

Chapter 4: Environmental Consequences

This chapter discusses the environmental consequences associated with the Build Alternatives and the No-Action Alternative.

- **Build Alternatives.** The Build Alternatives include the Proposed Action (Alternative B) and one other alternative (Alternative C) that would involve construction of a new rail line that would connect the UPRR mainline to shippers within portions of Juab, Sanpete, and Sevier Counties. Each alternative would run from the UPRR mainline within portions of Juab, Sanpete, and Sevier Counties beginning near Juab, about 16 miles south of Nephi to the industrial area located about 0.5 mile southwest of Salina.
- **No-Action Alternative.** Under the No-Action Alternative (Alternative A), no new rail line construction would take place. Central Utah shippers would continue to transport commodities by surface roads within portions of Juab, Sanpete, and Sevier Counties.

Chapter 4 is arranged in sections that discuss the environmental consequences for each alternative within each environmental resource area.

4.1 Impacts on Rail Operations and Safety

4.1.1 Methodology

SEA ordinarily analyzes impacts associated with rail operations and rail operations safety when a Proposed Action would create an increase of eight trains per day or more. Because there are currently no rail operations in the study area, SEA analyzed rail operations and rail operations safety issues associated with Alternative B and Alternative C. SEA anticipates that both of these alternatives will involve two trains per day on average.

SEA analyzed the expected operations of Alternatives B and C in the context of the existing operational and safety conditions described in Section 3.1, Rail Operations and Safety. The Central Utah Rail Feasibility Study (Feasibility Study) stated that the volume of coal transported through the study area would not materially change from current conditions under Alternatives B and C (see Appendix K, Central Utah Rail Feasibility Study, Washington Infrastructure Services, Inc. and others 2001). Based on the analysis in the Feasibility Study and SEA's review of market conditions and regional coal production, SEA does not expect that rail operations on the UPRR Sharp Subdivision would significantly change in volume or frequency if the proposed rail line is constructed. The volume of coal shipped by Canyon Fuels is expected to remain stable and the other potential shippers in the area are limited or speculative at this time (Washington Infrastructure Services, Inc. and others 2001). Since the

volume of coal moved on the UPRR mainline is not anticipated to materially change, SEA did not analyze rail operations and safety effects on the existing UPRR rail line between Provo and Lynndyl, Utah.

Because of the small number of trains expected with the Proposed Action (two per day on average), and because rail line use did not exceed thresholds, SEA evaluated the proposed rail operations and rail operation safety using a qualitative rather than quantitative approach.

Traffic Delay. SEA evaluated the consequences of the proposed alternatives on delay at grade crossings. SEA reviewed the existing traffic delay associated with the existing rail lines that would be used under the proposed alternatives. SEA also conducted field surveys within the project area and consulted with UDOT to discuss and identify any transportation delay at grade crossings in the project area.

SEA conducted its grade crossing analysis in accordance with Federal Highway Administration guidelines. These guidelines take into account the frequency of trains at grade crossings, volume of traffic, and other factors to determine the impacts of an increase in rail traffic.

Traffic Safety. SEA used traffic crash data from the Utah Department of Public Safety supplemented with detailed accident information provided by the Crash Data Section of UDOT to assess the current traffic safety conditions on the roads in the study area. SEA also used information from recent USDOT studies of truck crashes and fatalities to frame the analytic effort because of the significant number of large trucks carrying coal on the highway network between Salina and Levan.

Rail Lines. In the absence of rail operations in the study area, SEA used estimating methodologies based on hypothetical rail operations identified in the Feasibility Study. Applicants identified several parameters including 133-pound rails, no train-control signal systems, and 49 mph as the maximum operating speed. Consequently, SEA assumed FRA Track Class 4.

Trucking Operations. The analysis for estimating impacts to trucking operations was adapted from the Feasibility Study. The economic analysis presented in that study used an economic impact model called Regional Economic Models Incorporated (REMI). See Section 4.11, Socioeconomic Impacts, for more detail on the model and analysis.

Navigation. SEA contacted USACE to determine if navigable waters as defined under Sections 9 and 10 of the Rivers and Harbors Act were present in the study area. No navigable waters were present; therefore, no additional analysis was performed with regard to navigation.

Rail Accidents. There are no data available on past rail accidents in the study area. In the absence of these data, SEA examined the likelihood of rail operations resulting in a rail accident using the estimated frequency of derailment based on safety statistics derived in a 1994 unpublished project for the Association of American Railroads (Saricks and Kvittek

1994). SEA uses these statistics to provide a reasonable estimate of the results of anticipated operations on new line constructions.

Grade Crossings. SEA evaluated the consequences of the proposed alternatives on safety conditions at grade crossings. SEA reviewed the existing safety conditions associated with the existing rail lines that would be used under the proposed alternatives. SEA also conducted field surveys within the project area and consulted with UDOT to discuss and identify any safety concerns at grade crossings in the project area.

SEA conducted its grade crossings analysis in accordance with the Federal Highway Administration's guidelines. These guidelines take into account the frequency of trains at grade crossings, volume of traffic, existing safety devices at grade crossings, and other factors to determine the safety impacts of an increase in rail traffic.

Pipeline Crossings. SEA considered the impacts of rail operations on pipeline safety by examining the likelihood of the construction or operation of the proposed alternatives causing a rupture in a natural gas pipeline in the study area and the consequences of such as rupture. SEA used data available from the National Pipeline Mapping System (PHMSA 2006) to gather information on the location of pipelines in the study area.

Valid Existing Rights To Use Public Land. SEA used available data and worked cooperatively with state and local government entities, BLM, private landowners, and companies to identify the expected consequences of the proposed alternatives on the current valid existing rights on the public land within the project area. Valid existing rights are those rights to use the public land which predate the final decision on the proposed project and arise from a permit, lease, right-of-way, or claim. Valid existing rights include rights to use public land for roads, pipelines, buried and overhead power lines, telephone lines, canals, irrigation ditches, state- and county-maintained roads, and other facilities that are held by BLM, other government entities, or private individuals or companies. Any potential conflicts with existing rights are addressed in the particular resource section in this chapter or are reduced or eliminated with mitigation. Future coordination between agencies would continue to address potential conflicts during construction of the proposed rail line and continued maintenance activities. See Appendix D, Prior Existing Rights, for a list of existing rights-of-way within the project area.

Transportation of Hazardous Materials. Risk is a function of both the frequency of accidents and their potential consequences. Risk analysis considers not only how severe an accident could be, but also how likely it is that any specific consequence of the accident would occur. To assess the overall potential risk associated with transporting hazardous materials, SEA considered the existing risk in the project area as well as the additional risk, if any, that would be introduced by operation of the proposed rail line.

4.1.2 Impacts on the Regional Transportation System

4.1.2.1 Impacts on Traffic Delay

Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new construction or changes in rail operations would occur, so there would be no impacts to traffic delay from the No-Action Alternative.

Alternative B (Proposed Action)

Access and ancillary road construction, operation, and maintenance would be in compliance with the terms and conditions of the subject grant and the AASHTO safety standards.

Using methodology explained in Section 4.1.1, Methodology, Table 4.1-1 shows the number of trains and the expected average delay at highway/rail at-grade crossings for Alternative B. SEA's traffic delay analysis showed that the level of service would not decrease at any grade crossing as a result of Alternative B. The average delay per vehicle for the new grade crossings for Alternative B would range from 1 to 4 seconds. There would be no delay at US 89 because a grade-separated crossing is proposed.

Table 4.1-1. Expected Average Delay at Crossings under Alternative B

Crossing	Assumed AADT	Assumed Trains per Day	Estimated Blocked Crossing Time per Day (minutes)	Estimated Crossing Delay per Stopped Vehicle per Day (minutes)	Estimated Number of Vehicles Delayed per Day	Estimated Average Daily Delay per Vehicle (seconds)
<i>Major Crossings</i>						
SR 24	5,000	2	8.5	6.0	59	4
US 50	5,000	2	8.5	6.0	59	4
SR 78	3,000	2	8.5	5.1	35	4
<i>All Other Crossings</i>						
Public (9)	200	2	3.7	1.9	1	1
Private (43)	10	2	3.7	1.9	0	1

AADT = annual average daily traffic

Alternative C

Access and ancillary road construction, operation, and maintenance would be in compliance with the terms and conditions of the subject grant and the AASHTO safety standards.

Table 4.1-2 below shows the number of trains and the expected delay at highway/rail at-grade crossings for Alternative C. SEA's traffic delay analysis showed that the level of service would not decrease at any grade crossing as a result of Alternative C. The average delay per

vehicle for the new grade crossings for Alternative C would range from 1 to 4 seconds. There would be no delay at US 89 because a grade-separated crossing is proposed.

Table 4.1-2. Expected Average Delay at Crossings under Alternative C

Crossing	Assumed AADT	Assumed Trains per Day	Estimated Blocked Crossing Time per Day (minutes)	Estimated Crossing Delay per Stopped Vehicle per Day (minutes)	Estimated Number of Vehicles Delayed per Day	Estimated Average Daily Delay per Vehicle (seconds)
<i>Major Crossings</i>						
SR 24	5,000	2	8.5	6.0	59	4
US 50	5,000	2	8.5	6.0	59	4
SR 78	3,000	2	8.5	5.1	35	4
<i>All Other Crossings</i>						
Public (9)	200	2	3.7	1.9	1	1
Private (37)	10	2	3.7	1.9	0	1
AADT = annual average daily traffic						

4.1.2.2 Impacts on Traffic Safety

Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new construction or changes in rail operations would occur; therefore, there would be no impacts to traffic safety from the No-Action Alternative.

Alternative B (Proposed Action)

SEA noted that operations under either Alternative B or Alternative C would likely sharply reduce the number of trucks carrying coal on SR 28 and US 89 between Salina and Levan. Nationally, large trucks account for 3% of vehicles involved in all vehicle accidents and 8% of vehicles involved in fatalities. Large trucks are also associated with 12% of the total traffic fatality count (USDOT 1998, 1). If the driver of a passenger vehicle is involved in a collision with a large truck, the probability of injury to the driver of the passenger vehicle is increased by nine times (1,000%) on average compared to passenger-vehicle-to-passenger-vehicle collisions (USDOT Bureau of Transportation Statistics 1998, 20).

SEA reviewed UDOT's vehicle safety report (Utah Department of Public Safety 2004) and specific safety data for incidents on the highways where coal is being moved in trucks for the 3-year period from 2002 to 2004. Statewide, large trucks were involved in 3.5% of the "property damage only" crashes and 2.4% of the "vehicles involved in injury" crashes. On US 89 in Sevier County, large trucks were involved in 35% of the total accidents. Table 4.1-3 below shows a summary of all accidents in Juab, Sanpete, and Sevier Counties. Based on

national accident statistics and UDOT vehicle safety reports, SEA concluded that Alternative B would have negligible impacts on safety.

Table 4.1-3. Summary of All Accidents

	ADT	Total Accidents	Accidents Involving Large Trucks	
			Number	Percent of Total
<i>Juab County</i>				
US 28	2,660	50	7	14%
SR 78	950	2	0	0%
Total	—	52	7	13%
<i>Sanpete County</i>				
US 28	2,660	36	2	6%
US 89	8,050	42	2	5%
Total	—	78	4	5%
<i>Sevier County</i>				
US 50	1,950	6	0	0%
US 89	8,050	23	8	35%
Total	—	29	8	28%
ADT = average daily traffic				

Alternative C

The impacts on traffic accidents from Alternative C would be very similar to those from Alternative B. The train operations would be similar, and the results of the train operations would be similar with respect to the potential beneficial impact on highway safety from reducing the number of large trucks carrying coal on highways in the study area. Alternative C requires fewer rail/highway at-grade crossings; see Section 4.1.3.2, Impacts on Grade Crossing Safety.

4.1.2.3 Impacts on Rail Lines

Alternative A (No-Action Alternative)

Under the No-Action Alternative, UPRR would continue to operate as the only rail carrier providing service to and from the present Levan/Sharp load-out facility. There would be no change in rail operations compared to the conditions described in Section 3.1, Rail Operations and Safety.

Alternative B (Proposed Action)

Under Alternative B, the Applicant would construct a new rail line consisting of about 43 miles of new single-track railroad line between Juab (Levan/Sharp load-out facility) and Salina. The Applicant plans to operate one round trip (two movements which equals one full load and one empty back-haul) per day. If additional demand supports the operation of more trains, an additional round trip once per week may be required.

Typically, there would be two trains of about 100 cars each per day on the proposed line—one trip from Juab to Salina and the return trip from Salina to Juab. The train from Juab to Salina would consist of two or three locomotives and empty coal hoppers received from UPRR at Juab. At Salina, the train would operate around the SUFCO loading loop, and the hoppers would be filled with coal. The train from Salina to Juab would consist of the same locomotives and loaded coal hoppers. At Juab, the loaded cars would be placed on one of the interchange tracks for further movement by UPRR on UPRR trains. Any service to customers other than SUFCO would be provided by the same crew and locomotives or by another crew with the same locomotives.

Alternative C

Under Alternative C, the Applicant would construct a new rail line. Train operations would occur with the same frequency and at the same times of day as for Alternative B.

Alternative C would require fewer crossings of the Piute Canal and associated irrigation facilities since it would be west of and upslope from the canal. It would also cross fewer agricultural lands on the west side of the Sevier Valley.

