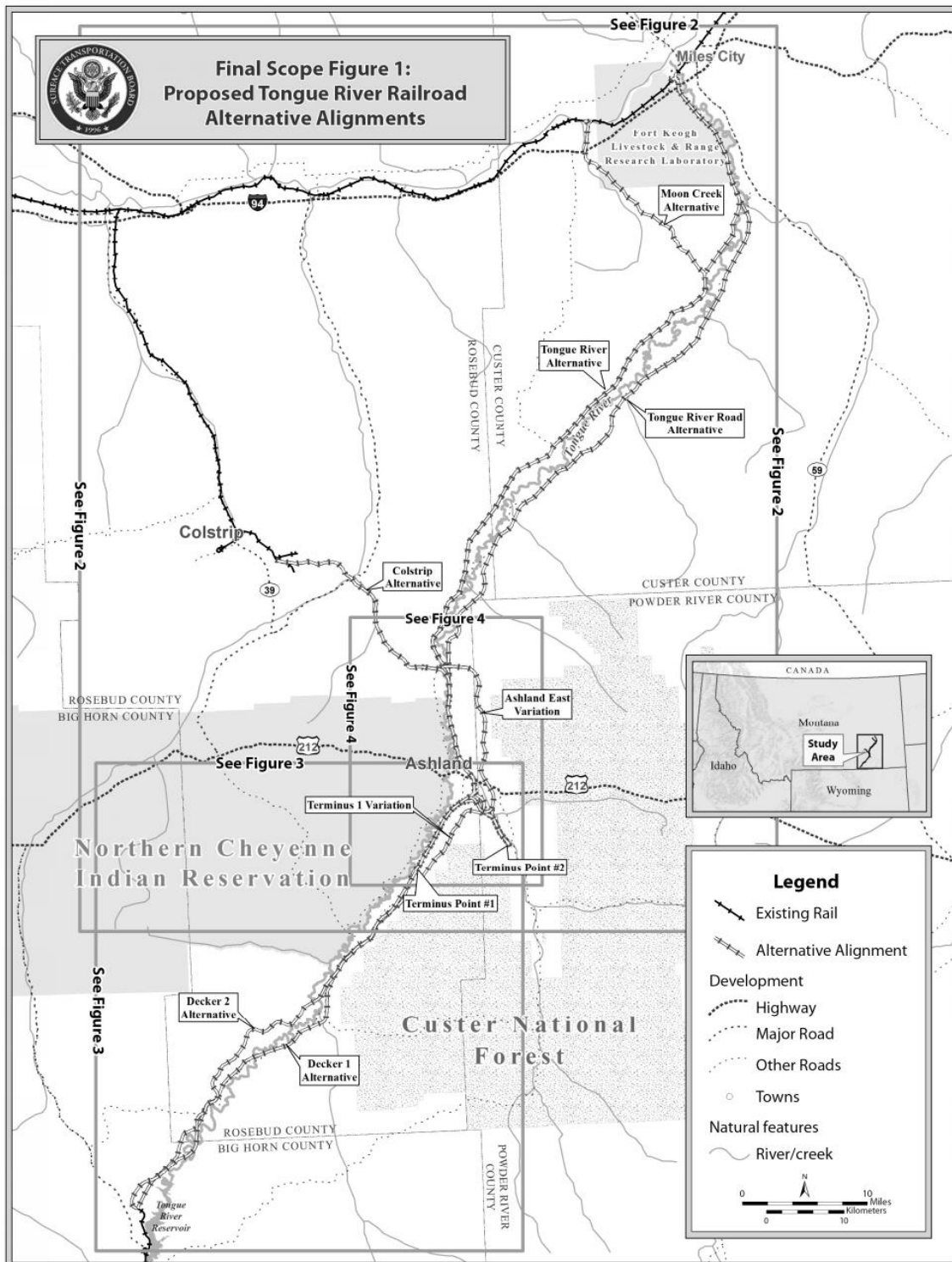


Figure 2. Proposed Southern Alternatives to Decker

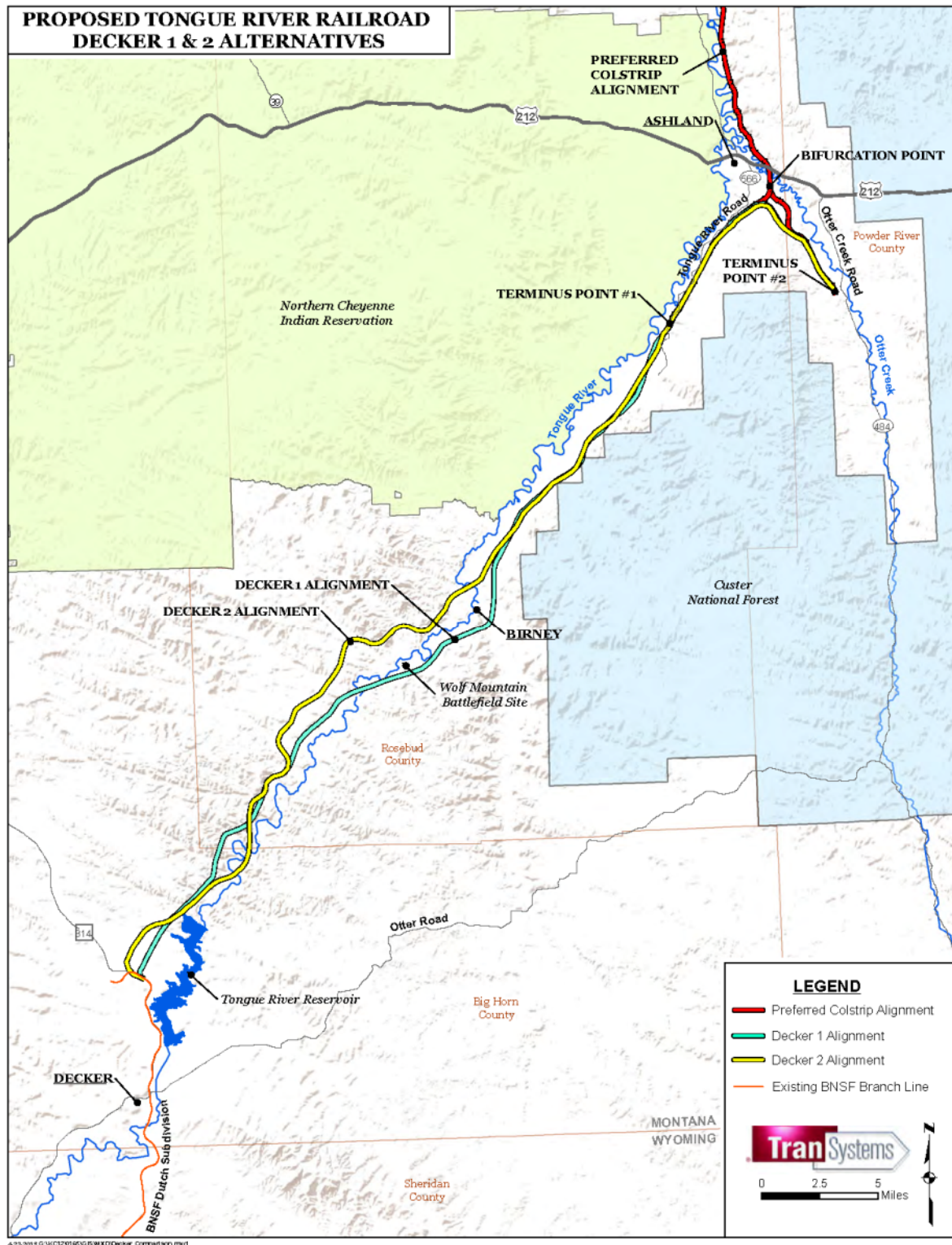
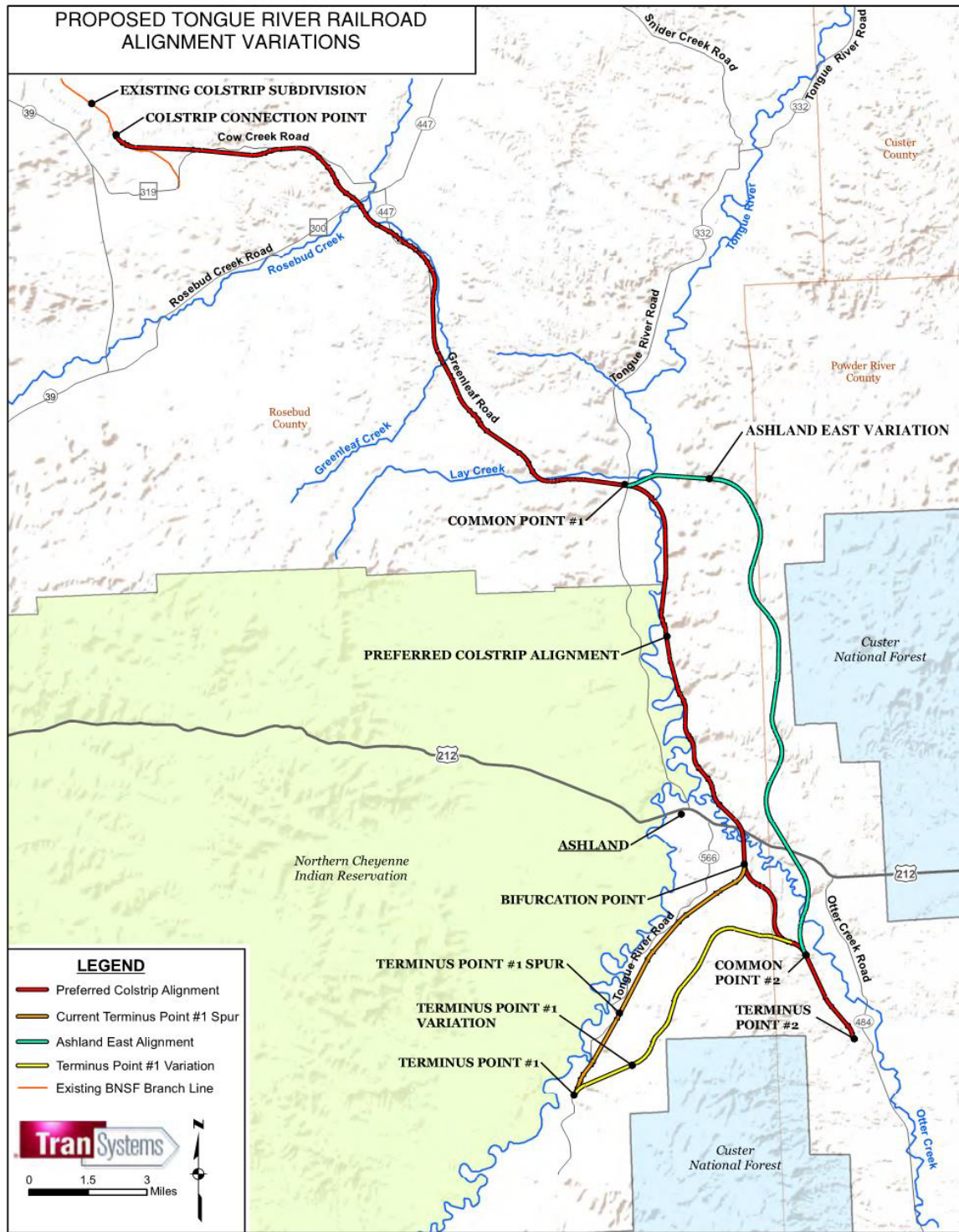


Figure 3. Proposed Alignment Variations



2.1 Decker 1 Alternative

The Decker 1 Alternative would depart from Terminus Point 2 at the proposed Otter Creek Mine, and follow Otter Creek approximately five miles north along the same route used for the Otter Creek Spur and then travel southwest generally paralleling the Tongue River through Terminus Point 1, as shown on Figures 1 and 2. It would run along the eastern side of the Tongue River and pass through the Wolf Mountains Battlefield National Historic Landmark (NHL). From there it would cross to the west side of the Tongue River and continue to its connection with the BNSF rail line via the Spring Creek Railroad Spur near Decker, Montana. This alternative is identical to the Ashland-Decker alignment (including the Western Alignment) that was previously approved for construction and operation by the STB in Tongue River III with one very significant difference, namely, the TRRC III line was part of a longer proposed Decker-Miles City line designed to transport coal mined in the Decker/Spring Creek area and Wyoming north to the BNSF Forsyth Subdivision at Miles City. The total length of new railroad construction would be about 50.1 miles. The estimated cost to construct the Decker 1 Alternative is \$566 Million (2013 Cost).

2.2 Decker 2 Alternative

STB developed the Decker 2 Alternative in an effort to consider a southern route that would avoid the Wolf Mountains Battlefield NHL. This alternative was not considered in the previous Tongue River Railroad proceedings. The Decker 2 Alternative would be almost identical to the Decker 1 Alternative. However, it would cross from the east to the west side of the Tongue River just north of Birney. It would pass west of the Wolf Mountains Battlefield NHL and, with the exception of a short segment approximately three miles north of the Tongue River Dam, this alternative would continue on the west side of the Tongue River for the remainder of its course, as shown on Figures 1 and 2. The total length of new railroad construction for the Decker 2 Alternative would be about 52 miles. The estimated cost to construct the Decker 2 Alternative is \$698 Million (2013 Cost).

2.3 Ashland East Variation

