

ALTERNATIVES SCREENING ANALYSIS

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

STB FINANCE DOCKET NO. 30186

Prepared by



TranSystems

and



Hanson Professional Services Inc.

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1. Proposed Action

The Tongue River Railroad Company, Inc. (TRRC) filed a Revised Application for Construction and Operation Authority with the STB on December 17, 2012. The TRRC revised application proposes to construct and operate a rail line between the BNSF branch line at Colstrip, Montana and Ashland/Otter Creek, Montana. As stated in the Revised Application, the purpose of the project is to transport low-sulfur, sub-bituminous coal from proposed and future mine sites in Rosebud and Powder River Counties, including the proposed Otter Creek mine. The southern portion of the proposed rail line was previously authorized by the STB's predecessor, the Interstate Commerce Commission (ICC), in 1986. The proposed line differs from that previously authorized line as follows: (1) the northern connection point with BNSF trackage has been shifted from Miles City to Colstrip and (2) refinements are being proposed to the previously authorized alignment south of the Tongue River crossing. The proposed refinements address rail operational considerations, including straightening and shortening the alignment. Also, TRRC does not intend to construct previously-authorized rail lines south of Terminus Point 1. BNSF is a partial owner of TRRC, is the proposed operator of the rail line, and is a party to the Revised Application.

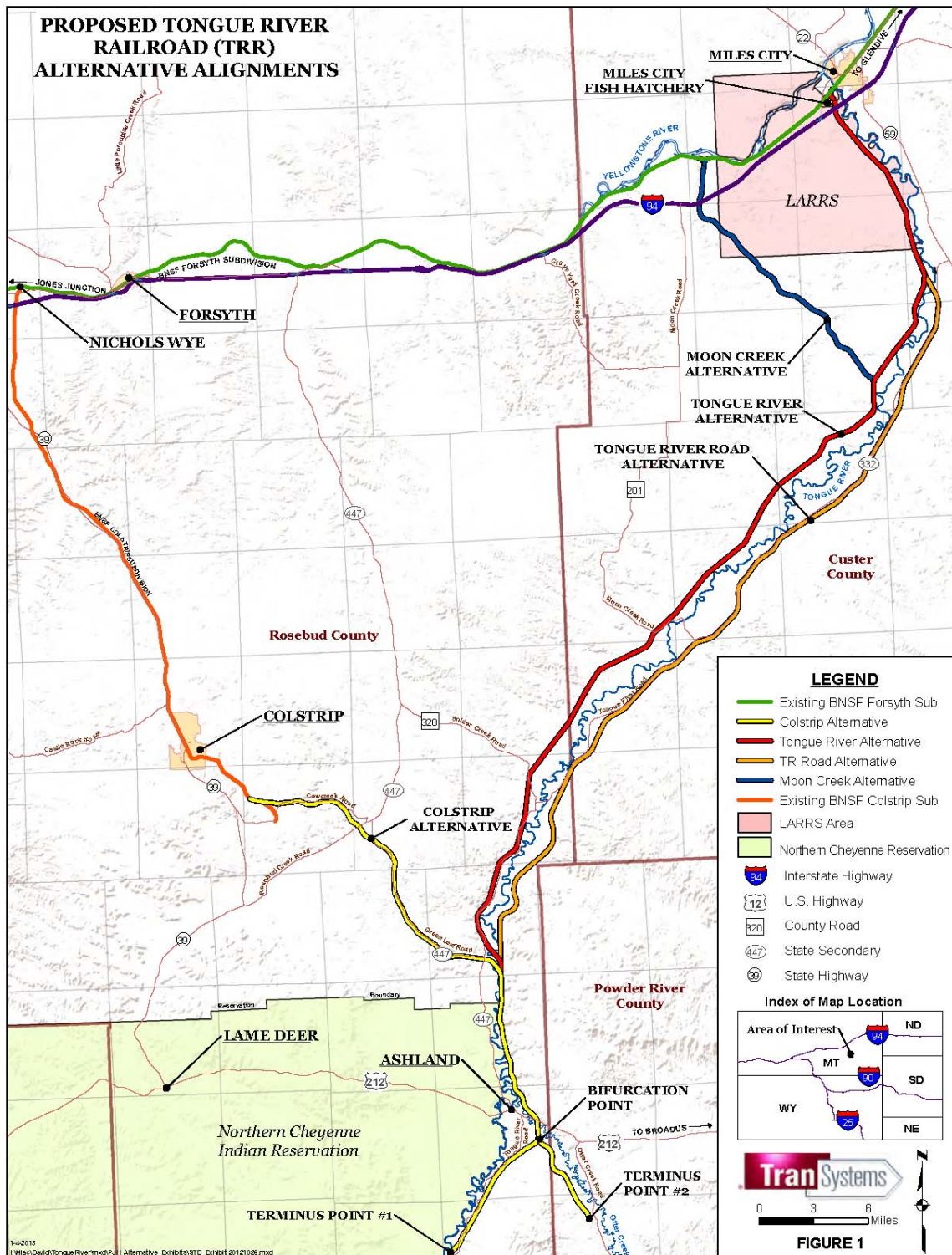
The STB has determined that it will conduct a new environmental review of the currently-proposed project. To support the environmental review, a third-party contractor has been retained to work with the STB's Office of Environmental Analysis, as provided under the STB's rules.

To assist the STB and its contractor, TRRC provides this Alternatives Screening Analysis of alternative alignments and other transportation options that have been considered by TRRC. This Analysis identifies four feasible alternatives that TRRC believes should be carried forward for further environmental study by the STB and also identifies other alternatives that TRRC has determined are not feasible based on applicable screening criteria and therefore that it believes do not warrant further detailed study. Detailed map data for each of the four alternatives has been shared with the STB's third party contractor.

2. Alternatives Development

TRRC has identified four rail alternatives that it recommends to be carried forward for further study, several rail alternatives that were considered but that it believes do not warrant further detailed study, and several non-rail alternatives that were considered but that it also believes do not warrant further detailed study. In assessing these alternatives, TRRC has relied to some extent on information previously gathered on these alternatives, supplemented by current or updated information where available and relevant. The four rail alternatives that TRRC recommends for further detailed study are shown on Figure 1.