4.1.2.4 Impacts on Trucking Operations**Alternative A (No-Action Alternative)**

Under the No-Action Alternative, the proposed rail line would not be constructed. Consequently, the local trucking industry would continue to transport commodities (including coal from the SUFCO mines) from Sanpete and Sevier Counties at current levels.

Alternative B (Proposed Action)

Alternative B is projected to cause the loss of 108 jobs in the local trucking industry (Washington Infrastructure Services, Inc. and others 2001). The jobs would be lost because the length of coal-haul routes would be reduced. Coal would still need to be trucked from the mines to the project's southern terminus in Salina and possibly to the proposed power plant outside Sigurd. This job loss would primarily impact Barney Trucking and Robinson Transport, the main freight carriers for the SUFCO mine, both of which are located in Sevier County.

In December 2004, Barney Trucking employed 225 people, including 200 drivers, at the company's Salina location. Robinson Transport employed 140 people, 110 of which were drivers. Assuming that these two companies account for all of the 108 lost trucking jobs, the result is a reduction of 30% of current positions between the two companies. The response of these companies to such an impact is unknown at this time. SEA anticipates that the terminated trucking employees would be able to find jobs in areas that are expected to experience growth as a result of the project (see Section 4.11.3, Impacts to Employment and Income).

Alternative C

The impacts to the trucking industry from Alternative C would be the same as those from Alternative B.

4.1.2.5 Impacts on Navigation

Alternative A (No-Action Alternative)

There are no navigable waters in the study area, so there would be no impact to navigable waters from the No-Action Alternative.

Alternative B (Proposed Action)

There are no navigable waters in the study area, so there would be no impact to navigable waters from Alternative B.

Alternative C

There are no navigable waters in the study area, so there would be no impact to navigable waters from Alternative C.

4.1.3 Impacts on Rail Safety

4.1.3.1 Impacts on Rail Accidents

Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new construction or changes in rail operations would occur, so there would be no impacts to rail safety from the No-Action Alternative.

Alternative B (Proposed Action)

In the absence of past data on rail accidents in the area, SEA examined the likelihood of rail operations resulting in a rail accident using the estimated frequency of derailment based on safety statistics derived in a 1994 unpublished project for the Association of American Railroads (Saricks and Kvitek 1994). SEA believes that these statistics provide a reasonable

estimate of the potential results of future operations on new rail line constructions. Table 4.1-4 shows train accident rates by track class and railroad class.

The proposed line would be Class 4 track (60 mph maximum freight train speed), but the absence of a fixed wayside train control signal system would limit train speed to 49 mph. For the accident calculation, SEA used the accident rate for Class 4 operations even though the maximum speed would be 49 mph. SEA determined that the probability of an accident occurring that included cars derailing was 30.6% in any given year, or approximately one accident every 3 years (Saricks and Kvitck 1994). See Section 4.1.1, Methodology, for more information.

Overall, SEA concluded that this project would cause negligible direct or indirect impacts on rail operations safety. SEA arrived at this conclusion by analyzing several facts including the distances traveled daily by the trains on the new line, the appropriate speeds for operation under proven methods with clear and unambiguous operating rules, and the strong regulatory environment in which the railroads operate.

Table 4.1-4. Regular Train Accident Rates by Track Class and Railroad Class

Accidents According to FRA RAIRS ^a	Accident Type	Class I Railroads – FRA Track Class				Non-Class I Railroads	Percent with Cars Derailed ^b
		2	3	4	5 and 6		
Accidents per billion car-miles traveled	Derailments	71.0	25.0	5.5	3.3	79.8	98%
	Collisions	0.8	0.3	0.2	0.0	0.4	53%
	Other	1.0	0.7	0.3	0.4	0.9	17%
Accidents per million train-miles traveled	Derailments	1.29	0.48	0.12	0.06	0.9	94%
	Collisions	0.27	0.10	0.03	0.02	0.17	54%
	Other	0.60	0.49	0.23	0.14	0.61	15%

^a FRA's Railroad Accident and Incident Reporting System (RAIRS) categorizes accidents as being a function of either car-miles (mechanical failure of track and car components) or train-miles (accidents caused by human factors, grade crossing collisions, or collisions with obstructions).

^b Percent of the total number of accidents on both Class I and non-Class I railroads that involved the derailment of at least one rail car.

Source: AREMA 2002

Alternative C

The impacts on rail accidents from Alternative C would be very similar to those from Alternative B. The train operations and subsequent results would be similar with respect to rail operation safety. Alternative C requires fewer rail/highway at-grade crossings; see Section 4.1.3.2, Impacts on Grade Crossing Safety.

4.1.3.2 Impacts on Grade Crossing Safety

Alternative A (No-Action Alternative)

Because no new construction or changes in rail operations would occur, no safety impacts are expected to result from the No-Action Alternative. The annual accident frequency rate for the existing conditions on the UPRR Sharp Subdivision would not change.

Alternative B (Proposed Action)

SEA recognized that all of the highway/rail at-grade crossings proposed as part of Alternative B would be new crossings. SEA used the USDOT accident prediction equations to estimate the likelihood of an accident occurring at each new crossing. Accident history is an important part of the accident prediction equations. Consequently, SEA used the Web Accident Prediction System to review the FRA 10-year collision history for the 32 public at-grade crossings in the FRA database for the three counties (Juab, Sanpete, and Sevier) where the proposed project would be constructed.

The FRA 10-year collision history showed that there have been eight accidents in the past 10 years: three accidents in 2004, one accident in 2002, two accidents in 1999, and one accident in 1998. Four of the accidents occurred at two crossings, and five of the accidents occurred in Nephi, a city with 15 crossings in 3 miles of rail line. Alternative B would have nine public at-grade crossings. SEA concludes that the estimates shown in Table 4.1-5 fairly predict the impacts to at-grade crossing safety that would result from Alternative B. According to these estimates, Alternative B would result in approximately one at-grade accident per year for a total of 10 accidents in 10 years.

Table 4.1-5. Estimated Accidents at Grade Crossings

Crossing Name	Estimated Years between Accidents	Estimated Accidents per Year
<i>Crossings Proposed with Gates and Flashers</i>		
SR 24	17	0.058
US 50	17	0.058
<i>Crossing Proposed with Only Flashers</i>		
SR 78	9	0.110
<i>Crossings Proposed with Passive Devices</i>		
Public (9)	58	0.017
Private (43)	75	0.013
<i>All Crossings</i>		
All roads crossed by the project	1	0.954
Source: AREMA 2002		

Alternative C

The impacts on grade crossing safety from Alternative C would be the same as those from Alternative B.

4.1.3.3 Impacts on Pipeline Crossings

Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no excavation and therefore no impacts to existing pipelines.

Alternative B (Proposed Action)

According to the National Pipeline Mapping System, two major pipeline companies have facilities in the three-county study area: Kern River Gas Transmission Company and Questar Gas and Pipeline Company. SEA contacted both pipeline companies. The Kern River Gas representative said that none of the Kern River Gas facilities would be affected by Alternative B because they are west of I-15 (Donnelly 2006). The Questar representative identified a natural gas pipeline and local distribution lines near US 89 that would be crossed by either Alternative B or Alternative C (Peay 2005). Short-term disruption of the natural gas pipeline and distribution lines could occur but would be minimized by coordinating with Questar.

SEA used data from the Pipeline and Hazardous Material Safety Administration's Office of Pipeline Safety (USDOT 1998) to estimate the potential hazard from the proposed rail line crossing the Questar gas transmission and distribution lines. SEA has previously reviewed data concerning pipeline safety with respect to new rail line construction and operation and concluded that excavation during construction is the only likely cause of a pipeline accident (Surface Transportation Board 2002). Based on the response from Questar, SEA considered the possibility of accidents from the gas transmission line and from the distribution lines separately. SEA calculated the annual accident occurrence rate as 3.4×10^{-7} for a transmission line accident and 2.9×10^{-8} for a distribution line accident, or virtually no likelihood of pipeline accidents.

Alternative C

The impacts on pipeline crossings from Alternative C would be the same as those from Alternative B.

4.1.3.4 Impacts on Transportation of Hazardous Materials

Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so the existing risk levels for transporting hazardous materials would not change.

Alternative B (Proposed Action)

No hazardous materials would be transported over the proposed rail line (Washington Infrastructure Services, Inc. and others 2001). Therefore SEA determined that there is virtually no risk of a hazardous material release as a result of constructing or operating Alternative B. The Applicant expects to ship petroleum products, but in a volume less than 1% of the total volume of goods shipped, or less than 400 carloads per year. Since rail is a safer mode of transportation than trucks for hazardous materials and petroleum products, SEA believes that any shift from trucks to rail would have a slightly positive but unquantifiable effect on overall safety.

Based on this analysis, SEA has determined that the overall risk associated with Alternative B would be very low.

Alternative C

Under Alternative C, the risks associated with transporting hazardous materials would be the same as those under Alternative B.

4.1.3.5 Mitigation Measures for Impacts to Rail Safety

SEA has determined through its analysis and consultation with UDOT that the Proposed Action and Alternatives would have a negligible effect on rail operations. Mitigation is discussed in Section 6.3.1, Rail Operations and Safety, and Section 6.4.1, Rail Operations.

4.2 Land Use Impacts

4.2.1 Methodology

SEA considered the expected land use impacts from the construction and operation of the proposed rail line. The land use study area includes the right-of-way of 0.5 mile in each direction from the centerline of the proposed alternatives. SEA analyzed the proposed alternatives for compatibility with local land uses and agency land use plans. SEA also analyzed the expected effects on prime farmlands and grazing allotments. The acquisition and use of the right-of-way could affect local land use if the alternatives change the area's current development trends or alter local land use policies.

4.2.2 Impacts to Agriculture

The Applicant used the best available information to review the expected effects of the proposed alternatives on farmland, including farmland designated as prime, unique, and state important. The proposed rail line would directly impact farmland. Some farmland is within the proposed right-of-way and would be directly taken out of production. The project would also cause indirect and secondary impacts, which typically occur when farmland is taken out of production because the remaining parcels are too small to farm or because access to parcels is eliminated. Acquiring farmland for rail line construction is considered a farm displacement only if the amount of farmland remaining is not enough to farm.

To determine the indirect impacts, parcels were identified as being farmed either by visual review of 2004 National Agriculture Imagery Program aerial photography or by information obtained from NRCS and the Utah Division of Water Resources. Indirect impacts are those on farmland outside the right-of-way that is rendered non-farmable because of such impacts as the creation of remnants (parts of fields that are too small to farm economically) and disruption of access. There is no specific guidance regarding the size at which a farmland remnant becomes too small to farm economically. However, according to the Utah Farmland Assessment Act (FAA),¹ 5 acres is the size at which farmland can qualify for the FAA.

Each farmed parcel was then noted as being impacted as a strip, split, or total take. Remaining acreages near or under 5 acres were calculated. BLM or another appropriate government agency, in consultation with the property owner, would consider on a case-by-case basis whether farmland could remain farmable. Farmland with less than 5 acres remaining was considered non-farmable and an indirect impact for this analysis. See Table 4.2-1 below for land use impacts in the study area.

¹ The Utah Farmland Assessment Act allows qualifying agricultural property to be assessed and taxed based upon its productive capability instead of the prevailing market value. This unique method of assessment is vital to agriculture operations in close proximity to expanding urban areas, where taxing agricultural property at market value can make farming operations economically prohibitive.

**Table 4.2-1. Land Use Impacts within the Right-of-Way
of the Proposed Alternatives**

Land Administration/ Land Use	Juab County		Sanpete County		Sevier County		
	Alt. B (acres)	Alt. C (acres)	Alt. B (acres)	Alt. C (acres)	Alt. B (acres)	Alt. C (acres)	
Private	Agricultural	126.39	126.39	1.23	1.14	37.52	115.72
	Commercial/ industrial	—	—	—	—	—	0.29
	Idle	—	—	7.65	7.16	8.33	12.66
	Water/Reservoirs/ Riparian	—	—	—	—	6.00	—
	Residential	—	—	—	—	—	—
	No data	12.78	12.78	29.21	11.33	12.10	26.96
	<i>Subtotal</i>	<i>138.17</i>	<i>138.17</i>	<i>38.09</i>	<i>19.63</i>	<i>63.95</i>	<i>155.63</i>
State	Agricultural	—	—	1.13	1.13	1.29	—
	Commercial/ industrial	—	—	—	—	—	—
	Idle	—	—	4.74	4.74	—	—
	Water/Reservoirs/ Riparian	—	—	3.33	3.33	—	—
	Residential	—	—	—	—	—	—
	No data	6.67	6.67	62.16	70.71	2.43	14.34
	<i>Subtotal</i>	<i>6.67</i>	<i>6.67</i>	<i>71.36</i>	<i>79.91</i>	<i>3.72</i>	<i>14.34</i>
BLM	Agricultural	—	—	—	—	—	—
	Commercial/ industrial	—	—	—	—	—	—
	Idle	—	—	—	—	—	—
	Water/Reservoirs/ Riparian	—	—	—	—	—	—
	Residential	—	—	—	—	—	—
	No data	—	—	20.43	42.85	—	20.61
	<i>Subtotal</i>	<i>—</i>	<i>—</i>	<i>20.43</i>	<i>42.85</i>	<i>—</i>	<i>20.61</i>
Total	145.84	145.84	129.88	142.39	67.67	190.58	

Source: HDR Engineering, Inc. 2006a

4.2.2.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built. However, some agricultural land would likely be converted to residential, commercial, industrial, and recreational uses. The amount of agricultural land that might be converted to these other uses is not known at this time.