STB 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, as shown on Figures 1 and 3. It 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 3 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 3.

as Common Point 2. The total length of new railroad construction for the Ashland East Variation is about 15.9 miles, compared to about 13.9 miles for the corresponding portion of the proposed Colstrip alignment. The estimated cost to construct the Ashland East Variation is \$275 Million, compared to \$127 million for the corresponding segment of the proposed alignment (2013 Cost).

2.4 Terminus 1 Variation

STB developed the Terminus 1 Variation in response to scoping comments from the Northern Cheyenne Tribe, which requested an alternative as far as possible from the eastern Reservation boundary and the Tongue River, as shown on Figures 1 and 3. This variation would start at a point approximately 1.8 miles southeast of the proposed Terminus Point 1. From there, it would travel northeast, largely paralleling the spur leading to Terminus Point 1 before joining with the Ashland East Variation. The Terminus 1 Variation connects to the Ashland East Variation and from there could connect to any of the northern alternatives (i.e., Tongue River, Colstrip, Tongue River Road and Moon Creek alternatives) and could also connect to the southern alternatives (i.e., Decker 1 and 2 alternatives). The total length of new railroad construction for the Terminus 1 Variation is about 8.3 miles, compared to about 7.5 miles for the corresponding portion of the proposed alignment. The estimated cost to construct the Terminus 1 Variation is \$141 Million compared to \$76 Million for the corresponding segment of the proposed alignment (2013 Cost).

3. Purpose and Need Assessment of the Southern Alternatives

The principal purpose of the proposed Tongue River Railroad is to efficiently transport low-sulfur, sub-bituminous coal from mine sites developed in Rosebud and Powder River Counties, Montana, including proposed mine sites in the Otter Creek area, to the national rail network via the BNSF Railway system. Coal from this region, the Northern Powder River Basin, would primarily be shipped eastbound to the upper Midwestern United States or westbound toward the Pacific Northwest coast for export, i.e., coal trains may travel on the BNSF system either east or west.