Figure 1 Rail Alternatives Map



3. Rail Alternatives that Should be Considered for Further Study

3.1 Colstrip Alternative

The Colstrip Alternative was identified in TRRC's December 17 Application as its preferred route. The north end of the Colstrip Alternative will connect to the existing BNSF Colstrip Subdivision just south of Colstrip, MT and continue east and south, crossing and paralleling Cow Creek Road for about seven miles before crossing Rosebud Creek Road and then Greenleaf Road. The rail line will then run generally parallel to Greenleaf Road for about eleven miles to the south and east before crossing Tongue River Road and then the Tongue River. From just east of the Tongue River crossing, approximately nine miles north of Ashland, MT, the alignment matches the Tongue River Alternative going south to Ashland, dividing at the bifurcation point and continuing southwest and southeast of Ashland to Terminus Points 1 and 2. The total length of new railroad construction for the Colstrip Alternative is about 42 miles including the trackage south of the bifurcation point serving both Terminus Points 1 and 2. The estimated cost to construct the Colstrip Alternative is \$416 Million (2013 Cost). Upgrades to the existing BNSF Colstrip Subdivision and the connection between the Colstrip and Forsyth Subdivisions will be made to bring the branch line up to current main line standards as well.

3.2 Tongue River Alternative

The Tongue River Alternative was previously identified as TRRC's preferred alternative. TRRC has previously proposed modifications to the version of this Alternative approved by the ICC in 1986 which are designed to straighten curves to facilitate modern unit train movements. It is this modified version of the Tongue River Alternative that is considered here. This Alternative originates at a wye connection to the existing BNSF mainline at Miles City. The current configuration includes the west leg of the wye passing through the north eastern edge of the Miles City Fish Hatchery. The alignment would cross Interstate 94 beneath a new highway grade separation and then follow the west side of the Tongue River south from Miles City. This portion of the route would cross the United States Department of Agriculture Livestock and Range Research Station (LARRS). The alignment continues southward west of the Tongue River, generally on high ground outside the floodplain of the river; however, at a few locations, due to the topography and river meanders, the alignment runs within about 500 to 1,000 feet of the river. About 10 miles north of Ashland, the alignment crosses the Tongue River on a new bridge north of the Northern Cheyenne Indian Reservation in order to access the proposed Otter Creek Mine and Terminus Point 1, which are both east of Tongue River. The alignment continues southward on the east side of the river, passing east of Ashland. The railroad would cross U.S. Route 212 and Otter Creek on new bridges, and then split into two branches, running southwesterly and southeasterly, respectively, to mine sites at Terminus Points 1 and 2. Terminus Point 1 is near the previously permitted Montco Mine site and Terminus Point 2 is near the proposed Otter Creek Mine site. The total length of new railroad construction is about 83 miles, including the trackage south of the bifurcation point serving both Terminus Points 1 and 2. The estimated cost to construct the Tongue River Alternative is \$625 Million (2013 Cost).¹

¹ The cost of this option is higher than the \$490 Million cost estimated in TRRC's October 16, 2012 Revised Application for Construction and Operation Authority. That is because additional information which supports the higher cost estimate has been developed since the filing of that Application.

3.3 Tongue River Road Alternative

The northern portion of the Tongue River Road Alternative is the same as the Tongue River Alternative. Both alternatives originate at a wye connection to the existing BNSF mainline at Miles City. The current configuration includes the west leg of the wye passing through the northeastern edge of the Miles City Fish Hatchery. The alignment would cross Interstate 94 beneath a new highway grade separation and then follow the west side of the Tongue River south from Miles City. This portion of the route would cross the LARRS. The alignment continues about 2 miles south of the LARRS, and then crosses to the east side of the river on a new bridge. The route continues southward on the east side of the river, generally parallel to the east side of Tongue River Road until the Tongue River Road turns and crosses to the west side of the river, about 19 miles north of Ashland. The railroad continues southward on the east side of the river to Ashland. The portion of this route, from about 10 miles north of Ashland to Terminus Points 1 and 2, follows the same alignment as the Tongue River Alternative. The alignment passes east of Ashland, crosses U.S. Route 212 and Otter Creek on new bridges, and then splits into two branches, running southwesterly and southeasterly, respectively, to mine sites at Terminus Points 1 and 2. The total length of new railroad construction for the Tongue River Road Alternative is about 83 miles including the trackage south of the bifurcation point serving both Terminus Points 1 and 2. The estimated cost to construct the Tongue River Road Alternative is \$753 Million (2013 Cost).

3.4 Moon Creek Alternative

The Moon Creek Alternative was considered as an alternative to minimize impacts to the Miles City Fish Hatchery and the LARRS. This alternative originates at a wye connection to the existing BNSF mainline, about 8.4 miles west of Miles City. Previous versions of this alignment originated at the old Milwaukee Road alignment and required a new bridge crossing the Yellowstone River; the current configuration does not cross the Yellowstone River. The alignment runs southward and crosses Interstate 94 beneath a new highway grade separation. The alignment passes through about 2.4 miles of the western edge of the LARRS, and then continues southeasterly along the Moon Creek drainage for about 17.2 miles toward the Tongue River. The alignment then runs southward along the same alignment as the Tongue River Alternative, crossing the Tongue River and continuing southwest and southeast of Ashland to Terminus Points 1 and 2. The total length of new railroad construction for the Moon Creek Alternative is about 82 miles including the trackage south of the bifurcation point serving both Terminus Points 1 and 2. The estimated cost to construct the Moon Creek Alternative is \$731 Million (2013 Cost).

4. Alternatives Screening Analyses

4.1 Alternatives Screening Criteria

The alternatives described in this Analysis were subjected to screening generally similar to analyses conducted in the previous studies. The screening criteria included engineering feasibility (construction and operating), environmental consequences discernible at this stage, and cost considerations. In screening alternatives, attention was also paid to the length of the track that would need to be constructed, avoiding sensitive areas and reducing known environmental impacts where possible. Track alignment was designed using current main line

standards, including maximum curvature of 2.5-degrees except at connections to existing BNSF trackage and a maximum ruling grade of 1%, while minimizing cuts and fills to the extent practical.