4.2.2.2 Alternative B (Proposed Action)

Alternative B would involve construction of a new rail line that would connect the UPRR mainline to shippers within portions of Juab, Sanpete, and Sevier Counties. The alternative would run from the UPRR mainline near Juab to the Salina area. The impacts to farmland in the farmland study area are shown in Table 4.2-2. Because the exact locations of sidings, temporary access roads, and maintenance yards within the right-of-way are not yet known, numbers for impacts to the specific types of land uses within the right-of-way may slightly change. Under Alternative B, there would be impacts to about 43 acres of irrigated farmland and about 9 acres of non-irrigated farmland. About 36 acres of farmland would be indirectly impacted by Alternative B.

Table 4.2-2. Direct Impacts to Crops or Farmland

Crop or Farmland Type	Alternative B (acres)	Alternative C (acres)
<i>Irrigated Crops or Farmland</i>		
Grass hay	0.80	9.54
Grain	2.62	3.69
Corn	4.13	5.24
Pasture	19.33	33.74
Alfalfa	16.18	69.32
Total irrigated	43.06	121.53
<i>Non-irrigated Crops or Farmland</i>		
Alfalfa	1.72	1.72
Grain/beans/seeds	3.20	3.20
Pasture	4.00	4.00
Total non-irrigated	8.92	8.92

4.2.2.3 Alternative C

Alternative C would cross fewer agricultural parcels than Alternative B. However, because the rail line would need to be placed on a 75-foot-tall berm through the agricultural land between the foothills and the loading facility north of I-70 near Salina's industrial park, it would impact more farmland acreage. The impacts to farmland in the farmland study area are shown above in Table 4.2-2, Direct Impacts to Crops or Farmland. Because the exact

locations of sidings, temporary access roads, and maintenance yards within the right-of-way are not yet known, the numbers for impacts to the specific types of land uses within the right-of-way may change slightly. Under Alternative C, there would be impacts to about 122 acres of irrigated farmland and about 9 acres of non-irrigated farmland. About 13 acres of farmland would be indirectly impacted by Alternative C.

4.2.2.4 Mitigation Measures for Impacts to Agriculture

Mitigation measures for impacts to agriculture are discussed in Section 6.3.2.1, Mitigation Measures for Impacts to Agriculture, and Section 6.4.2.3, Agriculture.

4.2.3 Impacts to Local Land Use and Zoning

4.2.3.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be constructed. There would be no changes to local land use or zoning as a result of railroad construction. Other locally constructed projects might require land use or zoning changes, but these projects would be independent of the proposed rail construction.

4.2.3.2 Alternative B (Proposed Action)

Juab County

Within Juab County, 146 acres of land would be impacted, including 139 acres of private land, 7 acres of state land, and 0 acres of BLM-administered public lands. See Figure 4-1, Impacts to Land Ownership, and Figure 4-2, Land Use Impacts. The acres of land impacted are shown in Table 4.2-3. Right-of-way acquisition for Alternative B is not expected to change the area's current development trends or alter local land use policies.

Table 4.2-3. Land Ownership within the Right-of-Way of the Proposed Alternatives

Ownership	Juab County		Sanpete County		Sevier County	
	Alt. B (acres)	Alt. C (acres)	Alt. B (acres)	Alt. C (acres)	Alt. B (acres)	Alt. C (acres)
Fillmore BLM	0	0	NA	NA	NA	NA
Richfield BLM	NA	NA	21	30	0	21
State	7	7	70	65	4	14
Private	139	139	71	53	64	137
Total	146	146	162	148	68	172
NA = data not available						

As noted in Section 3.2.3.1, Juab County, the areas zoned GMRF-1 (Grazing, Mining, Recreation and Forestry District) and A-1 (Agricultural District) comprise most of the county. The GMRF-1 District does not permit railroads, so a change in zoning would be required for these lands. No change in zoning would be required for lands in the A-1 District because railroad tracks, spurs, switches, and facilities are permitted uses of the A-1 District (Juab County, no date). The wye and associated tracks would be located in the A-1 District. The rest of the tracks in Juab County would be in the GMRF-1 District.

Sanpete County

Within Sanpete County, 162 acres of land would be impacted, including 71 acres of private land, 70 acres of state land, and 21 acres of Richfield BLM-administered public lands. The land uses and land ownership impacted are shown above in Table 4.2-3, Land Ownership within the Right-of-Way of the Proposed Alternatives. Use of BLM land for power lines, sidings, maintenance facilities, or temporary and/or permanent access roads would be authorized by the BLM Richfield Field Office in compliance with applicable land use polices and permitting regulations.

Alternative B would cross lands that are zoned A (Agricultural) and SL (Sensitive Lands). Lands zoned A occur primarily south of the Sevier Bridge Reservoir about 3 miles north of the Sanpete County–Sevier County border. The remaining land impacts are in the SL zone, which includes grazing lands, mountains, and canyons.

Sevier County

Within Sevier County, 68 acres of land would be impacted, including 64 acres of private land, 4 acres of state land, and 0 acres of BLM-administered lands would be affected. The land uses and land ownership impacted are shown in above in Table 4.2-3, Land Ownership within the Right-of-Way of the Proposed Alternatives.

As with Juab and Sanpete Counties, the land use in Sevier County is primarily agricultural with A5-25 (Agriculture), GRF 20 (Grazing Recreation Forestry), and GRF 5 (Grazing Recreation Forestry) zoning districts present. Alternative B would primarily cross lands zoned A5-25 and would terminate with a loop in an area designated by the community of Salina as a future industrial park. Railroads are not discussed as permitted or restricted uses within the A5-25 zone but would generally not affect the land uses or zoning in the area.

4.2.3.3 Alternative C

Juab County

In Juab County, the impacts from Alternative C would be the same as those from Alternative B because the alternatives share the same alignment in Juab County.

Sanpete County

Within Sanpete County, 148 acres of land would be impacted, including 53 acres of private land, 65 acres of state land, and 30 acres of Richfield BLM-administered public lands. The land uses and land ownership impacted are shown above in Table 4.2-3, Land Ownership within the Right-of-Way of the Proposed Alternatives. The land use and zoning impacts would be the same as those from Alternative B. Use of BLM land outside the right-of-way for power lines, sidings, maintenance facilities, or temporary and/or permanent access roads would be authorized by the BLM Richfield Field Office in compliance with applicable land use policies and permitting regulations.

Sevier County

Within Sevier County, 172 acres of land would be impacted, including 137 acres of private land, 14 acres of state land, and 21 acres of Richfield BLM-administered public lands. The land uses and land ownership impacted are shown above in Table 4.2-3, Land Ownership within the Right-of-Way of the Proposed Alternatives. Use of BLM land outside the right-of-way for power lines, sidings, maintenance facilities, or temporary and/or permanent access roads would be authorized by the BLM Richfield Field Office in compliance with applicable land use policies and permitting regulations.

As with Juab and Sanpete Counties, the land use in Sevier County is primarily agricultural, with A5-25 (Agriculture), GRF 20 (Grazing Recreation Forestry), and GRF 5 (Grazing Recreation Forestry) zoning districts present. Alternative C would primarily cross lands zoned GRF 20 and GRF 5 north of US 50. The lands in this area are primarily used for grazing rather than irrigated agricultural lands. South of US 50, Alternative C would cross lands zoned A5-25. These lands are primarily used for irrigated agriculture. Alternative C would terminate with a loop in an area that has been designated by the community of Salina as a future industrial park. Railroads are not discussed as permitted or restricted uses within these zones but would generally not affect the land uses or zoning in the area.

4.2.3.4 Mitigation Measures for Impacts to Local Land Use and Zoning

No mitigation is proposed for local land use and zoning.

4.2.4 Impacts to State Land Use (Utah Trust Lands)

4.2.4.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be constructed. No land would be leased from SITLA. Other locally constructed projects might require lease or purchase of SITLA lands, but these projects would be independent of the proposed rail construction. At this time, no additional projects are anticipated.

4.2.4.2 Alternative B (Proposed Action)

Under Alternative B, 81.75 acres of land would be leased from SITLA for construction and operation of the rail line. By state law, the trust lands can be used for commercial and industrial enterprises, so the railroad would be a compatible land use on SITLA lands.

4.2.4.3 Alternative C

Under Alternative C, 100.92 acres of land would be leased from SITLA for construction and operation of the rail line. The railroad would be a compatible land use on SITLA lands.

4.2.4.4 Mitigation Measures for Impacts to State Land Use

SEA has determined through its analysis and consultation with SITLA that the Proposed Action and Alternatives would have a negligible effect on state lands.

4.2.5 Impacts to Federal Land Use (Bureau of Land Management)

4.2.5.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be constructed. A right-of-way grant would not be obtained from BLM. Other locally constructed projects might require a right-of-way grant from BLM, but these projects would be independent of the proposed rail construction. Currently, construction of the Quitcupah Creek Road project would require a right-of-way grant.

4.2.5.2 Alternative B (Proposed Action)

Alternative B would not conflict with any existing land use regulations or policies in any BLM Management Framework Plan or Resource Management Plan or substantially change or alter the way the affected public lands are managed. Alternative B would not result in a change of resource uses, levels of use, areas of production, protection of resources, resource condition goals, resource condition objectives, management constraints, or management practices. Therefore, the Proposed Action is considered to be in conformance with the existing plans for the Richfield and Fillmore Field Offices.

Based on GIS (geographic information system) information provided by BLM and an overlay of the proposed project area, a right-of-way grant for about 20.43 acres of land would be obtained from BLM (Richfield Field Office) for the construction and operation of Alternative B. Most of the area that would be crossed by Alternative B is managed for multiple uses including recreation, grazing, and wildlife. The Sevier Bridge Reservoir is the only area within the right-of-way for Alternative B that is not managed for multiple uses. It is designated as a Special Resource Management Area. No other areas of critical environmental concern, wild and scenic rivers, areas with special management designations, or areas dedicated to special-status species management would be affected.

Construction and operation of the railroad would be compatible uses under BLM's multiple-use directive. Construction and operation of the railroad near the Sevier Bridge Reservoir would not affect the recreational land use around the reservoir. For more information on recreation impacts, see Section 4.14, Impacts to Recreation.

There are no withdrawals or designations presently existing on the described public lands that would preclude the issue of a right-of-way grant for Alternative B. The proposed right-of-way would be issued subject to the existing valid, prior rights-of-way as described in Appendix D, Prior Existing Rights.

Fences would be placed along the railroad right-of-way in cooperation with BLM guidance; these fences would limit recreation, grazing, and wildlife use along the rail right-of-way. For specific impacts to these resources, see Section 4.14, Impacts to Recreation, Section 4.2.6, Impacts to Grazing Allotments, and Section 4.3, Impacts on Biological Resources.

4.2.5.3 Alternative C

Based on GIS information provided by BLM and an overlay of the proposed project area, a right-of-way grant for about 63.46 acres of land would be necessary from BLM (Richfield Field Office) for the construction and operation of Alternative C. Alternative C would be compatible with the multiple-use directive on BLM lands and would have the same impacts as Alternative B.

There are no withdrawals or designations presently existing on the described public lands that would preclude the issue of a right-of-way grant for Alternative C. The proposed right-of-way would be issued subject to the existing valid, prior rights-of-way as described in Section 3.2.5.3, Prior Existing Rights-of-Way.

4.2.5.4 Mitigation Measures for Impacts to Federal Land Use

Mitigation measures for access to public land and recreation routes are discussed in Section 6.3.2.2, Mitigation Measures for Impacts to Federal Land Use, and Section 6.4.2, Land Use.

4.2.6 Impacts to Grazing Allotments

The proposed rail line would cause direct impacts to 10 grazing allotments administered by BLM as shown in Figure 4-3, Impacts to Grazing Allotments. Table 4.2-4 below provides an overview of the direct impacts to grazing allotments on public, state, and private lands within 0.5 mile of the centerline for each of the proposed alternatives. Each alternative is summarized by grazing allotment, acres impacted, and animal unit month (AUM) affected. An AUM is the amount of forage required to feed one cow for 1 month. The loss of each AUM would reduce the area available to graze cattle, which would cause an economic impact.

Indirect impacts typically result when transportation improvements bisect a grazing allotment and the remaining parcel is too small to graze. Other indirect impacts are usually short-term and include dust from construction activities, which could displace cattle from parts of an allotment during construction.

Table 4.2-4. Grazing Allotments Affected by the Proposed Alternatives

Grazing Allotment	Total Allotment Acreage in Study Area ^a	Acres Impacted		Permitted AUMs ^b	AUMs in Farmland Study Area ^c	AUMs Impacted	
		Alt. B	Alt. C			Alt. B	Alt. C
<i>Richfield Field Office</i>							
West Side	532	4.30	4.30	405	—	—	—
Denmark	2,255	0.00	20.92	976	15	0.00	0.14
South Valley	3,593	0.41	38.60	849	30	0.00	0.32
Little Valley	970	11.64	11.64	798	—	—	—
Red Canyon	545	0.00	0.00	702	3	0.00	0.00
River	964	13.90	13.90	34	4	0.06	0.06
Timber Canyon	2,745	31.48	31.48	654	15	0.17	0.17
<i>Fillmore Field Office</i>							
Yuba	543	12.0	12.0	539	—	2.0	2.0
Washboard	272	12.6	12.6	857	—	2.0	2.0
Chriss Creek	78	0.00	0.00	78	—	—	—
Total	12,497	86.33	145.44	5,892	67	4.23	4.69

^a Acreage within 0.5 mile of each side of the proposed alternatives.