As discussed further in Section 4 below, the proposed southern alternatives add significant mileage (approximately 436 to 440 miles for eastbound round-trip traffic and 122 to 126 miles for westbound round trip traffic) to shipments of coal from the Otter Creek area to the anticipated primary markets. The longer southern routing of the Decker 1 and Decker 2 alternatives would place the Otter Creek/Ashland area coal in a disadvantageous position in terms of transportation distance and cost relative to coal sourced at mines south of Otter Creek/Ashland. Therefore, the proposed southern alternatives (Decker 1 and Decker 2) do not meet the stated purpose of the railroad to provide efficient transportation of coal from the mines in the Otter Creek area to the anticipated markets and these alternatives accordingly do not warrant any further consideration.³

TRRC's February 6, 2013 response to question 1 of the STB's January 23, 2013 first information request provides detail on the historical markets for Montana coal and the expected markets to which coal transported by TRRC would be transported. As explained in that

³ Section 4.1.1 of this Analysis provides further detail with regard to the transportation disadvantages of the Decker Alternatives for Otter Creek/Ashland coal transported to the primary markets.

response, TRRC anticipates that the bulk of the coal transported by the TRRC line will (i) find a market at the Upper Midwest electric utilities (mostly in Michigan and Minnesota) that have historically used Montana coal and (ii) be exported to Asia through the existing west coast port at the Westshore Terminal south of Vancouver, BC or possibly through other Pacific Northwest port facilities presently in the planning stages.

TRRC anticipates that there will also be secondary markets for the coal. Some of the coal may be exported to Europe through a Great Lake port at Superior, Wisconsin, and historical data suggests that relatively smaller volumes might find their way to utilities in other Midwestern states (Wisconsin, Illinois and Ohio, among others) or to Arizona. See Exhibit 1 to TRRC Response to First Information Request.⁴ It is also possible that some volume of Otter Creek/Ashland coal will be used for power generation within Montana, including notably at the PPL Montana Colstrip plant, which at present has a source of coal at the adjacent Rosebud mine. The proposed Colstrip Alternative would allow for the most efficient routing to that facility.

The reason that most of the Otter Creek/Ashland area coal is expected to move northbound on the TRRC line to the BNSF Forsyth Subdivision is that such northbound transportation from the mine sites will provide a transportation distance and cost advantage to above-described primary market destinations for the coal. Transportation distance is a key factor in determining a likely market for coal from any particular mine and the nearest markets for the Otter Creek/Ashland coal, as in the case of other Montana coal that leaves the State, will be Upper Midwest and Pacific Northwest points to which Montana coal has historically been transported.

The northbound movement of the coal on the TRRC line from Otter Creek and future Ashland mines will allow the coal to enjoy a significant transportation distance advantage given the relative proximity of the Otter Creek/Ashland mines to the above-described primary markets, particularly in comparison to Southern Powder River Basin mines in Wyoming and other Montana mines located south of Otter Creek/Ashland, including Spring Creek and Decker. However, transporting the coal over the Decker Alternatives would reduce this advantage considerably, particularly for eastbound trains, which (if transported via either Decker Alternative) would have to traverse an additional 436 to 440 miles roundtrip versus the Colstrip Alternative to reach Upper Midwest markets. For westbound traffic, the Decker Alternatives would add an additional 122 to 126 miles roundtrip. These additional miles would add a transportation cost penalty on the Otter Creek/Ashland coal that would reduce its natural geographic advantages in the primary target markets and thus its competitiveness relative to coal from most other Powder River Basin mines.

It is notable in this regard that none of the various alternative proposals for TRRC routings that have been considered since the 1980's – until now – have contemplated the movement of coal from the Otter Creek/Ashland areas southbound via Decker. The TRRC II and III proposals did contemplate building a line linking Decker with the BNSF Forsyth Subdivision to the north, but that proposed line was designed to transport Decker/Spring Creek and Wyoming coal northbound, thereby *shortening* the route for that coal to reach Upper Midwest and other destinations to the north. That proposal was never designed to transport Otter Creek/Ashland coal southbound (and against grade), away from its primary markets.

⁴ How much of the coal will be used domestically versus exported through the above ports will depend on a variety of market conditions that cannot be predicted with confidence this many years in advance of the first carloads of coal being shipped out of the Otter Creek mine and potential Ashland area mines.

Significantly, the vast bulk of coal generated from the Montana mines at Spring Creek and Decker today follow a BNSF routing that takes the coal northward on the BNSF Big Horn Subdivision to a point from where it would follow the same eastbound or westbound routings on BNSF's Forsyth Subdivision and other northern BNSF lines that the Otter Creek/Ashland coal is expected to take. See Exhibit 1 on the following page, which shows that most Spring Creek coal travels primarily east via the Forsyth Subdivision with some smaller volume moving westbound via BNSF's northern lines. The same exhibit also shows that most Decker coal moves eastbound via the Forsyth Subdivision. Relatively smaller volumes of the Spring Creek and Decker coal move south from those mines via the BNSF Central corridor and other routes. Wyoming coal from the Southern Powder River Basin has a transportation distance advantage over Montana coal for markets that are south of the above-described primary target markets for Otter Creek and Ashland area coal.

In short, the two Decker alternatives would be disadvantageous for Otter Creek coal moving to its primary markets and therefore would not serve the purpose and need of the TRRC Project. Coupled with the other disadvantages discussed below, this transportation disadvantage underscores that those Alternatives warrant no further detailed examination.

4. Alternatives Screening Analyses

4.1 Alternatives Screening Criteria

The alternatives and variations described in this Analysis were subjected to screening evaluations using existing information from the previous studies where applicable along with a modest level of conceptual engineering studies. The screening criteria included engineering feasibility (construction and operating), environmental consequences discernible at this stage, and cost considerations. The route alternatives and variations are evaluated relative to the corresponding attributes of the proposed Colstrip Alignment. The following sections discuss the applicable and relevant screening data for the rail alternatives and variations described in this Supplement.

The descriptions, environmental impacts, engineering issues, and relative advantages of the Colstrip Alignments, Tongue River Alternative, Tongue River Road Alternative, and the Moon Creek Alternative, collectively referred to as the "Northern Alternatives," were presented in the January 11, 2013 Alternatives Screening Analysis, and are not repeated in detail in this Supplement. However, Table 1 summarizes the physical characteristics of the four Northern Alternatives and the Decker 1 and 2 Alternatives. Table 2 summarizes the physical characteristics of the alternative variations and compares them to the corresponding segments of the proposed Colstrip Alignment. Due to the lack of site access, no recent field studies have been conducted to date to evaluate environmental features such as wetlands, flora and fauna, or cultural resources.

4.2 Transportation Evaluation of the Alternatives

Train shipments originating from the Otter Creek area were evaluated over all of the proposed six rail alternatives. For comparison purposes, loaded trains were considered to originate at Terminus Point 2, travel over the alternative routes and the BNSF to common points at Miles

Exhibit 1. Montana Coal Moves 2003 – 2012

Data for 10 years (2003 - 2012)

Tons (000s)

Origin Mine	Likely Route based on Destination State				Total
	Montana	West/Big Horn Sub	East/Forsyth Sub	South or Central Corridor	
Absaloka	2,919		58,910		61,829
Big Sky			2,802		2,802
Bull Mountains No 1		66	476	2,809	3,351
Decker		232	46,691	5,652	52,575
Rosebud Crusher/Conveyor	94,529		16,222	0	110,751
Savage	2,777				2,777
Spring Creek Coal Co		23,911	81,143	16,147	121,201
Grand Total	100,225	24,209	206,245	24,608	355,286
	28.2%	6.8%	58.1%	6.9%	

Source: Compiled by Ventyx from EIA form 923 data

Notes:

EIA 923 data is for coal delivered to electric generating facilities in the United States. Dataset does not include exports.