Table 1 summarizes the descriptions, environmental impacts, engineering issues, and relative advantages of each of the four alternatives identified for further analysis. Table 2 summarizes the physical characteristics of each of these alternatives. The following sections discuss the screening criteria and relevant data applicable to each of the four rail alternatives recommended for further study. General observations were made of portions of the potential alignments from public roadways. However, 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 Railroad Construction Parameters

Each of the proposed rail alternatives would utilize conventional steel-wheel on steel-rail train operations with diesel-electric locomotives. The rail line would be a single track constructed of continuous-welded rail and would be built and maintained to FRA Class 3 standards. Passing sidings will be constructed at locations to be determined during the design phase, depending on the alternative selected for construction. The rail line is planned to occupy a minimum right-of-way of 200 feet, although the actual right-of-way at specific locations may vary depending on land acquisition conditions, topography requiring large cuts or fills, or other factors. Rail line construction will include clearing and excavating earth and rock on previously undisturbed land. Due to the variable natural topography, construction will require both cuts and fills. To the extent practicable, TRRC would attempt to adjust the design profile to balance cut and fill quantities. Typical railway culverts and bridges will be used to cross streams, drainageways, and grade-separated roadways where needed.

4.3 Railroad Operational Issues

TRRC anticipates that at full mine production for the Otter Creek mine, coal tonnage hauled will result in about 26 round trips per week on a 7-day weekly schedule. Railroad operational issues associated with the four rail alternatives are generally associated with the grades encountered along each alignment. Estimated ruling grades against loads for each alternative are as follows:

- Colstrip Alternative: 1.00% max, with about 12.76 miles total length against load.
- Tongue River Alternative: 0.94% max, with about 1.46 miles total length against load.
- Tongue River Road Alternative: 1.00% max, with about 1.46 miles total length against load.
- Moon Creek Alternative: 1.00% max, with about 4.88 miles total length against load.



Table 1. TRR Alternatives Comparison

| Route Alternative | Length (miles) | Environmental/ Operational Issues | Environmental/Operational Advantages |
|-------------------|---------------------|--|--|
| Colstrip | ~42 mi to TP1 & TP2 | <ol style="list-style-type: none"> Requires new grade separation of US 212, and possibly Tongue River Road. Longest total ruling grade. Longest continuous ruling grade. | <ol style="list-style-type: none"> Shortest rail line length. Least grading quantities and excess excavation. Highest % parallel to existing transportation corridors. No grade separation of I-94 required. Does not pass through or near USDA LARRS. Does not pass through or near Miles City Fish Hatchery. Least Right-of-Way Acquisition, including Grazing and Irrigated Land Least impacts to BLM lands. Affects and bisects least # of landowners. Lowest impacts to Block Management Areas and Conservation Easements. Lowest rail line length parallel to Tongue River Valley. Lowest number of stream crossings. Utilizes existing BNSF track to access the BNSF mainline. Although currently lightly used, population is accustomed to the track from Colstrip to the main line near Forsyth. |
| Tongue River | ~83 mi to TP1 & TP2 | <ol style="list-style-type: none"> Shares longest rail line length with Tongue River Road Alternative. Lowest % parallel to existing transportation corridors. Requires new grade separations of I-94, US 212, and possibly Tongue River Road. Shares highest impact to USDA LARRS with Tongue River Road Alternative. Passes through Miles City Fish Hatchery. Highest impacts to Block Management Areas and Conservation Easements. Highest rail line length parallel to Tongue River Valley. | <ol style="list-style-type: none"> Least Impacts to State and County Land. Shares shortest total ruling grade with Tongue River Road Alternative. Shortest continuous ruling grade. |

| Route Alternative | Length (miles) | Environmental/ Operational Issues | Environmental/Operational Advantages |
|-------------------|---------------------|--|--|
| Tongue River Road | ~83 mi to TP1 & TP2 | <ol style="list-style-type: none"> 1. Shares longest rail line length with Tongue River Alternative. 2. Highest grading quantities and excess excavation 3. Requires new grade separations of I-94, US 212, and possibly Tongue River Road. 4. Shares highest impact to USDA LARRS with Tongue River Alternative. 5. Passes through Miles City Fish Hatchery. 6. Highest Right-of-Way Acquisition, including Grazing and Irrigated Land. 7. Affects and bisects highest # of landowners. 8. Passes near or through more residential drives than other options. | <ol style="list-style-type: none"> 1. Shares shortest total ruling grade with Tongue River Alternative. |
| Moon Creek | ~82 mi to TP1 & TP2 | <ol style="list-style-type: none"> 1. Second highest grading quantities and excess excavation. 2. Requires new grade separations of I-94, US 212, and possibly Tongue River Road. 3. Impacts USDA LARRS 4. Most impacts to BLM lands 5. Most impacts to State and County land. 6. Affects and bisects second-most number of landowners. 7. Second highest rail line length parallel to Tongue River Valley. 8. Highest number of stream crossings. | <ol style="list-style-type: none"> 1. Does not pass through or near Miles City Fish Hatchery. 2. Less impact to USDA LARRS than Tongue River and Tongue River Road Alternatives. |