^b AUM = animal unit month; the amount of forage required to feed one cow for 1 month. The total AUMs shown are for the entire allotment, not just for the portion of the allotment in the study area.

^c No AUMs were determined for grazing allotments on state land even though the state land is administered in common with BLM. State land used in common with BLM would also be crossed by the rail line in the West Side, Little Valley, Yuba, Washboard, and Chriss Creek allotments.

Sources: Williams 2005; Lichthardt 2006

4.2.6.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, there would be no direct or indirect impacts to grazing allotments that are actively being used, and the land would continue to be grazed.

4.2.6.2 Alternative B (Proposed Action)

Under Alternative B, 7 grazing allotments would be directly impacted for a total reduction of about 98.92 grazing acres and a reduction of about 4.23 AUMs.

The land affected by the proposed rail line would be removed from the associated grazing allotments. Due to the small amount of forage that would be lost, the grazing permits would not likely be adjusted. Grazing allotments located on SITLA lands would require an easement

to be obtained for the proposed rail line in coordination with proper state trust land procedures.

The indirect impacts would be short-term and would typically last less than 1 year for any particular section of the rail line. The following indirect impacts could occur:

- Dust on forage adjacent to the right-of-way could reduce the palatability of the forage.
- The frequency of fires could increase, which would alter the composition of forage.
- The operation of heavy equipment during construction could displace livestock.

4.2.6.3 Alternative C

Under Alternative C, 8 grazing allotments would be directly affected for a total reduction of about 158.03 grazing acres and a reduction of about 4.69 AUMs. Under Alternative C, the proposed rail line would separate a well on private land used as a water supply from the allotment.

The land affected by the proposed rail line would be removed from the associated grazing allotments. Due to the small amount of forage that would be lost, the grazing permits would not likely be adjusted. Grazing allotments located on SITLA lands would require an easement to be obtained for the proposed rail line in coordination with proper state trust land procedures.

The indirect impacts would be short-term and would typically last less than 1 year for any particular section of the rail line. The following indirect impacts could occur:

- Dust on forage adjacent to the right-of-way could reduce the palatability of the forage.
- The operation of heavy equipment during construction could displace livestock.

4.2.6.4 Mitigation Measures for Impacts to Grazing Allotments

Mitigation measures for the 10 grazing allotments that lie within the right-of-way of the proposed alternatives are discussed in Section 6.4.2.4, Grazing Allotments.

4.3 Impacts on Biological Resources

4.3.1 Methodology

SEA, in coordination with USFWS, evaluated the expected effects of the project alternatives on plant communities, wildlife resources, and threatened, endangered, and sensitive species in the study area. SEA evaluated these effects by interpreting data collected from published reports, feasibility studies, regulatory agency documents, guidance manuals, discussions with resource personnel, aerial photographs, USGS topographic maps, and fall, spring, and summer pedestrian (walking) survey field inspections and by analyzing data in GIS. The study area for each biological resource was defined in the appropriate subsection of Section 3.3, Biological Resources. Other than pedestrian observational surveys, no specific survey protocols were identified as necessary to determine the potential for impacts to species listed in this section.

In order to calculate the acreage of impacts from the project, SEA performed GIS calculations using resource data and right-of-way boundaries for each proposed alternative. Areas investigated with the GIS calculations include wildlife sanctuaries, refuges, state parks, wetlands, and vegetation communities.

SEA consulted with state and federal officials regarding the potential presence of any threatened, endangered, or sensitive species in the project area. The characteristics (preferred habitat and behavior) of the species identified by these agencies were further researched to determine the probability of the species occurring within the project area and to determine the species with potential to be affected by project construction and operation.

4.3.2 Plant Communities

SEA evaluated the effects of the proposed alternatives on existing plant communities in the study area. The evaluation included construction-related impacts as well as impacts related to operation and maintenance of the proposed rail line.

Construction of the proposed alternatives would require clearing all existing vegetation within the project right-of-way. This right-of-way varies from 50 feet wide to 550 feet wide depending on the location of grade-separated crossings, construction staging areas, and necessary construction specific to each alternative. Some areas of natural vegetation would be permanently lost due to construction of the rail line bed.

Table 4.3-1 below lists the direct impacts to plant communities from each of the alternatives. For a more detailed description of each plant community type in the study area, see Section 3.3.2, Plant Communities.

Table 4.3-1. Plant Community Impacts

Vegetation Community	Direct Impacts (acres)		
	Alt. A	Alt. B ^a	Alt. C ^a
Agricultural vegetation	0	194	278
Sagebrush community	0	98	100
Grasslands	0	53	94
Salt desert scrub	0	27	25
Juniper community	0	0	0
Lowland riparian	0	3	0
<i>Subtotal</i>	<i>0</i>	<i>375</i>	<i>497</i>
Emergent marsh ^b	0	71	71
Wet meadow ^b	0	92	92
Total	0	538	660

^a Areas of direct impacts for the proposed alternatives were calculated using the right-of-way boundaries for each alternative.

^b For more information, see Section 4.4.7, Impacts to Wetlands and Waters of the U.S.

4.3.2.1 Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to plant communities.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to plant communities related to operation and maintenance of the rail line.

4.3.2.2 Alternative B (Proposed Action)

Construction Impacts

Construction impacts from Alternative B include removal of 194 acres of agricultural vegetation, 98 acres of sagebrush communities, 53 acres of grasslands, 27 acres of salt desert scrub, and 3 acres of lowland riparian vegetation communities. Impacts to wetland communities such as wet meadow and emergent marsh are described in Section 4.4, Impacts to Water Resources. Impacts to plant communities assume that all existing vegetation within the right-of-way for Alternative B would be cleared. For most of the right-of-way, this would be a short-term impact because cleared areas outside the rail line right-of-way would be reseeded.

Construction of a permanent rail line for Alternative B would cause minor fragmentation of some plant communities and would reduce the biological function of those communities by a small amount. Alternative B would consist of a long, thin, linear feature (the rail line) that would cause low impacts to any one type of plant community.

Whenever existing plant communities are disturbed, invasive and non-native plant species could be introduced. Some of the commonly found invasive and non-native plant species in the study area include cheatgrass (*Bromus tectorum*), halogeton (*Halogeton glomeratus*), Russian thistle (*Salsola iberica*), salt cedar (*Tamarix ramossisima*), common reed (*Phragmites australis*), and curly cup gumweed (*Grindelia squarossa*). Construction impacts could introduce some of these invasive and non-native plant species. However, following best management practices (BMPs) would help prevent the introduction of these species (see Section 6.3.3, Biological Resources).

Operation and Maintenance Impacts

During the operation of Alternative B, accidents or equipment failure could release petroleum products from the train engines and associated machinery into the adjacent plant communities. The trains would haul primarily coal, which is not considered to be a hazardous material. In the unlikely event of a coal or petroleum spill, the area would be cleaned up to prevent irreparable harm to the environment.

Maintenance procedures for parts of the Alternative B right-of-way could include periodic application of herbicides to control unwanted vegetation. Control of excess vegetation within the right-of-way also reduces the potential for fires (see Section 4.3.5, Accidental Fires). Herbicides could affect the surrounding plant communities if they are improperly applied. All herbicides would be used in accordance with regulatory requirements.

Maintenance procedures would also include occasional mowing if vegetation becomes a problem within the right-of-way. Operation and maintenance activities would have minor impacts on the surrounding plant communities. In many areas where weedy species are common, the application of herbicides would control weeds, resulting in improved vegetation immediately adjacent to the rail line.

4.3.2.3 Alternative C

Construction Impacts

Construction impacts from Alternative C would include the removal of 278 acres of agricultural vegetation, 100 acres of sagebrush communities, 94 acres of grasslands, and 25 acres of salt desert scrub vegetation communities. Impacts to wetland communities such as wet meadow and emergent marsh are described in Section 4.4, Impacts to Water Resources. Impacts to plant communities assume that all existing vegetation within the right-of-way for

Alternative C would be cleared. For most of the right-of-way, this would be a short-term impact because cleared areas outside the rail line right-of-way would be reseeded.

Under Alternative C, minor fragmentation of plant communities and the potential for introducing invasive and non-native species would be the same as under Alternative B.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance impacts on plant communities would be the same as those from Alternative B.

4.3.3 Wildlife Resources

Various wildlife resources are found within the project area (see Table 3.3-2, Common Wildlife Species in the Study Area). SEA evaluated the effects of the proposed alternatives on wildlife resources. The evaluation included construction-related impacts as well as impacts related to operation and maintenance of the proposed rail line.

Wildlife habitat in the project study area has already been somewhat fragmented due to the previous construction of highway rights-of-way and smaller roads and the conversion of land for agricultural, residential, commercial, and industrial uses. SEA expects that the impacts from constructing and operating a rail line with anticipated traffic of one round trip (two movements which equals one full load and one empty back-haul) per day would not contribute significantly to habitat fragmentation and the alteration of wildlife behavior in the project area.

4.3.3.1 Wildlife in the Area

Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to wildlife in the area.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to wildlife in the area related to operation and maintenance of the rail line.

Alternative B (Proposed Action)

Construction Impacts

Under Alternative B, construction impacts to wildlife in the area are anticipated to be minor and short-term. The right-of-way varies from 50 feet wide to 150 feet wide depending on

local conditions. Construction activities would temporarily displace several species of wildlife during construction, but they would likely return after construction.

Operation and Maintenance Impacts

During operation of Alternative B, accidents or equipment failure could release petroleum products from the train engines and associated machinery into the adjacent wildlife habitat. The trains would haul coal (no other specific commodities have been determined), which is not considered to be a hazardous material. In the unlikely event of a coal or petroleum spill, the area would be cleaned up to prevent irreparable harm to the environment.

Maintenance procedures for parts of the Alternative B right-of-way could include periodic application of herbicides to control unwanted vegetation. Herbicides could affect the surrounding wildlife habitat if they are improperly applied. All herbicides would be used in accordance with regulatory requirements.

Maintenance procedures would also include occasional mowing if vegetation becomes a problem within the right-of-way. Occasional mowing could kill or injure small rodents and reptiles using the right-of-way. Operation and maintenance activities would have minor impacts on the surrounding wildlife habitat.

Alternative C

Construction Impacts

Under Alternative C, the construction impacts to wildlife in the area would be the same as those from Alternative B.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance impacts to wildlife in the area would be the same as those from Alternative B.

4.3.3.2 Wildlife Corridors

As described in Section 3.3.3.2, Wildlife Corridors, there are important corridors for wildlife and migratory birds in the study area. The Utah Division of Wildlife Resources (UDWR) has stated that the proposed alternatives would bisect critical and high-value winter range for two separate deer herds in the Valley Mountains and the San Pitch Mountains (see Figure 4-4, Impacts to Elk and Mule Deer Seasonal Range).

Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to wildlife corridors.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to wildlife corridors related to operation and maintenance of the rail line.

Alternative B (Proposed Action)

Construction Impacts

Construction of Alternative B would result in a relatively small amount of habitat loss within wildlife corridors for migratory birds and big-game mammals. However, because of the timing of the construction of the rail line and the temporary nature of construction, SEA does not anticipate that these construction activities would be a substantial barrier to wildlife movement. Construction of Alternative B would not compromise the biological function of these wildlife corridors.

Operation and Maintenance Impacts

Under Alternative B, rail operations would conflict with the winter movements of two separate deer herds in the Valley Mountains and the San Pitch Mountains. The result of the conflict would be deer-train collisions. Deer-train collisions are expected and would result in deer mortality. However, existing coal-hauling trucks along SR 28 are currently a major source of deer mortality. According to records of road kills from 2001 to 2005 provided by UDWR, on average 15 deer are killed per month along the entire 38.8-mile length of SR 28 (Sakaguchi 2005). Given these data, the removal of many large trucks from SR 28 and the construction of the proposed rail line could result in a net decrease in deer mortality within the wildlife corridors in the study area.

Similarly, any collisions between migratory birds and trains might be offset by fewer collisions with trucks along SR 28. Therefore, the net effect of the project might be to decrease the net number of wildlife collisions within the wildlife corridors in the study area.

Alternative C

Construction Impacts

Under Alternative C, construction impacts to wildlife corridors would be the same as those from Alternative B.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance impacts to wildlife corridors would be the same as those from Alternative B.

4.3.3.3 Wildlife Sanctuaries, Refuges, and State Parks

Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to wildlife refuges.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to wildlife refuges related to operation and maintenance of the rail line.

Alternative B (Proposed Action)

Construction Impacts

Under Alternative B, construction impacts would occur to both Yuba Lake Recreation Area and the Redmond WMA. Alternative B would impact 10.8 acres of wildlife habitat associated with Yuba Lake Recreation Area. These impacts would consist of 8.9 acres of sagebrush community and 1.9 acres of agricultural lands. Yuba Lake Recreation Area is mostly surrounded by sagebrush communities. Waterfowl species typically do not use sagebrush communities adjacent to water bodies. Although some wildlife habitat associated with these vegetation communities would be lost, the function of Yuba Lake Recreation Area as a wildlife refuge and migratory stop-over for waterfowl would not be affected by the loss of such a small amount of upland acreage. Alternative B would cross the Sevier Bridge Reservoir on a bridge located at Yuba Narrows. Locating the bridge at this location would allow spanning the lake without placing any dredge, fill, or bridge structures into the Sevier Bridge Reservoir.