Table 1. TRR Rail Alternative Characteristics

No.	Alternative Alignment Characteristics	Colstrip	Tongue River	Tongue River Road	Moon Creek	Decker 1	Decker 2
1	Length of New Main Track Construction (Miles)	42.1	83.1	83.1	81.7	50.1	52.0
2	Round Trip Distance to Miles City Common Point for Eastbound Trains ¹ (Miles)	236	151	151	165	672	676
3	Round Trip Distance to Huntley Common Point for Westbound Trains ¹ (Miles)	295	411	411	392	417	421
4	Annual Round Trip Ton-Miles to Common Points with Trains Split 60% East and 40% West ^{1,2}	4,169,621,333	4,100,213,333	4,100,213,333	4,109,210,667	9,156,072,000	9,219,696,000
5	Annual Round Trip Ton-Miles to Common Points with Trains Split 50% East and 50% West ^{1,2}	4,264,093,333	4,517,946,667	4,517,946,667	4,472,960,000	8,747,014,667	8,810,638,667
6	Annual Round Trip Ton-Miles to Common Points with Trains Split 40% East and 60% West ^{1,2}	4,358,565,333	4,935,680,000	4,935,680,000	4,836,709,333	8,337,957,333	8,401,581,333
7	Cut (Cubic Yards) ³	18,100,000	25,300,000	38,800,000	36,200,000	40,300,000	49,450,000
8	Fill (Cubic Yards) ³	17,700,000	22,900,000	34,600,000	33,100,000	36,900,000	44,900,000
9	Excess Cut (Cubic Yards) ³	400,000	2,400,000	4,200,000	3,100,000	3,400,000	4,550,000
10	Total Grading (Cubic Yards) ³	35,800,000	48,200,000	73,400,000	69,300,000	77,200,000	94,350,000
11	Ratio of Total Grading Compared to Colstrip Alternative	1.00	1.35	2.05	1.94	2.16	2.64
12	Length of Public Roadway Impacted (Miles)	8.3	8.9	9.5	8.9	5.9	1.3
13	Length Alignment Parallels Existing Transportation Corridor (Miles (% of New Main Length))	18.1 (52.5%)	10.1 (13.4%)	37.0 (49.8%)	10.1 (13.6%)	24.54 (49%)	15.67 (30%)
14	Alignment Requires New Interstate 94 Crossing?	No	Yes	Yes	Yes	No	No
15	Alignment Requires New Highway 314 Crossing?	No	No	No	No	Yes	Yes
16	Alignment Requires New Highway 212 Crossing?	Yes	Yes	Yes	Yes	No	No
17	County and State Public Roadway Crossings	5	3	4	4	6	7
18	Length Alignment Impacts USDA Livestock and Range Research Station (Miles)	0.0	9.5	9.5	2.4	0	0
19	Alignment Crosses Miles City Fish Hatchery?	No	Yes	Yes	No	No	No
20	Right-of-Way Acquisition (Acres) ⁴	2,400	4,100	4,500	4,300	2,910	3,065
21	Right-of-Way Acquisition of Grazing Land (Acres) ⁴	1,560	3,200	3,520	3,020	2,250	2,320
22	Right-of-Way Acquisition of Irrigated Land (Acres) ⁴	40	90	230	90	10	20
23	Length of Impacts to Bureau of Land Management Land (Miles)	0.7	3.6	2.4	4.6	3.4	6.9
24	Length of Impacts to State/County Land (Miles)	3.4	7.4	3.4	16.5	3.7	4.5
25	Number of Affected Landowners ⁵	44	53	60	54	25	21
26	Number of Bisected Landowners ⁶	30	40	42	41	16	18
27	Wolf Mountains Battlefield National Historic Landmark Impacted?	No	No	No	No	Yes	No
28	Residences Impacted	1	1	1	1	0	1
29	MT FW&P Block Management Areas and Conservation Easements (Miles)	9.5	27.7	9.8	21.8	Unknown	Unknown
30	Length Alignment Parallels Tongue River Valley (Miles)	17.0	68.2	31.8	57.7	42.6	31.5
31	Number of Stream Crossings ⁷	122	247	197	250	132	132
32	Number of River Crossings	1	1	1	1	1	3
33	Max Curvature (Excluding Wye Tracks)	2°20'	2°20'	2°20'	2°20'	2°20'	2°20'
34	Total Length of Curves (Miles)	13.84	14.81	23.54	17.56	11.9	18.42
35	Ruling Grade Compensated for Horizontal Curves where Applicable	0.91 - 1.00%	0.86 - 0.94%	0.91 - 1.00%	0.91 - 1.00%	0.80 - 0.88%	0.84 - 0.92%
36	Total Length of Ruling Grade Against Load ⁸ (Miles) VPI - VPI	12.76	1.46	1.46	4.88	9.62	5.96
37	Max Continuous Length of Ruling Grade Against Load ⁸ (Miles)	7.15	0.80	1.46	4.88	9.62	5.96
38	Total Length of Grade Against Load ⁸ (Miles)	18.72	26.29	26.66	24.22	31.34	27.3
39	Elevation Difference Between TP #2 to Existing BNSF Connection Point ⁹ (Feet)	130	-760	-760	-746	393	393
40	Conceptual Estimate of Probable Cost (2013 \$Million)	416	625	753	731	566	698
41	Conceptual Estimate of Probable Cost Per Mile (2013 \$Million/Mile)	9.88	7.52	9.06	8.95	11.32	13.42
	¹ Round trip originates at Terminus Point #2						
	² Annual Tonnage based on 20 million tons of coal per year and empty train weight of 4,550 tons						
	³ Includes grading for proposed single main track and public road relocations, but not for future track at 15' track centers or adjacent track access road						
	⁴ Includes R/W for future grading of second track at 15' track centers and adjacent track access road						
	⁵ Affected Landowner is defined here as a landowner whose property through which the proposed rail right-of-way traverses						
	⁶ Bisected Landowner is defined here as landowners whose property is affected and severed by the proposed right-of-way						
	⁷ Perennial, Intermittent, or Ephemeral Streams; may be indicative of potential wetland impacts						
	⁸ Grade Against Load is defined here as the uphill grade which loaded trains must traverse						
	⁹ Negative value indicates cumulative downhill grade from TP# 2 to existing BNSF connection point for loaded trains						