Table 2. TRR Rail Alternative Characteristics

| No. | Alternative Alignment Characteristics | Colstrip | Tongue River | Tongue River Road | Moon Creek |
|-----|---|--------------|--------------|-------------------|--------------|
| 1 | Length of New Main Track Construction (Miles) | 42.1 | 83.1 | 83.1 | 81.7 |
| 2 | Cut (Cubic Yards) ¹ | 18,100,000 | 25,300,000 | 38,800,000 | 36,200,000 |
| 3 | Fill (Cubic Yards) ¹ | 17,700,000 | 22,900,000 | 34,600,000 | 33,100,000 |
| 4 | Excess Cut (Cubic Yards) ¹ | 400,000 | 2,400,000 | 4,200,000 | 3,100,000 |
| 5 | Length of Public Roadway Impacted (Miles) | 8.3 | 8.9 | 9.2 | 8.9 |
| 6 | 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%) |
| 7 | Alignment Requires New Interstate 94 Crossing? | No | Yes | Yes | Yes |
| 8 | County and State Public Roadway Crossings | 5 | 3 | 4 | 4 |
| 9 | Length Alignment Impacts USDA Livestock and Range Research Station (Miles) | 0.0 | 9.5 | 9.5 | 2.4 |
| 10 | Alignment Crosses Miles City Fish Hatchery? | No | Yes | Yes | No |
| 11 | Right-of-Way Acquisition (Acres) ² | 2,400 | 4,100 | 4,500 | 4,300 |
| 12 | Right-of-Way Acquisition of Grazing Land (Acres) ² | 1,560 | 3,200 | 3,520 | 3,020 |
| 13 | Right-of-Way Acquisition of Irrigated Land (Acres) ² | 40 | 90 | 230 | 90 |
| 14 | Length of Impacts to Bureau of Land Management (Miles) | 0.7 | 3.6 | 2.4 | 4.6 |
| 15 | Length of Impacts to State/County Land (Miles) | 3.4 | 7.4 | 3.4 | 16.5 |
| 16 | Number of Affected Landowners ³ | 44 | 53 | 60 | 54 |
| 17 | Number of Bisected Landowners ⁴ | 30 | 40 | 42 | 41 |
| 18 | MT FW&P Block Management Areas and Conservation Easements (Miles) | 9.5 | 27.7 | 9.8 | 21.8 |
| 19 | Length Alignment Parallels Tongue River Valley (Miles) | 17.0 | 68.2 | 31.8 | 57.7 |
| 20 | Number of Stream Crossings ⁵ | 99 | 270 | 250 | 298 |
| 21 | Number of River Crossings | 1 | 1 | 1 | 1 |
| 22 | Max Curvature (Excluding Wye Tracks) | 2°20' | 2°20' | 2°20' | 2°20' |
| 23 | Total Length of Curves (Miles) | 13.84 | 14.81 | 23.54 | 17.56 |
| 24 | Ruling Grade Compensated for Horizontal Curves where Applicable | 0.91 - 1.00% | 0.86 - 0.94% | 0.91 - 1.00% | 0.91 - 1.00% |
| 25 | Total Length of Ruling Grade Against Load ⁶ (Miles) VPI - VPI | 12.76 | 1.46 | 1.46 | 4.88 |
| 26 | Max Continuous Length of Ruling Grade Against Load ⁶ (Miles) | 7.15 | 0.80 | 1.46 | 4.88 |
| 27 | Total Length of Grade Against Load ⁶ (Miles) | 18.72 | 26.29 | 26.66 | 24.22 |
| 28 | Conceptual Estimate of Probable Cost (2013 \$Million) | 416 | 625 | 753 | 731 |
| 29 | Conceptual Estimate of Probable Cost Per Mile (2013 \$Million/Mile) | 9.88 | 7.52 | 9.06 | 8.95 |
| | 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 heading northbound | | | | |

The ruling grade is given as a maximum due to the fact that horizontal curves, and thereby curve compensations, do not apply to the entire length of ruling grade. BNSF has conducted train performance modeling on each alternative to determine power and operating requirements. The results of the performance modeling show none of these ruling grades would preclude railroad operations. Notably, the modeling indicates that the Colstrip alignment does not require additional locomotive power to haul current unit coal train lengths despite its longer length against load. Therefore, none of the four rail alternatives should be discarded based on railroad operational issues.

4.4 Environmental Impacts to Land Use

Among the potential environmental consequences associated with the rail alignments are temporary and permanent impacts to the Miles City Fish Hatchery, the LARRS, Interstate 94, and local ranches and farms. Although portions of the right-of-way for all the alternatives would be acquired from private landowners, it appears that only one residence would be displaced, located north of Ashland on the alignment that is common to all the alternatives under consideration. The railroad construction and operation may also cause environmental impacts to natural and cultural resources. These potential environmental impacts that are currently discernible are discussed in the following sections. Additional data will be developed during the EIS process.

4.4.1 Miles City Fish Hatchery

The Tongue River and Tongue River Road Alternatives originate at a wye connection to the existing BNSF mainline at Miles City. The current configuration for both alternatives includes the west leg of the wye passing through the northeastern edge of the Miles City Fish Hatchery. TRRC has reached a tentative agreement with the Montana Department of Fish, Wildlife & Parks for an easement for the proposed railroad to pass through the fish hatchery; however, mitigation including construction of at least one replacement hatchery basin would be required. The Moon Creek and Colstrip Alternatives do not run through or near the Miles City Fish Hatchery.

4.4.2 Interstate 94

The Tongue River, Tongue River Road, and Moon Creek Alternatives would cross Interstate 94, likely beneath new highway grade separations. Traffic would be disrupted during construction of the overpass structures. The Colstrip Alternative does not require construction of a new highway grade separation; the existing BNSF Colstrip Subdivision track already passes beneath Interstate 94.

4.4.3 LARRS

The Tongue River and Tongue River Road Alternatives pass through about 9.5 miles of the eastern edge of the LARRS. Agricultural research could be disrupted to some degree by railroad construction and/or train operations. The Moon Creek Alternative crosses only about 2.4 miles of the western portion of the LARRS. The Colstrip Alternative does not cross or pass near the LARRS.

4.4.4 Bureau of Land Management, Block Management Areas and Conservation Easements

The Tongue River, Tongue River Road, and Moon Creek Alternatives pass through about 2.4 to 4.6 miles of Bureau of Land Management parcels while the Colstrip Alternative crosses only about 0.7 mile. Approximately 27.7 miles of the Tongue River Alternative passes through Montana Fish Wildlife & Parks (MT FW&P) Block Management Areas and Conservation Easements compared to 21.8 miles of the Moon Creek Alternative, 9.8 miles of the Tongue River Road Alternative and 9.5 miles of the Colstrip Alternative, which has the lowest impact.

4.4.5 Impacts to Property

All of the rail alternatives impact private property. Some private property is impacted by the rail alignment along the edge of parcels such that the remainder of the property is usable, while other parcels are bisected by the rail alignment such that a portion of the property may be reduced in utility even though it is not specifically needed for railroad right-of-way. The numbers of impacted private properties and bisected private properties are as follows:

- Colstrip Alternative: 30 bisected / 44 impacted.
- Tongue River Alternative: 40 bisected / 53 impacted.
- Tongue River Road Alternative: 42 bisected / 60 impacted.
- Moon Creek Alternative: 41 bisected / 54 impacted.

4.5 Topography and Soils

The topography of the area is characterized by hilly, rugged uplands interspersed with wide, rolling valleys. Most of the rail alternatives would run on high ground outside the Tongue River basin, except where the alignments cross the Tongue River north of Ashland and Otter Creek south of Ashland. Due to the variable topography, construction of all the rail alternatives will require both cuts and fills. To the extent practicable, TRRC would attempt to adjust the design profile to balance cut and fill quantities. Table 2 shows the relative estimated cut and fill quantities. All the rail alternatives appear to require more cut than fill, resulting in between 0.4 million to 4.2 million cubic yards of excess earth, with the Colstrip Alternative requiring the smallest volume of additional cut. Some of the excess material may be accounted for in material shrinkage when soil and soft rock are cut from existing loose bank conditions and placed in compacted railroad embankment. The remainder will be utilized onsite in flattened fill slopes.