Additionally, Alternative B would impact 4.3 acres of wildlife habitat in the Redmond WMA. These impacts would consist of 2.9 acres of agricultural lands and 1.4 acres of riparian habitat. Although construction of Alternative B would result in only a small amount of direct

habitat loss, UDWR stated that construction of Alternative B could disrupt the flow of water from west of Redmond WMA that is crucial to the maintenance and health of the wetland habitat in the area. In addition, Sevier Bridge Reservoir and Chicken Creek Reservoir Bird Habitat Conservation Areas may be similarly affected through potential impacts to the health of wetland habitat.

Although the construction of the proposed project could affect the Redmond WMA, proper BMPs and other mitigation measures would be implemented (see Section 6.3.3, Biological Resources) so that these impacts would not significantly diminish the functions of either the Yuba Lake Recreation Area or the Redmond WMA.

Operation and Maintenance Impacts

Under Alternative B, the impacts from the operation and maintenance of Alternative B on wildlife refuges would be the same as those described for Alternative B in Section 4.3.2, Plant Communities, and Section 4.3.3, Wildlife Resources. Since the flow of water would be maintained to wildlife habitat in Redmond WMA, the operation and maintenance impacts from Alternative B would be minor.

Alternative C

Construction Impacts

Under Alternative C, construction impacts to Yuba Lake Recreation Area would be the same as those from Alternative B. There would be no construction-related impacts to Redmond WMA from Alternative C.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance impacts to Yuba Lake Recreation Area would be the same as those as those from Alternative B. There would be no operation or maintenance impacts to Redmond WMA from Alternative C.

4.3.4 Threatened, Endangered, and Sensitive Species

USFWS has determined that the proposed project would have no effect on threatened, endangered, or sensitive species (see Appendix B, U.S. Fish and Wildlife Coordination). Table 4.3-2 below lists the threatened, endangered, and sensitive species that could occur in the study area and therefore could potentially be negatively affected by the proposed alternatives. This table also addresses the state status, the federal status, and the potential for negative impacts from the proposed alternatives for 17 species of concern. USFWS has designated critical habitat for two federally listed species in the table: one bird species, the southwestern willow flycatcher (*Empidonax traillii extimus*), and one plant species, the heliotrope milkvetch (*Astragalus montii*). However, the areas designated as critical habitat for

each of these species are outside the project right-of-way. Also, BLM has stated that no threatened, endangered, or sensitive species are present on BLM-administered land in the project right-of-way (Greenwood 2005). As part of mitigation for the impacts from this project, surveys for specific species would be conducted prior to construction, if required by the affected land management agency. These surveys would be conducted according to agency-approved protocols.

Table 4.3-2. Federal and State Listed Threatened, Endangered, and Sensitive Species of Concern and Their Potential To Be Affected by the Proposed Alternatives

Common Name	Scientific Name	State Status	Federal Status	Potential for Negative Impacts from the Proposed Alternatives
<i>Birds</i>				
Bald eagle	<i>Haliaeetus leucocephalus</i>	SPC	T	Potential for negative impacts is low for both Alternative B and Alternative C. Bald eagles are winter migrants in the project corridor. There is little if any suitable nesting habitat present.
Burrowing owl	<i>Althene cunicularis</i>	SPC	—	Potential for negative impacts is low for both Alternative B and Alternative C. Burrowing owls were observed in multiple locations in the foothills of the Valley Mountains during field surveys. Burrowing owls are ground nesters in grasslands and prairie habitats. Burrowing owl dens were not identified within the right-of-way corridor for either alternative.
Ferruginous hawk	<i>Buteo regalis</i>	SPC	—	The potential for negative impacts is low for both Alternative B and Alternative C. Ferruginous hawks occur in grasslands, agricultural lands, and sagebrush, saltbrush, and greasewood shrub lands and along the edges of pinyon-juniper zones. The study area includes these habitat types; however, ferruginous hawks are encountered so rarely that the probability of occurrence in the project corridor is low.
Long-billed curlew	<i>Numenius americanus</i>	SPC	—	Potential for negative impacts is medium for Alternative B (which impacts 4.3 acres of the Redmond WMA) and low for Alternative C. Alternative C would not impact the Redmond WMA. Additionally, it would be spatially separated from the Redmond WMA. Long-billed curlew habitat requirements include short-stature grasslands with a bare ground component, shade, and abundant prey base, all of which are found in and immediately adjacent to the Redmond WMA.
Northern goshawk	<i>Accipiter gentiles</i>	SPC	—	No potential for negative impacts for either Alternative B or Alternative C. Northern goshawks prefer nesting in mature mountain forests and riparian-zone habitats. No mature mountain forests are within the project corridor.

Common Name	Scientific Name	State Status	Federal Status	Potential for Negative Impacts from the Proposed Alternatives
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	SPC	E	Potential for negative impacts is low for Alternative B and Alternative C. Southwestern willow flycatchers prefer enclosed riparian canopy. Inadequate riparian habitats are present in the project area to sustain this species. The project area is outside the known distribution of this species.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	SPC	C	Potential for negative impacts is low to none for Alternative B and Alternative C. Western yellow-billed cuckoos require a fairly enclosed riparian canopy habitat. There are inadequate amounts of riparian canopy in the project corridor to support this species. There are no historical accounts of western yellow-billed cuckoo in the project corridor.
<i>Mammals</i>				
Kit fox	<i>Vulpes macrotis</i>	SPC	—	Potential for negative impacts is very low to none for Alternative B and Alternative C. Kit foxes prefer open prairie, plains, and desert habitat. The project corridor is too urbanized to support this species.
Utah prairie dog	<i>Cynomys parvidens</i>	SPC	T	Potential for negative impacts is very low to none for Alternative B and Alternative C. The project area is outside the known distribution of this species. No prairie dog colonies or mounds were observed during field surveys.
<i>Fish</i>				
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	CS	—	No potential for negative impacts for either Alternative B or Alternative C. Bonneville cutthroat trout occurs in Chicken Creek Reservoir. No impacts to this reservoir are anticipated from the proposed project.
Least chub	<i>Lotichthys phlegethontis</i>	CS	—	Potential for negative impacts to the least chub is low to none for Alternative B and Alternative C. Least chub occurs in the Sevier River and its tributaries. Alternative B and Alternative C both cross the Sevier Bridge Reservoir at Yuba Narrows. This area would be spanned. No bridge structures or fill material would be placed in the Sevier River.
Leatherside chub	<i>Gila copei</i>	SPC	—	Potential for negative impacts to the leatherside chub is low to none for Alternative B and Alternative C. Leatherside chub occurs in the Sevier River and its tributaries. Alternative B and Alternative C both cross the Sevier Bridge Reservoir at Yuba Narrows. This area would be spanned. No bridge structures or fill material would be placed in the Sevier River.

Common Name	Scientific Name	State Status	Federal Status	Potential for Negative Impacts from the Proposed Alternatives
<i>Amphibians</i>				
Columbia spotted frog	<i>Rana luteiventris</i>	CS	—	No potential for negative impacts for either Alternative B or Alternative C. Columbia spotted frog exists in known locations in Juab Valley, but none were identified in the project corridor during field surveys. The Columbia spotted frog prefers isolated springs, and no impacts to springs are anticipated with this project.
<i>Mollusks</i>				
Toquerville springsnail	<i>Pyrgulopsis kolobensis</i>	SPC	—	No potential for negative impacts for either Alternative B or Alternative C. No impacts to springs are anticipated from the proposed project. Toquerville springsnail is associated with springs.
<i>Plants</i>				
Heliotrope milkvetch	<i>Astragalus montii</i>	SPC	T	No potential for negative impacts for either Alternative B or Alternative C. Heliotrope milkvetch habitat is at high elevation (10,600–10,900 feet), which is outside the elevation range for the proposed project.
Last chance townsendia	<i>Townsendia aprica</i>	SPC	T	No potential for negative impacts for either Alternative B or Alternative C. Last chance townsendia is found only in soils derived from the Mancos Formation. No Mancos Formation is found within project corridor.
Wright fishhook cactus	<i>Sclerocactus wrightiae</i>	SPC	E	No potential for negative impacts for either Alternative B or Alternative C. Wright fishhook cactus has never been documented to occur within the project corridor. The project corridor is outside the known distribution of this species.

Federal Status

T = Threatened
E = Endangered
C = Candidate for Listing

State Status

SPC = State Species of Concern
CS = Conservation Species. This designation indicates that the species has a conservation agreement in place. Conservation agreements are voluntary cooperative plans among resource agencies. The purpose of a conservation agreement is to take measures to conserve and protect the species and its habitat so that it will not become federally listed.

Source: UDWR 2006

4.3.4.1 Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to threatened, endangered, or sensitive species.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to threatened, endangered, or sensitive species related to operation and maintenance of the rail line.

4.3.4.2 Alternative B (Proposed Action)

Construction Impacts

As described above in Table 4.3-2, Federal and State Listed Threatened, Endangered, and Sensitive Species of Concern and Their Potential To Be Affected by the Proposed Alternatives, no impacts are anticipated to most threatened, endangered, or sensitive species. Construction of Alternative B could affect three special-status species: long-billed curlew, least chub, and leatherside chub.

Suitable habitat for the long-billed curlew occurs within the Redmond WMA. Construction of Alternative B would impact up to 4.3 acres in the Redmond WMA. However, there are no known documented occurrences of long-billed curlew nesting within the area affected by Alternative B.

The least chub and the leatherside chub both occur in the Sevier River. Alternative B crosses the Sevier Bridge Reservoir at Yuba Narrows and again farther south in Sevier County. Placing the bridge at this location would allow spanning the lake without placing any bridge structures, dredge, or fill material into the lake. The potential for negative impacts to the least chub and the leatherside chub is low to none for Alternative B. Additional mitigation measures to avoid or minimize any impacts to these fish are described in Section 6.3.3, Biological Resources.

Burrowing owls have been observed by HDR biologists near the project right-of-way west of Alternative B in the foothills of the Valley Mountains. Burrowing owl dens were not identified within the right-of-way for Alternative B. The potential for negative impacts to burrowing owls is low for this alternative.

Operation and Maintenance Impacts

During operation of Alternative B, accidents or equipment failure could release petroleum products from the train engines and associated machinery into the adjacent habitat for the long-billed curlew, least chub, and leatherside chub. The trains would haul primarily coal,

which is not considered to be a hazardous material. In the unlikely event of a coal or petroleum spill, the area would be cleaned up to prevent irreparable harm to the environment.

Collisions between long-billed curlews and trains might occur infrequently, but operational and maintenance activities for Alternative B would not likely affect the long-term viability of any threatened, endangered, or sensitive species.

4.3.4.3 Alternative C

Construction Impacts

As described above in Table 4.3-2, Federal and State Listed Threatened, Endangered, and Sensitive Species of Concern and Their Potential To Be Affected by the Proposed Alternatives, no impacts are anticipated to most threatened, endangered, or sensitive species. Construction impacts under Alternative C would be the same for the least chub, leatherside chub, and burrowing owl as those from Alternative B. However, Alternative C would not impact Redmond WMA and associated long-billed curlew habitat. Therefore, construction impacts for this species would be less under Alternative C than under Alternative B.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance impacts to threatened, endangered, and sensitive species would be similar to those from Alternative B. Alternative C does not travel through Redmond WMA; therefore, impacts to long-billed curlew would be less than those from Alternative B. Collisions between sensitive bird species and trains might occur infrequently, but operational and maintenance activities for Alternative C would not likely affect the long-term viability of any threatened, endangered, or sensitive species.

4.3.5 Accidental Fires

Operation and maintenance of the rail line could infrequently ignite a wildfire. Fires that remove the healthy native vegetation can increase the potential for invasion of noxious weeds. If fire occurs frequently, the native vegetation might never recover due to competition with invasive species. Some of the plant communities that would be bisected by the rail line are grasslands and desert grasslands. During dry periods, the danger of igniting a fire in these plant communities would be increased with the presence of the rail line (see Figure 4-5, Vegetation Impacts).

4.3.5.1 Alternative A (No-Action Alternative)

Construction Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no construction-related impacts to biological resources resulting from accidental fires.

Operation and Maintenance Impacts

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no operation and maintenance–related impacts to biological resources resulting from accidental fires.

4.3.5.2 Alternative B (Proposed Action)

Construction Impacts

Under Alternative B, the number of accidental fires caused by the construction of the proposed rail line is expected to be minor.

Operation and Maintenance Impacts

Operation of a rail line can cause accidental fires. Accidental fires resulting from Alternative B that are not confined to the right-of-way could alter existing plant communities, including areas that provide habitat for threatened, endangered, and sensitive species or other wildlife. Accidental fires could also affect big-game migratory corridors or adjacent wildlife refuge habitat. Additionally, fires have the potential to convert healthy native vegetative communities to monocultures of undesirable noxious weeds.

4.3.5.3 Alternative C

Construction Impacts

Under Alternative C, the construction-related impacts to biological resources resulting from accidental fires would be the same as those from Alternative B.

Operation and Maintenance Impacts

Under Alternative C, the operation and maintenance–related impacts to biological resources resulting from accidental fires would be the same as those from Alternative B.

4.3.6 Mitigation Measures for Impacts to Biological Resources

Mitigation measures for impacts to biological resources are discussed in Section 6.3.3, Biological Resources, and Section 6.4.3, Biological Resources.

4.4 Impacts to Water Resources

This section describes the expected direct and indirect impacts of the proposed alternatives on surface water and groundwater in the Sevier River watershed and study area (see Figure 4-7, Impacts to Water Resources). It includes discussion of permitting requirements as well as impacts to streams, lakes, wetlands, floodplains, wells, and public water sources.