Table 2. TRR Rail Alternative Variation Characteristics

No.	Alternative Alignment Characteristics	Ashland Alternatives		Terminus Point 1 Alternatives	
		Proposed Alignment	Ashland East Variation	Proposed Alignment	TP #1 Variation
1	Length of New Main Track Construction (Miles)	13.9	15.9	7.5	8.3
2	Cut (Cubic Yards) ¹	5,900,000	22,000,000	4,600,000	12,000,000
3	Fill (Cubic Yards) ¹	6,850,000	20,800,000	4,400,000	7,800,000
4	Excess Cut (Cubic Yards) ¹	-950,000	1,200,000	200,000	4,200,000
5	Total Grading (Cubic Yards) ¹	12,750,000	42,800,000	9,000,000	19,800,000
6	Length Alignment Parallels Existing Transportation Corridor (Miles (% of New Main Length))	2.18 (16%)	0 (0.0%)	4.72 (63%)	0.0
7	Length of Public Roadway Impacted (Miles)	2.3	0.0	1.5	0.0
8	Alignment Requires New Highway 212 Crossing?	Yes	Yes	No	No
9	County and State Public Roadway Crossings	2	1	0	0
10	Right-of-Way Acquisition (Acres) ²	760	1,175	430	525
11	Right-of-Way Acquisition of Grazing Land (Acres) ²	605	1,103	418	510
12	Right-of-Way Acquisition of Irrigated Land (Acres) ²	84	67	4	15
13	Length of Impacts to Bureau of Land Management Land (Miles)	0.3	0.0	0.2	0.8
14	Length of Impacts to State/County Land (Miles)	0.0	0.9	0.0	0.0
15	Number of Affected Landowners ³	22	12	8	7
16	Number of Bisected Landowners ⁴	14	11	7	5
17	MT FW&P Block Management Areas and Conservation Easements (Miles)	0.0	0.0	0.0	Unknown
18	Length Alignment Parallels Tongue River Valley (Miles)	8.4	0.0	7.5	0.0
19	Number of Stream Crossings ⁵	43	39	18	12
20	Number of River Crossings	1	1	0	0
21	Max Curvature (Excluding Wye Tracks)	2°20'	2°20'	2°00'	2°00'
22	Total Length of Curves (Miles)	6.1	8.42	1.25	3.66
23	Ruling Grade Compensated for Horizontal Curves where Applicable Against Load	0.86 - 0.95%	0.76 - 0.82%	0.91 - 0.95%	0.91 - 1.00%
24	Total Length of Ruling Grade Against Load ⁶ (Miles) VPI - VPI	0.68	5.41	1.10	2.80
25	Max Continuous Length of Ruling Grade Against Load ⁶ (Miles)	0.68	5.41	1.10	2.80
26	Total Length of Grade Against Load ⁶ (Miles)	4.16	5.41	4.13	5.00
27	Conceptual Estimate of Probable Cost (2013 \$Million)	127	275	76	141
28	Conceptual Estimate of Probable Cost Per Mile (2013 \$Million/Mile)	9.15	17.35	10.08	16.97
¹ Includes grading for proposed single main track and public road relocations, but not for future track at 15' track centers or adjacent track access road					
² Includes R/W for future grading of second track at 15' track centers and adjacent track access road					
³ Affected Landowner is defined here as a landowner whose property is impacted by the proposed Right-of-Way					
⁴ Bisected Landowner is defined here as landowners whose property is impacted and severed by the proposed Right of Way					
⁵ Perennial, Intermittent, or Ephemeral Streams; may be indicative of potential wetland impacts					
⁶ Grade Against Load is defined here as the uphill grade which loaded trains must traverse					

City, Montana for eastbound shipments, or Huntley, Montana for westbound shipments, and then return empty trains via the same routes. The alternative routes from Terminus Point 2 to the common points are shown on Figure 4. The transportation evaluations in round-trip mileage are shown in Table 1 (Rows 2-3).

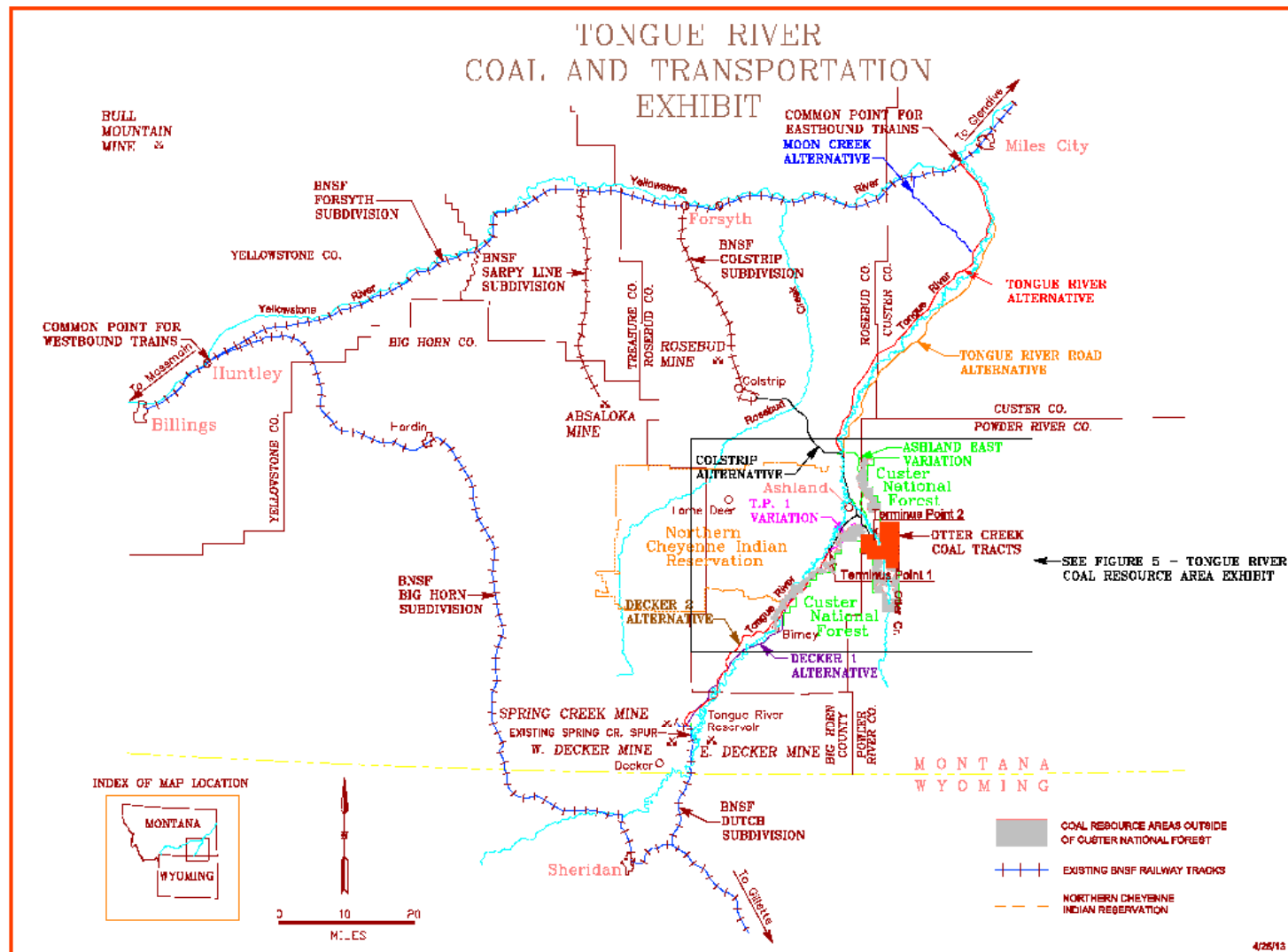
The transportation evaluations of the proposed Decker 1 and 2 Alternatives indicate:

- Loaded trains from the Otter Creek area traveling eastward through Miles City toward the Upper Midwestern United States using the Decker 1 Alternative route would travel about 436 miles farther per round-trip than if using the Colstrip Alternative route.
- Loaded trains from the Otter Creek area traveling eastward through Miles City toward the Upper Midwestern United States using the Decker 2 Alternative route would travel about 440 miles farther per round-trip than if using the Colstrip Alternative route.
- Loaded trains from the Otter Creek area traveling westward through Huntley using the Decker 1 Alternative route would travel about 122 miles farther per round-trip than if using the Colstrip Alternative route.
- Loaded trains from the Otter Creek area traveling westward through Huntley using the Decker 2 Alternative route would travel about 126 miles farther per round-trip than if using the Colstrip Alternative route.