Soils in the project area are not expected to be unsuitable for railroad construction. Pending site access, geotechnical investigations are planned to characterize site soils and develop foundation recommendations for structures and large fills.

4.6 Water Resources

4.6.1 Surface Water and Wetlands

All of the rail alternatives would cross the Tongue River once. The Tongue River, Moon Creek, and Colstrip Alternatives all cross the Tongue River at a location about 10 miles north of

Ashland. The Tongue River Road Alternative crosses the Tongue River about 10 miles south of the BNSF connection at Miles City. The southern portion of the railroad south of the bifurcation point between trackage connecting to Terminus Points 1 and 2, which is common to all the alternatives, crosses Otter Creek southeast of Ashland. All the alignments would cross other small streams and drainageways, using culverts and bridges depending on the length of the crossing. Table 2 summarizes the required numbers of stream crossings estimated by reviewing USGS topographic maps and aerial photography. Due to the lack of site access, no field studies have been conducted to date to verify the numbers or characteristics of potential streams to be crossed. The estimated numbers of stream crossings for each alternative, including the Tongue River and Otter Creek crossings, are as follows:

- Colstrip Alternative: 100 crossings.
- Tongue River Alternative: 271 crossings.
- Tongue River Road Alternative: 251 crossings.
- Moon Creek Alternative: 299 crossings.

Due to the relatively shorter length of new rail construction and the higher elevations of the route, the Colstrip Alternative has by far the fewest number of waterbody crossings. However, all of the alternatives cross the Tongue River and Otter Creek and up to five other perennial streams. Relatively small culverts and bridges are common elements of railroad construction, and following construction, the presence of culverts and bridges is not expected to cause any significant continuing impacts to area drainage, surface water quality, or aquatic habitat.

Rail construction could also directly affect wetlands, if present within the new rail right-of-way (ROW), by clearing, grading and placement of fill material. Wetlands adjacent, but outside of the ROW, may be indirectly impacted by the fragmenting of habitat, changes in hydrology, and changes in vegetation diversity.

Due to the lack of site access, no field studies have been conducted to date to determine and delineate wetlands along the rail alternatives. Large wetlands have not been observed in general observations made in some locations from public roadways. Most of the routes of the four rail alternatives have not been mapped in the National Wetland Inventory (NWI) to identify wetlands. Available NWI mapping of areas south of Miles City and north of Colstrip generally indicate intermittent occurrences of small emergent or shrub/scrub wetlands adjacent to streams or drainage ways. Isolated stock ponds are also shown. Based on interpretation of the route topography, limited visual observations from public roadways, and extrapolation of the apparent typical NWI mapping, large contiguous wetland areas are not likely present in any of the four rail alternatives. Small intermittent wetlands may be present adjacent to the Tongue River and other relatively-permanent streams that may provide sufficient hydrology for wetland establishment.

When site access is obtained, wetland and waterbody delineations will be conducted to support the environmental review of the project and permitting requirements. The actual wetland determinations will include evaluations of soil, vegetation, and hydrology in accordance with the U.S. Army Corps of Engineers *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* and the *1987 Corps Wetland Delineation Manual*. At this time, qualitative evaluations of potential wetland impacts can be made based on the relative numbers of stream crossings encountered by each alternative. Wetlands would be most likely to occur at locations where sufficient hydrology is present, such as streams and drainage ways.

The relative numbers of stream crossings as shown above may represent the relative amounts of wetland impacts.

The northern sections of the Tongue River and Tongue River Road Alternatives appear to run within the floodplains of the Tongue River for short stretches. A higher likelihood for wetlands exists within the floodplains. All of the rail alternatives cross the Tongue River once and follow the same southern alignment along Otter Creek to Terminus Point 2. Therefore, potential wetland impacts in the southern segments appear to be equivalent between the rail alternatives. Overall, the Colstrip Alternative appears to have the potential for significantly less wetland impacts than the other alternatives, due to its shorter length of new construction, fewer stream crossings, and divergence from the Tongue River floodplain.

4.6.2 Groundwater

Construction of each of the alternatives would occur at or above grade, with cuts required on the upland side of construction due to the topography. Localized groundwater infiltration may be altered within the footprint of the rail line. The rail line is not expected to cause significant effects to groundwater movement or quality.

4.6.3 Floodplains

Most of the routes for the four rail alternatives have not been mapped by FEMA to identify floodplains. The FEMA Flood Insurance Rate Map (FIRM) for Custer County shows Zone A floodplains along the Tongue River for a few miles south of Miles City at the northern end of the Tongue River and Tongue River Road Alternatives. The lack of flood hazard mapping over much of the project area suggests that the areas are not prone to flooding, although this has not been confirmed. The rail alternatives generally run on high ground. Flood-prone areas may be crossed at the Tongue River crossing and in a few locations where the alignment runs close to current or abandoned river meanders. Stream crossing and drainage structures will be hydraulically designed to convey the expected water flows. When an alternative is selected, TRRC will coordinate with the affected Counties to obtain floodplain development permits if necessary.

4.7 Biological Resources

4.7.1 Endangered and Threatened Species

According to the United States Fish and Wildlife Service (USFWS) list of Endangered, Threatened, Proposed, and Candidate Species in Montana Counties, the following listed endangered species may be present in Custer, Powder River, and Rosebud Counties:

- Pallid sturgeon;
- Interior least tern;
- Black-footed ferret;
- Whooping crane;
- Greater sage grouse (candidate species); and
- Sprague's pipit (candidate species).

Subject to updated review, no USFWS-designated critical habitat for these or other species have been identified for the project locations. The USFWS Montana Field Office issued a Biological Opinion on July 12, 2006 regarding the effects of the proposed railroad on listed species. The 2006 list of endangered species within the project counties included the species listed above plus the bald eagle, which has since been de-listed as an endangered species but is still protected under the Bald and Golden Eagle Protection Act. The Biological Opinion concurred that the proposed action (constructing and operating the proposed railroad) was likely to adversely affect the bald eagle, and was not likely to adversely affect the pallid sturgeon, whooping crane, interior least tern, and black-footed ferret. "Candidate species" indicates the USFWS has sufficient information on the biological status and threats to these species to propose to list them as threatened or endangered. USFWS encourages their consideration in environmental planning and partnerships, however, none of the substantive or procedural provisions of the Endangered Species Act apply to candidate species.