4.4.1 Methodology

Surface Water Impacts. SEA assessed surface water impacts for each of the alternatives by evaluating the number of rivers and ephemeral drainages that would be crossed by each alternative. Of particular concern are waters currently listed on the State of Utah 303(d) list of impaired waters; these waters fail to meet water quality standards due to the presence of one or more pollutants. To determine whether construction of the proposed rail line would affect the amount of these pollutants in surface waters, SEA compared the amount of existing ground that has been disturbed by construction to the amount of ground that would be disturbed by construction of the proposed rail line. Disturbed ground is considered to contribute more pollutants to nearby surface waters than undisturbed ground.

The closer an alternative is to a drainage, the greater are the expected impacts (release of sediment or pollutants) to the drainage. If the source of pollution is farther away from surface waters, pollutants are more likely to be filtered out of runoff through settlement of suspended sediments, reactions from sunlight, and nutrient uptake by plants before the runoff reaches the water body. These processes would treat runoff from both construction impacts and impacts from railroad operation.

Areas that would be built up to support the rail line (filled areas) are more likely to degrade water quality than areas that are undisturbed because there is a greater potential for sediment and pollutants from disturbed areas to wash into surface waters. The side slopes of filled areas are typically vegetated. A raised area causes more negative impacts to water quality than undisturbed ground, which can treat runoff through processes such as infiltration of runoff into soil, nutrient uptake of soluble pollutants by plants, or sheetflowing of runoff through vegetation to remove particulates. In addition, the side slopes of filled areas erode more easily than undisturbed ground, particularly undisturbed ground with a flatter slope. When water flows along a steeper slope, it has a higher velocity and can potentially cause more erosion and mobilize more sediments.

Canals and Irrigation. Impacts to canals and irrigation were determined by reviewing topographic maps, evaluating current farming practices, and assessing the proposed alternatives to determine whether they would affect access to canals or irrigation facilities.

Floodplains. Impacts to floodplains were determined by calculating the amount of land that would be disturbed in areas that have a regulatory floodplain as defined by FEMA (see Section 3.4.4, Floodplains). These regulatory floodplains are shown in Figure 3-7, Floodplains, and the impacts were calculated for each alternative using GIS.

Wetlands and Waters of the U.S. SEA evaluated the effects of the alternatives on wetlands and other jurisdictional waters of the U.S. using the study area wetland data described in Section 3.4.5, Wetlands and Waters of the U.S. SEA used GIS to determine the acreage of wetlands that would be located within the right-of-way for each proposed alternative. To determine the expected impacts to ephemeral drainages, SEA counted the number of drainage crossings for each alternative.

Groundwater. Impacts to groundwater were determined by calculating the acreage of disturbance to groundwater recharge areas and the proximity of the proposed alternatives to drinking water wells. The extent of disturbance was calculated using GIS.

4.4.2 Permitting

Table 4.4-1 below lists the permits that would be needed to construct the proposed project in addition to regulations that must be followed during construction and operation of the railroad. The major permits are described in more detail after the table.

Table 4.4-1. Water Quality Permits and Regulations To Be Considered during Construction and Operation of the Railroad

Regulation	Regulatory Agency and Requirement
CWA Section 401 State Water Quality Certification	USEPA requires UDEQ to certify that the project would not cause Utah water quality standards to be exceeded.
CWA Section 402 (UAC R317-8) NPDES Permit (UPDES in Utah) (Limits discharges)	USEPA delegated authority for the National Pollutant Discharge Elimination System (NPDES) program in Utah to UDEQ. Industrial projects that discharge stormwater to surface water, construction projects that disturb more than 1 acre of land, and construction dewatering projects must obtain a Utah Pollutant Discharge Elimination System (UPDES) permit.
CWA Section 404 Waters and Wetlands	USEPA delegated authority for the Waters and Wetlands program to USACE. Stream alteration permits are administered by the Utah Division of Water Rights. All waters of the United States, such as streams, rivers, lakes, etc., including wetlands, are protected under the guidelines of the Clean Water Act, including the requirements for appropriate and practicable mitigation.
CWA Section 303(d) Impaired Waters (Limits discharges)	USEPA requires the Utah Division of Water Quality to identify water bodies that do not meet state water quality standards and therefore do not support their designated beneficial use. The Division submits a 303(d) list of these impaired waters to USEPA biannually. The Division conducts a total maximum daily load (TMDL) analysis on the impaired waters to determine the maximum contaminant load that the water body can accept and still meet the standards. The Division then assigns point-source dischargers (UPDES permit holders) a numerical limit for discharge of particular pollutants based on the TMDL analysis.
UAC R317-2-7.2 Narrative Water Quality Standards (Limits discharges)	This regulation states that it is unlawful to discharge into surface waters substances that could cause undesirable effects on human health or aquatic life.
UAC R317-2-14 Beneficial Uses (In-stream standard)	Numeric standards for water quality are based on the water body's beneficial use, such as drinking water, supporting game fish, or swimming. Projects cannot cause water quality standards to be exceeded. If a standard is already being exceeded, a TMDL limit may be applied to the project.
UAC R317-2-3 High-Quality Waters (In-stream standard)	UDEQ regulations state that waters whose existing quality is better than the established standards for the designated uses would be maintained at high quality; that is, a project cannot cause the existing water quality to be degraded.
UAC R309-600 and 605 Drinking Water Source Protection (Regulates activities near drinking water sources)	Owners of public water systems are responsible for protecting sources of drinking water and for submitting a Drinking Water Source Protection (DWSP) Plan to the Utah Division of Drinking Water. DWSP Plans must identify DWSP zones around each drinking water source (such as a lake, river, spring, or groundwater well), existing sources of contamination, and the types of new construction projects that are restricted within each zone.
UAC R317-6 Classified Aquifers (Aquifer standards; limits discharges to groundwater)	The Utah Water Quality Board classifies aquifers according to quality and use (such as ecologically important, irreplaceable, drinking water quality, and saline). The Utah Division of Water Quality publishes numerical standards for each class. Any person can petition the Board to classify an aquifer. In addition, the Division requires groundwater permits for activities that discharge pollutants to groundwater. The Central Utah Rail project is unlikely to require a groundwater permit because the impacts are likely to be considered <i>de minimis</i> (that is, too minor to require action) based on discussion with the Utah Division of Water Quality.

CWA = Clean Water Act; UAC = Utah Administrative Code

4.4.3 Regulatory Programs

The regulatory programs of several federal, state, and local agencies address water resources in the project study area. Impacts to waters of the U.S., including perennial streams, intermittent streams, and wetlands, require permits from USACE. Section 404 of the Clean Water Act requires a permit for the discharge of dredge or fill material into waters of the U.S. The USACE Section 404 permit process requires a comprehensive analysis of the steps taken to avoid and minimize wetland impacts. The USACE Section 404 permit would require mitigation to compensate for unavoidable impacts on jurisdictional wetlands.

Section 401 of the Clean Water Act requires certification from UDEQ that the project would not violate state water quality standards. According to Section 402 of the Clean Water Act, and because the project would disturb more than 1 acre, the Applicant would be required to obtain a Utah Pollutant Discharge Elimination System permit for construction-related stormwater runoff discharges.

Executive Order 11988, Floodplain Management, established federal policy “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” To the extent practicable, a proposed action should not “significantly” encroach on the 100-year floodplain. What constitutes a “significant” encroachment is determined on a case-by-case basis, considering adjacent development. FEMA has set a 1-foot increase in the 100-year flood elevation as the upper limit of allowable impact.

Executive Order 11990, Protection of Wetlands, established federal policy to “avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.”

4.4.4 Impacts to Surface Waters

4.4.4.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the rail line would not be built. Existing sources of pollution, such as highways and areas disturbed by construction, would continue to contribute pollutants to surface waters.

4.4.4.2 Alternative B (Proposed Action)

Alternative B would cross the Sevier River at two locations and would cross a total of 85 ephemeral drainages (see Table 4.4-2 below). Under Alternative B, the southern portion of the alternative would be placed on fill (that is, raised above the existing ground); however, this fill would not disproportionately impact wetlands. Alternative B would widen

substantially at the northernmost end, which is the connection to the Union Pacific mainline and switch yard. At this point, Alternatives B and C are on the same alignment. In this area, as well as the southern terminus loop ramp, there would be more ground disturbed during construction and therefore more potential for surface water impacts.

Table 4.4-2. Approximate Impacts to Wetlands and Ephemeral Drainages

Alternative	Wetland Impacts (acres)			Crossings of Ephemeral Drainages
	Emergent Marsh	Wet Meadow	Total	
Alternative A	0.0	0.0	0.0	0
Alternative B	71.1	92.4	163.5	85
Alternative C	70.6	92.4	163.0	109

Table 4.4-3 shows the acres of ground that would be disturbed by each alternative. Construction of Alternative B would disturb 335.48 acres of ground.

Table 4.4-3. Area Disturbed by the Proposed Alternatives

Alternative	Disturbed Area (acres)
Alternative A	0.00
Alternative B	335.48
Alternative C	464.17

Source: HDR Engineering, Inc. 2006b

Common Railroad Pollutants

In addition to sedimentation, railroad pollutants can also affect surface waters. The following list presents the conventional pollutants from railroad operations as published in the *Federal Register* (Volume 58, No. 222, November 19, 1993, page 61335):

- Biological oxygen demand (BOD5)
- Chemical oxygen demand (COD)
- Nitrate + nitrate nitrogen
- Total Kjeldahl nitrogen
- Oil and grease
- pH
- Total phosphorus
- Total suspended solids (TSS)

Of these pollutants, only phosphorus is mentioned in the 303(d) list as a pollutant whose standard is not being met in the study area (see Section 3.4.2.2, Impaired Waters). The

impaired water for which phosphorus is a problem is the Sevier River between the Sevier Bridge Reservoir dam and the confluence with Salina Creek.

4.4.4.3 Alternative C

Alternative C would cross the Sevier River at two locations and would cross a total of 109 ephemeral drainages.

Construction of Alternative C would disturb 464.17 acres of ground. The increase in disturbed area over Alternative B is due primarily to the design of the southern end of the Alternative C alignment. This part of the alignment would require a filled berm up to 75 feet high and a maximum of 550 feet wide as the rail line approaches the southern terminus. The area of the Alternative C alignment with the berm would have the steepest and longest slopes.

4.4.5 Impacts to Canals and Irrigation

4.4.5.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so the No-Action Alternative would have no impact to canals and irrigation.

4.4.5.2 Alternative B (Proposed Action)

Alternative B would use farmland in the northern portion of its alignment north of where Alternatives B and C diverge. Alternative B lies east of the Piute, Vermillion, and Rocky Ford irrigation canals and would cut off some farms' access to these canals. During the scoping phase of the project, farmers suggested that sleeves (pipe culverts) could be placed beneath the rail line so that irrigation lines could still tie into the canals. The Applicant will coordinate the locations of the sleeves with the farmers, as described in Section 6.3.4, Water Resources. In the southern portion of its alignment, Alternative B would use less farmland than Alternative C. Table 4.4-7, Impacts to Groundwater Recharge Areas, on page 4-47 shows impacts to groundwater recharge areas, which is also the amount of land taken for each alternative.

4.4.5.3 Alternative C

Alternative C would not use any irrigated farmland in the northern portion of its alignment north of where Alternatives B and C diverge. Alternative C lies west of the Piute, Vermillion, and Rocky Ford irrigation canals in an area that is not typically irrigated for farming. During the scoping phase of the project, farmers initially stated a preference for Alternative C because it would not cut off access to these canals. However, as Alternative C was developed, SEA determined that a filled berm up to 75 feet high and a maximum of 550 feet wide would be required as the rail line approaches the southern terminus. This berm would require a substantial amount of additional farmland toward the southern end of this alternative. Table

4.4-7, Impacts to Groundwater Recharge Areas, on page 4-47 shows impacts to groundwater recharge areas, which is also the amount of land taken for each alternative.

4.4.6 Impacts to Floodplains

4.4.6.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so the No-Action Alternative would have no impact to floodplains.

4.4.6.2 Alternative B (Proposed Action)

Alternative B would disturb 15.96 acres of Zone A floodplain (see Table 4.4-4 and Figure 4-6, Wetland/Drainage Impacts). Development within Zone A floodplains is allowed provided it does not cause a rise in the surface water elevation of 1 foot or more. Compared to the overall size of the floodplain, the impact of disturbing up to 20 acres of floodplain should not cause an increase in water surface elevation of more than 1 foot. The culverts and bridges along the rail line would be designed in accordance with FEMA regulations. These minimum FEMA regulations are to be administered by the county floodplain administrators for their respective counties as listed in Table 4.4-5.

Table 4.4-4. Impacts to Floodplains

Alternative	Floodplain Impacts (acres)	Zone
Alternative A	0.00	A
Alternative B	15.96	A
Alternative C	18.13	A

Impacts do not include Juab County because there is no Flood Insurance Rate Map for Juab County.
Source: HDR Engineering, Inc. 2006c

Table 4.4-5. County Floodplain Administrators

County	Floodplain Administrator	Telephone
Juab County	Glen Greenhalgh, City of Nephi	(435) 623-0822
Sanpete County	Dale Nichols	(435) 835-2113
Sevier County	Don Brown, County Attorney	(435) 896-9262

Source: Crofts 2006

4.4.6.3 Alternative C

Alternative C would disturb 18.13 acres of floodplain. Compared to the overall size of the floodplain, the impact of disturbing up to 20 acres of floodplain should not cause an increase in water surface elevation of more than 1 foot. The culverts and bridges along the rail line would be designed in accordance with FEMA regulations. These minimum FEMA regulations are to be administered by the county floodplain administrators for their respective counties, as listed above in Table 4.4-5, County Floodplain Administrators.