Although the volume of coal that will be transported to each coal market over the Tongue River Railroad cannot be conclusively determined at this time, assumptions were made of annual ton-mile shipments over each of the rail alternatives in order to evaluate the relative efficiencies of the routes to each of the primary markets, i.e., Upper Midwest and Pacific Northwest. Assumptions regarding the proportions of shipments going eastbound vs. westbound were calculated for projected shipments of 20 million tons per year going 60% eastbound – 40% westbound; 50% eastbound – 50% westbound; and 40% eastbound – 60% westbound. The transportation evaluations in estimated annual round-trip ton-miles are shown in Table 1 (Rows 4-6). As shown in the table, the Decker 1 Alternative requires approximately 8.7 billion ton-miles round trip to common points shared by all alternatives assuming one half of the traffic travels east and the other half west. The Decker 2 Alternative similarly requires approximately 8.8 billion ton-miles round trip to common points shared by all alternatives with half the traffic travelling east and the other half west. The Colstrip Alternative, by contrast, requires approximately 4.3 billion ton-miles round trip split evenly between east- and west-bound traffic, less than half of either of the Decker Alternatives.

The transportation mileage and ton-mile figures shown in Table 1 conclusively show that the Decker 1 and 2 Alternatives are far less efficient than any of the Northern Alternatives by orders of magnitude. As discussed above, this disadvantage of the Decker Alignments relative to the presumed primary target markets for the transported coal renders those alternatives infeasible relative to the purpose of the project and not warranting further analysis.

Figure 4. Coal Transportation Exhibit



4.3 Decker 1 Alternative Screening Analysis

4.3.1 Decker 1 Alternative Engineering and Environmental Screening Analysis

The screening analysis of the Decker 1 Alternative indicates:

- Construction of the Decker 1 Alternative would require about 8 more miles of new railroad construction than the Colstrip Alternative, which requires fewer miles of new construction than any of the rail alternatives.
- Construction of the Decker 1 Alternative route is estimated to require about 41.4 million more cubic yards of excavation and embankment construction compared to the Colstrip Alternative in order to achieve the grade and curvature necessary to accommodate unit coal trains while attempting to balance the cut and fill quantities to the greatest extent possible.
- Primarily due to the added length and the substantial additional earthwork, construction of the Decker 1 Alternative is estimated to cost about \$150 Million more than the Colstrip Alternative.
- Loaded coal trains using the Decker 1 Alternative route would run about 31.3 miles against adverse grades (uphill), compared to about 18.7 miles on the Colstrip Alternative, which provides the shortest length against load relative to each of the alternative alignments. Please note that the similar alignment of the previously-approved Tongue River III Alternative was planned to transport loaded trains from south to north toward Miles City, which is generally downhill; the Decker 1 Alternative proposes to transport loaded trains south from Ashland to Decker, which is generally uphill.
- National Wetlands Inventory (NWI) mapping along this alternative route is available from about Milepost 7 on the Terminus Point 1 spur southward to the Tongue River Reservoir near Decker, Montana. Emergent and forested wetlands are generally shown adjacent to the Tongue River, with small wetlands shown intermittently in various drainages and other locations. The proposed Decker 1 Alternative route generally runs southward from Terminus Point 1 to Birney through upland areas on the east (high) side of Tongue River Road. The Decker 1 Alternative runs near a mapped emergent wetland near the crossing of Hanging Woman Creek southeast of Birney. South of Birney the route turns westward through the Tongue River valley across irrigated fields and crosses the river once. The route continues southward through upland areas on the west side of the river to its connection near Decker. Review of the available NWI mapping indicates the route would impact only small, intermittent wetlands, if any, primarily near the river crossing. Wetlands along the proposed alternative route have not been field verified.
- The Decker 1 Alternative would run near the western boundaries of the Custer National Forest in several places. We assume that additional consultation requirements may be required with the U.S. Forest Service for this routing.
- The southern portion of the Decker 1 Alternative runs west of the Tongue River Reservoir. The October 2006 Final Environmental Impact Statement for Tongue River I, Tongue River II, and Tongue River III included a list of recommended mitigation measures, including Mitigation Measure 76 (Dam Vibration). Mitigation Measure 76 required *“Prior to construction of the Western Alignment, TRRC shall conduct a seismic analysis based on local geology and specific blasting plans to quantify the risk of construction-related activities to the Tongue River Reservoir Dam. TRRC shall consult with Montana Department of Natural Resources and Conservation during the*

development of the geotechnical-drilling/blasting plans for construction of those portions of the Western Alignment located within two miles of the dam, to limit peak particle velocity and minimize vibration impacts that may occur.” It is anticipated that similar measures to determine potential effects to the Tongue River Reservoir Dam would be required if the Decker 1 Alternative is selected for construction.

- The Decker 1 Alternative runs along the eastern boundary of the Northern Cheyenne Reservation for a distance of approximately 17.5 miles. To the extent that there are any discernible disadvantages to proximity to the Reservation (we note that the two Variation Alternatives discussed below were designed to locate the line away from the Reservation boundary), the Decker 1 alternative will not mitigate any such disadvantages compared to the four northern alternatives, which parallel the eastern boundary of the Northern Cheyenne Reservation for a distance of approximately 12.1 miles. However, since other factors militate strongly against the Decker 1 Alternative, further assessment of impacts to the Reservation does not appear warranted in TRRC’s view.

4.3.2 Wolf Mountains Battlefield National Historic Landmark

The Decker 1 Alternative would pass through the Wolf Mountains Battlefield NHL in Rosebud County, Montana. The Battlefield is the site of the last major battle of the Great Sioux War in 1877, and was designated as a NHL in 2008. National Historic Landmarks are designated by the Secretary of the United States Department of the Interior under the authority of the Historic Sites Act of 1935, which authorizes the Secretary to identify historic and archaeological sites, buildings, and objects which “possess exceptional value as commemorating or illustrating the history of the United States.” Only about 2,500 historic places have been designated as NHLs.

Wolf Mountains Battlefield was designated an NHL *after* the *TRRC III* decision was issued by the STB in 2007 authorizing construction of the TRRC III line through the Battlefield. Were the STB to now pursue a routing for the TRRC line through the Wolf Mountains NHL site, it would have to satisfy a more elaborate process and meet a much higher standard than was the case in the *TRRC III* proceeding. As discussed more fully below, the STB would need to consider all prudent and feasible alternatives to avoid an adverse effect on the NHL, and could reject such alternatives only based on undue cost or “compromise” to the goals of the project.

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies, prior to approval of an undertaking, to take into account the effects of an undertaking on historic properties, including NHLs. Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs. 16 U.S.C. § 470h-2(f). In particular, agencies must, “to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm” to NHLs. *Id.*

If it is determined that an undertaking may affect an NHL, the agency is required to take the following actions, as set forth in 36 CFR Part 800:

- Notify the federal Advisory Council on Historic Preservation (ACHP) and invite the ACHP to participate in consultation to resolve adverse effects to the NHL. The ACHP may request the Secretary of the Interior to provide a report to ACHP detailing the

significance of the affected NHL under Section 213 of the NHPA and recommending measures to avoid, minimize or mitigate adverse effects to the NHL.