Since all the alternative routes cross the Tongue River and traverse similar upland terrain, the potential for these listed species or their habitat to be present within each alternative alignment appears to be approximately equivalent. The Colstrip Alternative may cause the fewest impacts to listed species and their habitat because of its shorter length and its location adjacent to existing roadways. The Colstrip Alternative also may cause fewer impacts to bald eagles since it diverges away from the Tongue River where bald eagles may be likely to nest.

4.7.2 Flora

Rail line construction will include clearing surface vegetation and excavating earth and rock on previously undisturbed land. Secondary impacts to vegetation may include loss or alteration of shrub or forested habitat, fragmentation of habitat types, and altered vegetation succession. Creation of staging areas and work pads would cause temporary vegetation impacts in all the rail alternatives. Based on visual observation of the alternatives from public roadways, the natural vegetation generally consists of variable grassland and shrublands interspersed with coniferous forests, with deciduous trees and shrubs in drainages and bottomland areas. Areas disturbed during construction and not covered by railroad structures will be reseeded with native species.

The Colstrip Alternative has the potential to cause the least amount of vegetation impacts because of its shorter length and its route adjacent to existing roadways where natural vegetation has already been disturbed. The Tongue River Alternative is the longest in length and has a higher potential for impacts to established vegetation and scrubland forests.

4.7.3 Terrestrial Wildlife

A variety of wildlife species likely inhabit areas within all alternatives. The majority of land within the alternatives is open pasture or scrubland forests. Potential impacts to wildlife for each alternative would vary based on the dependence of specific wildlife to a preferred habitat, sensitivity to habitat fragmentation and past and present population trends. Habitat fragmentation occurs when large areas of continuous core habitat are spilt into smaller pieces, thereby increasing the amount of habitat edge. Potential construction impacts common to all alternatives could include habitat alteration and loss, disturbance and displacement of wildlife, disruption of food sources and direct mortality from construction equipment and/or trains. Common potential impacts related to train operation could include animal/train collisions, habitat

fragmentation, and potential exposure to spills. Appropriate mitigation will be adopted to address these potential impacts.

The Colstrip Alternative has the least potential for wildlife impacts due to its shorter length. Also, the Colstrip Alternative will create less habitat fragmentation than the other alternative routes because it is shorter and a significant portion is adjacent to established roadways. The Tongue River Alternative is the longest in length and has a higher potential for wildlife impacts.

4.7.4 Aquatic Ecology

All of the four rail alternatives cross the Tongue River, Otter Creek, and several named and unnamed tributaries that provide habitat for numerous fish and aquatic macroinvertebrate species. Construction activities conducted in the waterbodies may cause temporary increases in sedimentation and short-term degradation of water quality. Water quality and aquatic habitat would be expected to return to normal conditions when construction is completed. Stream crossings may result in some loss or alterations to in-stream and associated riparian habitat. Bridge crossings would likely result in less impact to aquatic habitat than installation of culverts.

Since the Colstrip Alternative crosses fewer waterbodies than the other rail alternatives, as presented in Section 4.6.1, the Colstrip Alternative can be expected to cause less aquatic species and habitat disturbance than the other alternatives, although operation of the railroad on any of the alternative alignments is not expected to cause significant long-term adverse effects to aquatic ecology.

4.8 Cultural Resources

The alternative routes will be subject to updated comparative cultural resources reviews during the EIS and Section 106 processes. Those updated reviews have not yet been undertaken. Based on information reported in the Tongue River I EIS, the Colstrip Alternative would impact fewer total prehistoric and historic resources than each of the other alternatives, while the Tongue River Road Alternative would impact a greater total of resources than the other alternatives. Clearly, however, the additional cultural resources information, including information on impacts to traditional Native American cultural properties, will need to be gathered and the relevant impacts assessed.

4.9 Transportation

Most of the rail alternatives pass through sparsely-populated rural country that is generally used for rangeland and some crop production. The Tongue River Road and Colstrip Alternatives parallel existing transportation corridors through much of their lengths. Although these alternatives may result in less division of agricultural parcels, these alternatives require more roadway grade crossings than the other alternatives, leading to the potential for more traffic delays and collisions.

Grade separations are anticipated at Interstate 94 (except for the Colstrip Alternative, which would not cross I-94) and U.S. Route 212. Other roadways will be crossed at-grade, although the Montana Department of Transportation has asked that Tongue River Road be evaluated for grade separation. The numbers of public and private roadway grade crossings estimated for

each alternative are as follows (additional private crossings may be required through landowner negotiation):

- Colstrip Alternative: 5 public / 18 private
- Tongue River Alternative: 3 public / 41 private.
- Tongue River Road Alternative: 4 public / 46 private.
- Moon Creek Alternative: 4 public / 36 private.

4.10 Right-of-Way Acquisition

Construction of the railroad will require acquisition of right-of-way from private and public landowners. The numbers of landowners directly affected by each alternative are as follows:

- Colstrip Alternative: 44 landowners.
- Tongue River Alternative: 53 landowners.
- Tongue River Road Alternative: 60 landowners.
- Moon Creek Alternative: 54 landowners.

Although portions of the right-of-way for all the alternatives would be acquired from private landowners, it appears that only one residence would be displaced, located north of Ashland on the alignment that is common to all the alternatives under consideration. Due to the relatively shorter length of new rail construction, the Colstrip Alternative directly affects the fewest number of landowners. Property negotiations with fewer landowners may result in more expeditious acquisition of right-of-way for the Colstrip Alternative. The relative numbers of landowners directly affected by the other alternatives are similar to each other, ranging from 53 landowners on the Tongue River Alternative to 60 landowners on the Tongue River Road Alternative.

Rail traffic utilizing the Colstrip Alternative would pass through the city of Colstrip on the existing BNSF track. Colstrip has an estimated population of 2,200 according to the 2010 Census.