4.4.7 Impacts to Wetlands and Waters of the U.S.

Jurisdictional waters of the U.S. in the study area are described in Section 3.4.5, Wetlands and Waters of the U.S., and include springs, wetlands, riparian zones, open water, and ephemeral drainages. As discussed in Section 4.4.2, Permitting, all waters of the U.S. are protected under the guidelines of the Clean Water Act. Figure 4-6, Wetland/Drainage Impacts, shows the locations of wetlands relative to the proposed alternatives. Direct impacts to wetland areas (about 163 acres) and ephemeral washes (85 acres for Alternative B and 109 acres for Alternative C) are provided in Table 4.4-2, Approximate Impacts to Wetlands and Ephemeral Drainages, on page 4-41.

4.4.7.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, there would be no construction impacts to wetlands or ephemeral drainages. There would be no long-term operation or maintenance impacts to wetlands, ephemeral drainages, or other jurisdictional waters of the U.S.

4.4.7.2 Alternative B (Proposed Action)

Construction Impacts

According to Table 4.4-2, Approximate Impacts to Wetlands and Ephemeral Drainages, on page 4-41, Alternative B would directly impact 71.1 acres of emergent marsh and 92.4 acres of wet meadow for a total of 163.5 acres of direct wetland impacts. Most of the wet meadow impacts would occur near the northern terminus for Alternative B northeast of Chicken Creek Reservoir. Impacts to emergent marsh would occur mainly near Yuba Narrows and the northern terminus. The placement of fill in these areas would cause a permanent loss of wetland functions. Hydrologic modifications and stormwater runoff from Alternative B could indirectly affect wetlands by altering the functions and composition of wetlands that are located near the construction footprint.

Alternative B would cross 85 ephemeral drainages. As described in Section 3.4.5, Wetlands and Waters of the U.S., several of these ephemeral drainages have been disturbed or modified by human activities. Based on the characterization of ephemeral drainages in the study area, the character and quality of the drainages do not differ substantially among the different

locations for Alternative B crossings. No notable or unique ephemeral drainages were identified. Placement of fill and other materials to construct crossings would constitute minor impacts to ephemeral drainages.

Alternative B may impact a small amount of riparian vegetation (about 3 acres) near Chicken Creek Reservoir, Sevier Bridge Reservoir, Redmond Lake, and the Sevier River floodplain, but it would not impact any open water areas.

Operation and Maintenance Impacts

During the operation of Alternative B, accidents or equipment failure could result in a release of petroleum from the engine into adjacent wetlands. Stormwater discharges could contain low concentrations of typical railway pollutants that would indirectly affect wetlands located along the receiving waterways and drainages. Adjacent wetland areas are located primarily near Chicken Creek Reservoir, Yuba Narrows, and Redmond Lake. Railroad maintenance could include repairs to the tracks, associated structures, and bridges as well as cleaning out ditches, drainages, and culverts. These activities would be of short duration and relatively infrequent and, if they were located in wetlands, would be performed in accordance with any permit requirements.

4.4.7.3 Alternative C

Construction Impacts

According to Table 4.4-2, Approximate Impacts to Wetlands and Ephemeral Drainages, on page 4-41, Alternative C would directly impact 70.6 acres of emergent marsh and 92.4 acres of wet meadow for a total of 163.0 acres of direct wetland impacts. The general locations of impacts and indirect impacts from Alternative C would be the same as those from Alternative B.

Alternative C would cross 109 ephemeral drainages. Based on the characterization of ephemeral drainages in the study area, the character and quality of the drainages do not differ substantially among the different locations for Alternative C crossings. Placement of fill and other materials to construct crossings would constitute minor impacts to ephemeral drainages.

Alternative C would not impact any identified areas of lowland riparian vegetation.

Operation and Maintenance Impacts

The long-term impacts from Alternative C would be the same as those from Alternative B.

4.4.8 Impacts to Groundwater

The Utah Division of Drinking Water, which issues groundwater permits, considers the impacts to groundwater from a railroad to be *de minimis* (too minor to require action) and

does not require a permit for this project (Herbert 2006). Nevertheless, there would be a small impact to groundwater quality because developing undisturbed soil could cause a slight deterioration of the groundwater recharge area compared to the No-Action Alternative. Figure 4-6, Wetland/Drainage Impacts, shows the groundwater reservoirs that would be affected by the various alternatives.

None of the alternatives would displace the 18 drinking water wells in the study area. In addition, none of the alternatives would be located in DWSP Zone 1, which is the area within 100 feet of a wellhead (see Section 3.4.6.3, Drinking Water Source Protection Zones). All 18 drinking water wells in the study area are located in or near DWSP Zones 2, 3, or 4.

Consequently, SEA does not expect any of the alternatives to substantially affect drinking water for any of the 18 drinking water wells. The Utah Division of Drinking Water encourages building as far as possible from drinking water wells, preferably outside of Zone 4. Table 4.4-6 shows that there are eight wells for Alternative B and six wells for Alternative C that are within 2 miles of the alternatives and 15 wells for Alternatives B and C that are within 5 miles of the alternatives.

Table 4.4-6. Drinking Water Wells within 2 Miles and 5 Miles of the Proposed Alternatives

Alternative	Wells within 2 Miles	Wells within 5 Miles
Alternative A	0	0
Alternative B	8	15
Alternative C	6	15

Source: HDR Engineering, Inc. 2006d

4.4.8.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so there would not be any impacts to groundwater recharge areas or to the 18 drinking water wells in the study area.

4.4.8.2 Alternative B (Proposed Action)

Alternative B would disturb 173.93 acres of groundwater recharge area (see Table 4.4-7 below). The Utah Division of Water Quality generally does not consider railroad construction in a groundwater recharge area to be a significant concern. There are seven drinking water wells within 2 miles of Alternative B and 14 wells within 5 miles of the alternative. The Utah Division of Drinking Water encourages building as far as possible from drinking water wells.

4.4.8.3 Alternative C

Alternative C would disturb 259.11 acres of groundwater recharge area (see Table 4.4-7). The Utah Division of Water Quality generally does not consider railroad construction in a groundwater recharge area to be a significant concern. There are five drinking water wells within 2 miles of Alternative C and 14 wells within 5 miles of the alternative. The Utah Division of Drinking Water encourages building as far as possible from drinking water wells.

Table 4.4-7. Impacts to Groundwater Recharge Areas

Alternative	Groundwater Recharge Area (acres)				Total (acres)
	Aurora-Redmond Reservoir	Redmond-Gunnison Reservoir	Gunnison-Sevier Bridge Reservoir ^a	Southern Juab Valley Reservoir	
Alternative A	0.00	0.00	0.00	0.00	0.00
Alternative B	46.65	39.61	0.00	87.67	173.93
Alternative C	171.44	0.00	0.00	87.67	259.11

^a The northern portion of the groundwater recharge area is unmapped since its location is unclear. Little is known about the extent, thickness, or characteristics of the groundwater reservoir in the lower subbasin as it is typically covered by water stored in Sevier Bridge Reservoir (UDWR 1999).

Source: HDR Engineering, Inc. 2006e

4.4.9 Mitigation Measures for Impacts to Water Resources

Mitigation measures for impacts to water resources are discussed in Section 6.3.4, Water Resources, and Section 6.4.4, Water Resources and Wetlands.

4.5 Impacts to Topography, Geology, and Soils

4.5.1 Methodology

SEA assessed whether the construction and operation of the proposed rail line would substantially affect the local topography, geology, and soils. This evaluation included a review of topographic and geologic maps, relevant published geology, water resources reports logs, soil borings, preliminary design information, and experience in similar settings and construction.

An NRCS-CPA-106 Farmland Impact Rating Form was used to evaluate the impacts of each proposed alternative on prime and state important farmland. The main criteria used for this rating are total farmland acreage to be converted (both directly and indirectly), percentage of total acreage in the county or city, degree of nonurban land use, level of on-farm investments, availability of state or local programs to protect farmland, impacted farm size compared to the average, and amount of nonfarmable land that is created.

If the right-of-way receives a total rating of less than 160 points, it is given a minimal level of consideration for protection and no additional sites need to be evaluated. If the right-of-way receives a total rating of 160 points or more, it receives higher levels of consideration for protection and additional alternatives must be evaluated. Both Alternative B and Alternative C had ratings under 160 points as described in Section 4.5.5, Impacts to Prime Farmland. These are the guidelines and criteria for assessing impact ratings under 7 CFR 658.4 and 658.5. Impacts on prime farmland from the proposed alternatives are described below.

4.5.2 Topographic Impacts

4.5.2.1 Alternative A (No-Action Alternative)

The No-Action Alternative does not involve new construction, so it would not result in any topographic changes.

4.5.2.2 Alternative B (Proposed Action)

Alternative B would result in mostly minor changes to the existing topography along the right-of-way of the proposed rail line due to the flat rail grades and relatively flat existing ground. Due to the flat natural topography, most of the length of the rail line would be at or near the natural grade, and only small changes would be needed to fill in depressions or excavate the higher ground. These changes would raise or lower the existing topography by about 3 feet to 5 feet and would include compacted embankment fill and a subballast/ballast section under the ties and track. The fills for embankments would be taken from the extensive sand and gravel deposits along the right-of-way. The proposed project would require about 1,286,000 cubic yards of borrow. Materials would come from sites along the right-of-way within 0.5 mile to 1 mile of the alternative (Washington Group 2006). This material would be an excellent source of fill that could be placed and compacted in embankments with slopes as steep as 2:1. The foundation conditions are generally well suited to support the fills, and no foundation improvement with stone columns, wick drains, or staged construction would be needed.

Culverts would be provided so that existing drainages can safely pass storm runoff.

The greatest topographic increases would occur at the grade separations over existing roadways and water crossings where approach embankments would be constructed. The maximum height of these embankments would be about 25 feet. In addition, excavations into higher ground would be required which may have a maximum height of about 25 feet.

4.5.2.3 Alternative C

The topographic impacts from Alternative C would be the same as those from Alternative B, except in Sevier County where a berm with a maximum height of 75 feet and a maximum

width of 550 feet would be required as the rail line approaches the southern terminus. About 12,518,000 cubic yards of borrow material would be required for Alternative C.

4.5.3 Geologic Impacts

4.5.3.1 Alternative A (No-Action Alternative)

The No-Action Alternative does not involve new construction, so it would not result in any impacts to geologic conditions.

4.5.3.2 Alternative B (Proposed Action)

As discussed in Section 3.5, Geology and Soils, the primary geologic hazards that could affect the region are ground motions caused by earthquake shaking and soil liquefaction. Rail line construction or traffic is not anticipated to affect seismicity, landslides, or the frequency or intensity of earthquakes. The actual inclinations of the cut-and-fill slopes have not been determined at this time, but will be selected based on the observed subsurface conditions and the configuration of the cut or fill. The earthen cuts and fills required to construct the new rail line would not adversely affect the geologic conditions or the stability of the ground or cause an increase in seismic activity. The configuration of the cuts and fills will be selected to provide long-term stability, erosion resistance, and minimal maintenance. Alternative B would not involve actions that would adversely affect the existing geologic conditions or increase the potential for the occurrence of geologic hazards in the area within and outside of the right-of-way.

For this alternative, water would be required to compact the new fill and to control dust. This water would be taken from the Sevier Bridge Reservoir and not from groundwater wells. Therefore, this alternative would not cause subsidence due to extracting groundwater, and no impacts to groundwater conditions would occur.

4.5.3.3 Alternative C

The impacts to geologic conditions from Alternative C would be the same as those from Alternative B.

4.5.4 Soil Impacts

4.5.4.1 Alternative A (No-Action Alternative)

The No-Action Alternative does not involve new construction, so it would not affect soils.

4.5.4.2 Alternative B (Proposed Action)

The surficial soils within the study area and those that would be exposed from grading operations are generally granular in nature and were deposited in alluvial and deltaic

environments. SEA anticipates a minor increase in erosion to these soils during grading operations and construction of Alternative B. Disturbance of surface soils is an unavoidable aspect of the construction process.

The naturally flat topography and the use of standard erosion-control practices would reduce the amount of erosion that occurs. These erosion-control practices include limiting the amount of disturbed areas, replanting vegetation as soon as practical after construction, and spraying the disturbed areas with water to reduce the amount of windblown dust. Haul and access roads might require additional treatment such as a surface layer of crushed rock to provide a stable surface for traffic and to protect against erosion.

4.5.4.3 Alternative C

The impacts to soils under Alternative C would be greater than those from Alternative B due to construction of the 75-foot-tall berm at the southern terminus of the rail line.

4.5.5 Impacts to Prime Farmland

4.5.5.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built. However, the study area would experience continued residential, commercial, industrial, and recreational development. The No-Action Alternative would not cause any indirect impacts to prime farmland, although continued development in the study area would likely convert some prime farmland to urban uses near Salina.

4.5.5.2 Alternative B (Proposed Action)

Under Alternative B, 12.1 acres of prime farmland would be impacted. The impacts to prime farmland in the farmland study area are shown in Table 4.5-1 below and Figure 4-8, Impacts to Prime and State Important Farmland.