- Notify the Secretary of the Interior and invite the Secretary to participate in the Section 106 consultation process.
- Consider the findings of the Department of the Interior if the ACHP has formally requested a report from the Secretary under Section 213 of the NHPA to assist in consultation.
- Advise the consulting parties of the adverse effect on the NHL, and determine if other consulting parties should be involved in consultation.
- Provide background documentation to consulting parties, including an analysis of alternatives considered to avoid, minimize, or mitigate adverse effects on the NHL.
- Notify the public of the proposed mitigation plan for the undertaking, and provide them an opportunity to express their views on resolving adverse effects.
- Resolve adverse effects, or request and consider ACHP comments.
- Inform the public of the outcome of the undertaking, such as the provisions of a Programmatic Agreement.

In addition to the above requirements, the National Park Service (NPS) has issued guidance⁵ that provides a summary of factors that should be considered when planning undertakings that involve NHLs:

- ... the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL.
- ...Where such alternatives appear to require undue cost or to compromise the undertaking's goals and objectives, the agency must balance those goals and objectives with the intent of Section 110(f). In doing so, the agency should consider:
 - (1) the magnitude of the undertaking's harm to the historical, archaeological and cultural qualities of the NHL;
 - (2) the public interest in the NHL and in the undertaking as proposed; and
 - (3) the effect a mitigation action would have on meeting the goals and objectives of the undertaking.

Thus, under the NPS guidelines, an agency is required to consider all prudent and feasible alternatives to avoid an adverse effect on the NHL, and should reject such alternatives only based on undue cost or “compromise” to the goals of the project.

NPS and the Northern Cheyenne Tribe have already commented in prior proceedings that the routing through the Battlefield would adversely impact the NHL. During the post-decision Section 106 consultation process for *TRRC III*, the STB consulted with the NPS and other entities regarding the Wolf Mountains Battlefield. The NPS Intermountain Region, which administers the NHL program in Montana, commented in 2011 that the alignment of the Tongue River Railroad through the Wolf Mountains Battlefield would have “a direct adverse effect” on the NHL. See July 7, 2011 NPS Letter to STB at p. 1. NPS noted that “the Wolf Mountains Battlefield has a very high degree of physical integrity...” See March 11, 2011 NPS Letter to STB at p. 2. NPS also noted its concern that STB continue to consult “to identify an alternative

⁵ NPS, Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act, 63 Fed. Reg. 20496 (April 24, 1998).

that avoids Wolf Mountains Battlefield.” *Id.* The Northern Cheyenne Tribe also expressed concerns regarding impacts to the Wolf Mountains Battlefield, stating that the Wolf Mountains Battlefield should be given special attention in light of its new status and role in U.S. and tribal history.” See March 31, 2011 Letter from Northern Cheyenne Tribe Administration to STB.

In sum, the Decker 1 Alternative would directly and adversely impact the Wolf Mountains Battlefield NHL. Given that, the STB is required by the NHPA guidelines to consider all prudent and feasible alternatives to avoid such an adverse effect on the NHL. In this case, there are feasible, and indeed more advantageous alternatives that would not impact the Wolf Mountains Battlefield NHL or any other NHL. Moreover, as demonstrated in the above sections and Table 1, the Decker 1 Alternative route does not meet the purpose of the project and presents substantial engineering, construction, and operating challenges compared to the proposed Colstrip Alternative. For these reasons, given the impact to the Wolf Mountains Battlefield NHL and the feasibility of alternative routes, the Decker 1 Alternative should not be further pursued.

4.4 Decker 2 Alternative Screening Analysis

The screening analysis of the Decker 2 Alternative indicates:

- Construction of the Decker 2 Alternative would require about 10 more miles of new railroad construction than the Colstrip Alternative.
- Construction of the Decker 2 Alternative route is estimated to require about 58.5 million more cubic yards of excavation and embankment construction compared to the Colstrip Alternative in order to achieve the grade and curvature necessary to accommodate unit coal trains while attempting to balance the cut and fill quantities to the greatest extent possible.
- Primarily due to the added length and the substantial additional earthwork, construction of the Decker 2 Alternative is estimated to cost about \$282 Million more than the Colstrip Alternative.
- Loaded coal trains using the Decker 2 Alternative route would run about 27.3 miles against adverse grades (uphill), compared to about 18.7 miles on the Colstrip Alternative. Similar to the Decker 1 Alternative, the Decker 2 Alternative proposes to transport loaded trains south from Ashland to Decker, which is generally uphill.
- The Decker 2 Alignment would require three crossings of the Tongue River, compared to only one crossing by the other alignments under consideration.
- National Wetlands Inventory (NWI) mapping along this alternative route is available from about Milepost 7 on the Terminus Point 1 spur southward to the Tongue River Reservoir near Decker, Montana. Emergent and forested wetlands are generally shown adjacent to the Tongue River, with small wetlands shown intermittently in various drainages and other locations. The proposed Decker 2 Alternative route generally runs southward from Terminus Point 1 to Birney through upland areas on the east (high) side of Tongue River Road. North of Birney the route turns westward through the Tongue River valley across irrigated fields and crosses the river. The route continues southward through upland areas on the west side of the river. Just north of the Tongue River Reservoir, the route swings easterly and crosses a double oxbow of the Tongue River twice, then continues on the west side of the river to its connection near Decker. Review of the available NWI mapping indicates the route would impact only small, intermittent wetlands, if any, primarily near the river crossings. However, since the Decker 2 Alternative crosses the

Tongue River three times, the expected wetlands impacts of the Decker 2 Alternative would be expected to be about three times the impacts associated with the Decker 1 Alternative. Wetlands along the proposed alternative route have not been field verified.

- The Decker 2 Alternative would run near the western boundaries of the Custer National Forest in several places. It is unclear what, if any, additional consultation requirements may be incurred with the U.S. National Forest Service for this routing.
- The southern portion of the Decker 2 Alternative runs west of the Tongue River Reservoir. As with the Decker 1 Alternative, it is anticipated that seismic analysis and consultation with the Montana Department of Natural Resources and Conservation would be required to determine potential effects to the Tongue River Reservoir Dam if the Decker 2 Alternative is selected for construction.
- The Decker 2 Alternative runs along the eastern boundary of the Northern Cheyenne Reservation for a distance of approximately 17.8 miles. To the extent that there are any discernible disadvantages to proximity to the Reservation (we note that the two Variation Alternatives discussed below were designed to locate the line away from the Reservation boundary), the Decker 2 alternative will not mitigate any such disadvantages compared to the four northern alternatives, which parallel the eastern boundary of the Northern Cheyenne Reservation for a distance of approximately 12.1 miles. However, since other factors militate strongly against the Decker 2 Alternative, further assessment of impacts to the Reservation does not appear warranted in TRRC's view.