4.11 Air Quality

The U.S. Environmental Protection Agency (USEPA) National Ambient Air Quality Standards (NAAQS) regulations specify the maximum acceptable ambient concentration levels for six primary or “criteria” air pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), respirable particulate matter (PM), and lead (Pb). According to the USEPA *The Green Book of Nonattainment Areas for Criteria Pollutants as of July 20, 2012* (<http://www.epa.gov/oar/oaqps/greenbk/index.html>, accessed November 24, 2012), the Lame Deer area in Rosebud County, Montana persistently exceeds the NAAQS for PM (PM-10) and is designated as a “nonattainment area.” All other areas within the project alternatives are in attainment of the NAAQS.

Air emissions of PM may occur as fugitive dust from earthmoving activities during construction of the rail line. However, fugitive dust emissions during construction are temporary and can be readily controlled by water application. The Colstrip Alternative would result in the lowest temporary PM during construction since it requires the least amount of earthwork.

BNSF is currently performing modeling of locomotive emissions and fuel usage. A comparative discussion will follow upon completion of the modeling.

4.12 Noise and Vibration

TRRC has not conducted modeling to estimate noise or vibration effects caused by construction or operation of the railroad except for specific evaluations performed previously at the Miles City Fish Hatchery. The Tongue River and Tongue River Road Alternatives pass through the Miles City Fish Hatchery and LARRS, which may be sensitive receptors for noise and vibration. The Moon Creek Alternative reduces the amount of trackage through the LARRS. The Colstrip Alternative does not pass through the LARRS or the Fish Hatchery. Each of the rail alternatives traverses a common alignment east of the populated area of Ashland, so the potential effects of noise and vibration, if any, would be equivalent between the rail alternatives in that area. The Colstrip Alignment does not pass through any populated areas upon leaving the Tongue River valley.

4.13 Parks and Recreation

There are no designated recreation areas within any of the rail alternative alignments. The Tongue River and Tongue River Road Alternatives pass along the western edge of the Spotted Eagle Lake (Miles City) Recreation Area where the eastern leg of the wye connects to the BNSF main line.

4.14 Hazardous Materials and Waste Sites

According to the USEPA EnviroMapper for Envirofacts (<http://www.epa.gov/emefdata/em4ef.html?ve=7,46.22972869873047,-106.73079681396484&pText=Rosebud> , accessed November 24, 2012), there are no uncontrolled hazardous waste sites or other listed sites that suggest possible areas of contaminated soils that may be encountered during construction of any of the rail alternatives.

4.15 Socioeconomics

Most of the rail alternatives pass through sparsely-populated rural country. Although portions of the right-of-way for all the alternatives would be acquired from private landowners, it appears that only one residence would be displaced, located north of Ashland on the alignment that is common to all the alternatives under consideration. Most socioeconomic impacts to the region are expected to be the same for all the rail alternatives.

5. No-Build Alternative

The No-Build Alternative would result in no construction of any rail line to serve the Otter Creek mine or other mines in the Ashland area. The No-Build Alternative is based on the assumptions that either: 1) there will not be a need to transport coal from the proposed mines near Ashland/Otter Creek; or 2) another mode of transportation is preferable to the proposed railroad.

At this time, permitting for the Otter Creek mine is progressing. Therefore, there will be a need to transport coal from the area. However, we assume that the No-Build Alternative will be evaluated during the current STB EIS proceedings.

6. Alternatives Previously Considered and Eliminated from Detailed Study

Certain rail alternative routings were considered during the screening process and eliminated as being unfeasible or otherwise clearly inferior to the four rail alternatives described above on the basis of relevant screening criteria, including the length of required track construction or other readily discernible impacts. Non-rail alternatives for transporting coal from the Ashland/Otter Creek area also were evaluated in the previous environmental studies. The evaluations of the non-rail alternative transportation modes concluded that the non-rail alternatives are unfeasible. TRRC believes that these conclusions remain valid. The following sub-sections summarize the evaluations of the rail and non-rail transportation alternatives that TRRC does not believe warrant detailed consideration.

6.1 Rail Alternatives and Sub-Alternatives

A previous alignment of the Tongue River Road Alternative has been discarded due to impacts that it would have on newer developments on the east side of Miles City. Significant relocations to commercial and industrial development would be required as the alignment passed through the east side of Miles City and then continued southward crossing Interstate 94 beneath new highway grade separations. The rail line continued southward on the east side of the Tongue River just north of Pumpkin Creek, and then turned west and crossed the Tongue River. The rail line then turned southward and ran about 10 miles before crossing the Tongue River again, and then running on the east side of the Tongue River to Terminus Points 1 and 2. The current proposed alignment of the Tongue River Road Alternative originates on the west side of Miles City and includes only one crossing of the Tongue River.

An alternative known as the Bureau of Land Management (BLM) Alternative has been evaluated to determine approximate grading quantities and right-of-way impacts using the same criteria as the updated evaluation of the four rail alternatives described above. The north end of this alternative shares a common connection to the BNSF Forsyth Subdivision as the Moon Creek Alternative, which is a modification from the previously studied route. The connection point to the Forsyth Subdivision studied previously was not feasible due to excessive cuts through rugged terrain. The alignment runs south runs parallel to the Tongue River, but further west and along higher ground than the Tongue River Alternative. Although the grades are comparable to the Moon Creek Alternative, the grading quantities required to construct this alternative are about 60 million cubic yards of cut and 60 million cubic yards of fill, even with the adjustment of the north end to reduce grading. The grading footprint is about triple, and right-of-way impacts are about double, that of the Tongue River Road Alternative, which contains the highest volume of grading and right-of-way impacts of the four alternatives screened. For these reasons, it was not selected for further analysis.

Other alternative rail alignments were proposed during public scoping meetings in November 2012. Two of these alternatives would originate at Otter Creek and run east toward Broadus along US 212 before paralleling Montana State Route 59 (MT59) to the north or south. The two alternatives share a common alignment from the proposed Otter Creek Mine site north to US 212, then turn east and run parallel to US 212 for about 40 miles before diverging. The north

route turns north about 4 miles northwest of Broadus and runs parallel to MT59 for a distance of 60 miles before connecting to the Tongue River Road Alternative about 13 miles south of Miles City. The south option turns south about 3 miles southeast of Broadus and runs parallel to MT59 for a distance of about 78 miles before connecting to the existing BNSF Campbell Subdivision in Campbell, Wyoming. The northern MT59 alternative would require about 119 miles of new main track construction and the southern MT59 alternative would require about 127 miles of new main track construction. Impacts associated with construction and energy consumption would be at least double the impacts associated with any of the four alternatives identified for further study. For these reasons, these alternatives were not selected for further analysis.

Routings to the south of Ashland/Otter Creek were also considered. A rail route from Terminus Point 1 to the existing Spring Creek rail spur near Decker, Montana was originally proposed as part of Tongue River II EIS and refined in Tongue River III EIS. Although approved during those previous proceedings, significant concerns were raised by Native American groups and the National Park Service due to the proximity of the route to the Wolf Mountains battlefield site, which was added to the National Register of Historic Places in 2001 and designated a National Historic Landmark in 2008. Some concerns were also raised about the effect of vibrations caused by rock excavation during construction on the Tongue River Reservoir, as well as visual and noise issues for recreational users of the reservoir. The approved Tongue River III south alignment extended approximately 38 miles south from Terminus Point 1 to the existing Spring Creek rail spur near Decker, Montana. A meaningful comparison to the current preferred rail line would involve the route length from Terminus Point 2 to Miles City of approximately 119 miles for east-bound traffic via the Colstrip Alternative and approximately 340 miles via the Tongue River III south alignment. Terminus Point 2 to Jones Junction near Billings, MT requires west-bound traffic to travel approximately 148 miles via the Colstrip Alternative and approximately 209 miles via the Tongue River III south alignment. The additional route length of 221 miles for east-bound traffic and 61 miles for west-bound traffic, as well as approximately 52% more total grading and the aforementioned cultural resources and environmental impacts, are significant issues when compared to the Colstrip Alternative and do not merit further consideration of the TRRC III south alignment alternative in this screening analysis.

6.2 Non-Rail Alternatives

6.2.1 Conveyor

The previous studies considered constructing a conveyor system to transport coal from the mine to a bulk transportation system to the BNSF main line at Miles City. However, the previous studies concluded that building and operating the conveyor system would not be feasible for the following reasons:

- The cost of constructing and operating a conveyor system from Terminus Point 2 to Miles City would be higher than the cost of transporting the product on the proposed railroad. The higher cost would have a negative impact on the marketability of coal. Since the current proposed route to Colstrip is less than half the distance to Miles City, the total costs of a conveyor system would be less than the costs previously determined. It is assumed the costs of a conveyor and the proposed railroad to Colstrip would each be proportional to the shorter length of the current proposal. Therefore the conveyor

system would be expected to have a higher cost than the proposed railroad, although this has not been confirmed in this Alternatives Screening analysis.

- The constructor or operator of a conveyor system would likely not have the legal power of eminent domain to acquire right-of-way for the conveyor. It is not likely that all of the required right-of-way could be acquired through negotiation.
- A conveyor system operating 24/7 may cause constant noise annoyance.
- The conveyor system would likely present a significant barrier to wildlife migration at most or all portions of the conveyor route.
- Conveyor systems are normally designed for a specific tonnage capacity. With the possibility of additional mines being developed in the Otter Creek area, any conveyor system would require upgrading, or re-construction, to handle additional tonnage from new mines.
- We are not aware of any conveyor system in existence that is over 20 miles long.

6.2.2 Coal Slurry Pipeline

The previous studies considered constructing a coal slurry pipeline to transport coal from the mine to a bulk transportation system to the BNSF main line at Miles City. However, the previous studies concluded that building and operating the coal slurry pipeline system would not be feasible for the following reasons:

- The cost of constructing and operating a coal slurry pipeline system from Terminus Point 2 to Miles City would be higher than the cost of transporting the product on the proposed railroad. The higher cost would have a negative impact on the marketability of coal. As described above for a conveyor system, a coal slurry pipeline would be expected to have a higher cost than the proposed railroad, even along the shorter proposed route to Colstrip.
- The constructor or operator of a coal slurry pipeline system would likely not have the legal power of eminent domain to acquire right-of-way for the conveyor. It is not likely that all of the required right-of-way could be acquired through negotiation.
- A coal slurry pipeline system requires a reliable source of sufficient water to operate. It is unlikely that sufficient water supply is present in this area.

6.2.3 Hauling by Truck

The previous studies considered hauling coal from the Ashland/Otter mines to Miles City by truck using existing and new roadways. The previous studies concluded that hauling coal by trucks would not be feasible for the following reasons:

- The cost of hauling coal by truck from Terminus Point 2 to Miles City would be higher than the cost of transporting the product on the proposed railroad. The higher cost would have a negative impact on the marketability of coal. The costs of hauling coal by truck via Colstrip have not been determined, but typical cost per ton-mile for other similar haul situations indicates that truck hauling costs would be significantly higher than rail.
- Hauling the coal by truck would likely have a greater negative impact on air quality than transportation by rail, including higher fugitive dust emissions from the roadways and higher diesel exhaust emissions from the required number of operating trucks compared to the projected numbers of railroad locomotives.

- The large number of trucks operating on public roadways would cause significant increases in traffic, road damage, noise, and vibration. Using an assumption of 38 tons/truck maximum capacity for highway trucks with an additional trailer, the anticipated coal production of 20 MMT/year would require 1,442 round trips via truck every day of the year. This equates to approximately one round trip per minute.

6.2.4 Mine-Mouth Power Generation

Previous studies indicated that constructing and operating a mine-mouth electrical generating plant near the proposed mine may be cost competitive with rail transportation. The previous studies concluded that constructing and operating a mine-mouth electrical generating plant near the proposed mine would not be comparatively advantageous to rail transportation for the following reasons:

- The environmental impacts of constructing and operating an electrical generating power plant in this area would be substantial, including the plant's needs for large amounts of water, which would not be available in the area, and possible deterioration of air quality, including to the Northern Cheyenne Indian Reservation.
- Substantial environmental impacts would also result from siting and constructing the necessary high-voltage transmission lines from the plant.

7. Conclusion

Based on the analysis presented above, all four alternatives are feasible, but the Colstrip Alternative presents the shortest length of new construction, smallest grading footprint, least right-of-way acquisition, least waterway crossings and significantly less length parallel to the Tongue River valley compared to the other rail alternatives. The Colstrip Alternative does not require a new grade separation of I-94, would not impact LARRS or the Miles City Fish Hatchery and follows existing transportation corridors to a far greater extent than the other rail alternatives.