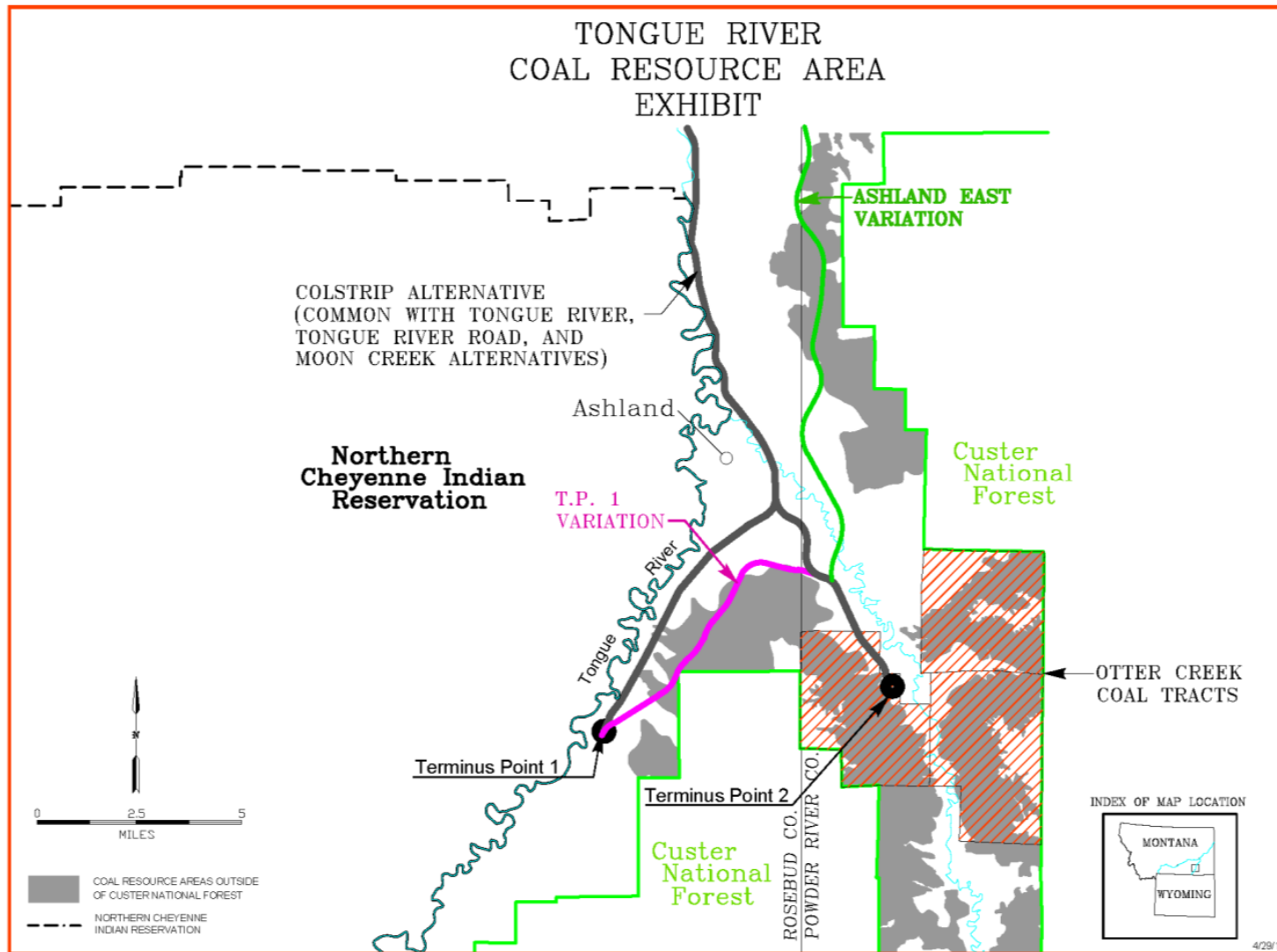
Although the Decker 2 Alternative route avoids the Wolf Mountains Battlefield NHL and the associated requirements under the NHPA, it encounters similar substantial engineering, construction, and operating challenges as the Decker 1 Alternative, and wetlands impacts are expected to be about three times the impacts associated with the Decker 1 Alternative. For these reasons, given the feasibility of alternative routes, the Decker 2 Alternative should not be further pursued.

4.5 Ashland East Variation Screening Analysis

The screening analysis of the Ashland East Variation indicates:

- Portions of the Ashland East Variation would cross over mineable coal reserves, which would require future relocation of the railroad as mining progresses. The proximity of the Ashland East Variation to central portions of mineable coal reserve areas is shown on Figure 5. The fact that this variation would be constructed over mineable coal reserves in the Ashland area provides a significant disqualifying factor for this variation.
- Construction of the Ashland East Variation would require about 2 more miles of new railroad construction than the proposed alignment.
- The Ashland East Variation route would run about 5.4 miles against adverse grades (uphill), compared to about 4.2 miles on the corresponding segment of the proposed alignment.
- Due to the topography encountered, construction of the Ashland East Variation route is estimated to require about 30 million more cubic yards of excavation and embankment construction compared to the proposed alignment.

Figure 5. Coal Resource Area Exhibit



- The Ashland East Variation route would require acquisition of about 415 more acres of right-of-way than the proposed alignment.
- Primarily due to the added length and the substantial additional earthwork, construction of the Ashland East Variation is estimated to cost about \$148 Million more than the corresponding segment of the proposed alignment.
- The Ashland East Variation route would disturb a greater number of acres crossing the Otter Creek drainage along with potentially greater impacts to riparian habitat and agricultural land.
- The Ashland East Variation does not parallel any existing transportation corridor, while by contrast the other alternatives under review for this area do parallel the Tongue River Road or other existing roads.
- The Ashland East Variation would run near the western boundaries of the Custer National Forest. It is unclear what, if any, additional consultation requirements may be incurred with the U.S. Forest Service for this routing.
- There are no apparent offsetting benefits to this route variation. While the route would be somewhat more distant from the Northern Cheyenne reservation compared to the Northern Alternatives and thus noise impacts on the reservation could be lower, the number of receptors in the eastern portion of the reservation in comparison to the number of receptors in the area traversed by the Ashland East Variation would need to be determined in order to meaningfully compare noise impacts. Also, further study would be required to assess air quality impacts to the reservation of the proposed Variation in contrast to the originally proposed routes. However, given the other disadvantages of this variation alternative noted above, including most notably the fact that the variation would be constructed over mineable reserves, such further study is not warranted.

The Ashland East Variation would involve substantial engineering, construction, and operating challenges as compared to the proposed alignment. For these reasons, given the feasibility of alternative routes, the Ashland East Variation should not be further pursued.

4.6 Terminus 1 Variation Screening Analysis

The screening analysis of the Terminus 1 Variation indicates:

- Portions of the Terminus 1 Variation would cross over mineable coal reserves, which would require future relocation of the railroad as mining progresses. The proximity of the Terminus 1 Variation to central portions of mineable coal reserve areas is shown on Figure 5. The fact that this variation would be constructed over mineable coal reserves in the Ashland area provides a significant disqualifying factor for this variation.
- Construction of the Terminus 1 Variation would require about 0.8 more mile of new railroad construction than the proposed alignment.
- The Terminus Point 1 Variation does not parallel the existing transportation corridor of Tongue River Road as this segment of the Northern Alternatives does.
- The Terminus 1 Variation route would run about 5 miles against adverse grades (uphill), compared to about 4.1 miles on the corresponding segment of the proposed alignment.
- Due to the topography encountered, construction of the Terminus 1 Variation route is estimated to require about 8.8 million more cubic yards of excavation and embankment construction compared to the proposed alignment.

- Primarily due to the added length and the substantial additional earthwork, construction of the Terminus 1 Variation is estimated to cost about \$65 Million more than the corresponding segment of the proposed alignment.

The Terminus 1 Variation encounters substantial engineering, construction, and operating challenges as compared to the proposed alignment. For these reasons, given the feasibility of alternative routes, the Terminus 1 Variation should not be further pursued.

5. Conclusion

Based on the analyses presented above, the Decker 1 and 2 Alternatives do not meet the stated purpose of the project to provide efficient transportation of coal from the mines in the Otter Creek area to the primary anticipated destinations for the coal in the Upper Midwest and Pacific Northwest. The Decker 1 Alternative and Decker 2 Alternative merit prompt disqualification due to the substantial transportation mileage penalty these routes would impose on the Ashland/Otter Creek coal. In addition, these alternatives, the Ashland East Variation, and the Terminus 1 Variation all appear to encounter substantial engineering, construction, and operating disadvantages in comparison to the proposed Colstrip Alternative Alignment. Further, there do not appear to be any apparent offsetting benefits to these alternatives.