Using the NRCS-CPA-106 rating form, the Alternative B right-of-way is rated 114 points (see Appendix H, Farmlands), which is under the 160-point threshold that requires the implementation of special mitigation measures and the consideration of other alternatives.

There would be no indirect impacts to prime farmland under this alternative.

4.5.5.3 Alternative C

Under Alternative C, 19.99 acres of prime farmland would be impacted. The impacts to prime farmland in the farmland study area are shown in Table 4.5-1 below.

Using the NRCS-CPA-106 rating form, the Alternative C right-of-way is rated 124 points (see Appendix H, Farmlands), which is under the 160-point threshold that requires the implementation of special mitigation measures and the consideration of other alternatives.

At the southern end of Alternative C near US 50, about 2.7 acres of prime farmland would be indirectly impacted.

Table 4.5-1. Direct and Indirect Impacts on Prime and State Important Farmland

Type of Farmland	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
<i>Prime Farmland</i>			
Direct impacts	0.0	12.1	19.99
Indirect impacts ^a	0.0	0.0	2.70
<i>State Important Farmland</i>			
Direct impacts	0.0	3.1	3.06
Indirect impacts ^a	0.0	0.0	0.00
Total	0.0	15.2	25.75

^a This number includes farmland outside the right-of-way that would no longer be farmable due to small parcel size, lack of access, or other reasons.

4.5.6 Impacts to Unique Farmland

According to NRCS, there is no unique farmland in the study area (Parslow 2004).

4.5.7 Impacts to Farmland of State Importance

4.5.7.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built. However, the study area would experience continued residential, commercial, industrial, and recreational development. The No-Action Alternative would not cause any direct impacts to state important farmland, although continued development in the study area would likely convert some state important farmland to urban uses near Salina.

4.5.7.2 Alternative B (Proposed Action)

Under Alternative B, 3.1 acres of state important farmland would be impacted. The impacts to state important farmland in the farmland study area are shown in Table 4.5-1 above, Direct and Indirect Impacts on Prime and State Important Farmland.

Using the NRCS-CPA-106 rating form, the Alternative B right-of-way is rated 114 points (see Appendix H, Farmlands), which is under the 160-point threshold that requires the implementation of special mitigation measures and the consideration of other alternatives.

There would be no indirect impacts to state important farmland under this alternative.

4.5.7.3 Alternative C

Under Alternative C, 3.06 acres of state important farmland would be impacted. The impacts to state important farmland in the farmland study area are shown in Table 4.5-1 above, Direct and Indirect Impacts on Prime and State Important Farmland.

Using the NRCS-CPA-106 rating form, the Alternative C right-of-way is rated 124 points (see Appendix H, Farmlands), which is under the 160-point threshold that requires the implementation of special mitigation measures and the consideration of other alternatives.

There would be no indirect impacts to state important farmland under this alternative.

4.5.8 Impacts to Paleontological Resources

4.5.8.1 Methodology

Geologic mapping in coordination with SITLA and the Utah Geological Survey was reviewed to determine the presence of Tertiary formations that might contain fossils.

4.5.8.2 Impact Analysis

Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new rail line construction would take place, so there would be no effects to any paleontological resources.

Alternative B (Proposed Action)

Paleontological resources found on public lands are recognized by BLM as a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage. These resources are afforded protection under 43 CFR 3802 and 3809, and penalties possible for the collection of vertebrate fossils are under 43 CFR 8365.1-5.

Based on the geologic mapping and paleontological occurrences within the area, the project is rated as Condition 2 in accordance with BLM policy, and impacts to fossils are considered unlikely. Based on that conclusion, fossils should be adequately protected by mitigation measures to protect any significant fossils discovered during the construction of the railroad. Therefore, Alternative B is not likely to cause impacts to paleontological resources. Fossils could be present in the Tertiary and Quaternary unconsolidated deposits, but specific discoveries or known locations of paleontological resources from these deposits within the project area are not reported.

Alternative C

Paleontological resources found on public lands are recognized by BLM as a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage. These resources are afforded protection under 43 CFR 3802 and 3809, and penalties possible for the collection of vertebrate fossils are under 43 CFR 8365.1–5.

Based on the geologic mapping and paleontological occurrences, the project is rated as Condition 2 in accordance with BLM policy, and impacts to fossils are considered unlikely. Condition 2 includes areas with exposure of geological units or settings that are likely to contain fossils. The presence of geologic units from which fossils have been recovered elsewhere will require an assessment of these same units if they occur in the area of consideration. Based on that conclusion, fossils should be adequately protected with mitigation measures to protect any significant fossils discovered during the construction of the railroad. Therefore, Alternative C is not likely to cause impacts to paleontological resources. Fossils could be present in the Tertiary and Quaternary unconsolidated deposits, but specific discoveries or known locations of paleontological resources from these deposits within the project area are not reported.

4.5.8.3 Mitigation Measures for Impacts to Paleontological Resources

Mitigation measures for impacts to paleontological resources are discussed in Section 6.3.12, and Section 6.4.10.

4.5.9 Impacts to Minerals and Mining

4.5.9.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail right-of-way would not be constructed. Consequently, mining operations would continue to operate at current levels and transport their commodities out of Sanpete and Sevier Counties by truck. Mining companies would continue to have similar expenses related to truck transport. However, as discussed in Section 4.10, Impacts to Energy Resources, using trucks to ship coal is more expensive and less energy-efficient than using the rail line (see Section 4.10, Impacts to Energy Resources, and Section 4.11, Socioeconomic Impacts, for further discussion).

4.5.9.2 Alternative B (Proposed Action)

Alternative B would have a minor effect on oil and gas leasing on BLM-administered land. Although oil and gas leases have been issued along the project right-of-way, there are no approved oil and gas activities such as drilling. Proposed activities under an oil and gas lease would be subject to the existing rights of the rail right-of-way, if it is constructed.

There are no other mineral leases, mineral material disposals, mining material disposals, or mining claims within the proposed right-of-way. Future mineral leases, future mineral material disposals, or proposed operations under the mining laws would similarly be subject to the existing rights of the rail right-of-way.

Construction of the rail line under Alternative B would require about 1,286,000 cubic yards of borrow material. In addition, construction could require materials in addition to the fill material that will be produced from construction of the rail line. These materials could include additional fill material, subgrade gravel, and railroad ballast. These materials could come from sources outside the railroad right-of-way on private, state, and/or federal land. Those sources will be permitted in accordance with applicable laws and regulations at the time the individual sources are located for use on the project.

Alternative B would have beneficial impacts on mining companies in the Sevier Valley. SUFCO would need to ship 38,000 carloads annually to provide the economic foundation to proceed with the Proposed Action. Marketing studies show that, without increased production, SUFCO would be shipping 42,410 to 44,175 carloads annually (Washington Infrastructure Services, Inc. and others 2001). The new rail right-of-way would provide a more cost-effective method of transporting mining commodities out of the area. Mining facilities would benefit from the lower operating costs associated with rail transport.

The SUFCO mine would be the primary benefactor of the proposed rail construction due to decreased operating costs related to coal transport and the resulting increased competitiveness with other regional coal producers. SEA predicts that the SUFCO mine would ship 38,000 carloads of coal per year with destinations primarily including utilities in Utah and Nevada. This is about 90% of the total 41,925-carload minimum projected shipping volume and about 87% of the total 43,475-carload maximum projected shipping volume of the Central Utah Rail (Washington Infrastructure Services, Inc. and others 2001).

Other potential users of the Central Utah Rail include Redmond Minerals, Western Clay, US Gypsum Company, Georgia-Pacific Gypsum, Johansen Sand and Gravel, and Hales Sand and Gravel. Mining companies with a lower potential of using the Central Utah Rail include B&H Stone, Consol Energy (Emery Mine), and the proposed power plant near Sigurd.

The right-of-way design could limit the shipping potential for US Gypsum and other businesses in the Sigurd area (Georgia-Pacific Gypsum). In order for US Gypsum to use the rail, they would have to truck their product (gypsum wallboard) to the industrial park at the southern terminus of the rail right-of-way before loading their product onto rail cars. The incremental cost associated with trucking and product handling would likely offset the rail shipping advantage to nearby destinations such as Salt Lake City (the ultimate destination for the majority of US Gypsum product) (Washington Infrastructure Services, Inc. and others 2001).

During a market analysis screening interview performed the week of May 7, 2001, B&H Stone stated that they would like to find a market for their lacustrine limestone that is produced as a byproduct of the quarrying process. However, the delivered value of this lime is about \$3.50 per ton due to its relatively low quality. After removing the cost of loading, the remaining value would not cover transportation costs (Washington Infrastructure Services, Inc. and others 2001).

After being idle for a decade, the Emery Mine was reopened by Consol in August 2004 and produced 256,000 tons before year-end. Consol has short-term contracts to keep the mine in service for the indefinite future, and operators plan to produce 1.2 million tons in both 2005 and 2006 (Vanden Berg 2005).

4.5.9.3 Alternative C

Under Alternative C, shippers within portions of Juab, Sanpete, and Sevier Counties would be able to load their cargo only at the southern terminus of the proposed project near Salina. Although Alternative C would have a different alignment than Alternative B, the alternatives would have the same southern terminus, where loading would occur.

Construction of the rail line under Alternative C would require about 12,518,000 cubic yards of borrow material. In addition, construction could require materials in addition to the fill material that will be produced from construction of the rail line. These materials could include additional fill material, sub-grade gravel, and railroad ballast. These materials could come from sources outside the railroad right-of-way on private, state, and/or federal land. Those sources will be permitted in accordance with applicable laws and regulations when the individual sources are located for use on the project.

4.5.10 Mitigation Measures for Impacts to Topography, Geology, and Soils

Mitigation measures for impacts to topography, geology, and soils are discussed in Section 6.3.5, Topography, Geology, and Soils, and Section 6.4.5, Topography, Geology, and Soils.

4.6 Vibration Impacts

4.6.1 Methodology

SEA assessed whether vibrations generated by the construction and operation of the proposed rail line would substantially affect buildings and water wells. This evaluation included a visual examination of aerial photographs, a review of geologic information and literature on train-induced vibration levels, a review of preliminary design information, and SEA's prior experience in similar settings and construction.

Buildings. The analysis of vibration impacts on buildings used the most conservative published criterion for the upper limit of ground vibration that can cause damage to buildings.

This criterion is the DIN 4150 standard for historic and ancient buildings from the Deutsches Institut für Normung (German Institute for Standards).

Under this criterion, a ground vibration level of more than 0.08 ips (inches per second) is considered capable of causing damage to buildings. A loaded freight train traveling at the design speed for the proposed alternatives (49 mph) can be expected to produce this level of vibration at a distance of about 52 feet from the track centerline, based on data collected by the Federal Transit Administration (1998). An allowance was made for sediments along the alternative (such as saturated silty or clayey sediments) that could conduct vibration beyond this distance. A final screening distance of 104 feet, twice the projected minimum, was used to identify expected impacts.

Water Wells. According to a study on the effects of coal mine blasting on domestic water wells (Daniel B. Stephens & Associates, Inc. 2002), a ground vibration level of 0.125 ips at the surface adjacent to a water well has no measurable effect on the integrity of the well or the water quality. A loaded freight train traveling at the design speed for the proposed alternatives (49 mph) can be expected to produce this level of vibration at a distance of about 36 feet from the track centerline, based on data collected by the Federal Transit Administration (2006). Although geologic conditions along the right-of-way are expected to be similar to those in the blasting study, a screening distance of 72 feet, twice the projected minimum, was used to provide a larger buffer zone for identifying expected impacts.

4.6.2 Building Impacts

4.6.2.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built, so there would be no vibration impacts to buildings from construction or operation of the rail line.

4.6.2.2 Alternative B (Proposed Action)

An examination of aerial photographs did not identify any buildings within 104 feet of the track centerline for Alternative B, so no vibration impacts to buildings are expected from this alternative.

4.6.2.3 Alternative C

An examination of aerial photographs did not identify any buildings within 104 feet of the track centerline for Alternative C, so no vibration impacts to buildings are expected from this alternative.

4.6.3 Water Well Impacts

4.6.3.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built, so there would be no vibration impacts to water wells from construction or operation of the rail line.

4.6.3.2 Alternative B (Proposed Action)

An examination of aerial photographs did not identify any water wells within 72 feet of the track centerline for Alternative B, so no vibration impacts to water wells are expected from this alternative. A water well is currently permitted for future installation at the Painted Rocks Campground. When the well is installed or the proposed project is constructed (whichever occurs first), site-specific mitigation measures will be implemented to ensure that the well is not affected.

4.6.3.3 Alternative C

An examination of aerial photographs did not identify any water wells within 72 feet of the track centerline for Alternative C, so no vibration impacts to water wells are expected from this alternative.

4.6.4 Mitigation Measures for Vibration Impacts

SEA has determined through its analysis that the Proposed Action and Alternatives would have a negligible vibration effect on buildings and water wells because construction would be outside of the zone of vibration effect for buildings and water wells. Therefore, no mitigation measures are proposed.

4.7 Impacts to Hazardous Materials

4.7.1 Methodology

SEA identified potentially hazardous waste sites by reviewing the Utah Division of Environmental Response and Remediation (DERR) interactive map viewer. In addition, HDR conducted field surveys to help identify other potentially hazardous sites that were not identified in the DERR databases. As described in Section 3.7.2, Potentially Hazardous Waste Sites, HDR reviewed spill incidents reported to DERR between 1988 and 2003 and queried the National Response Center spills database. Searches of the DERR and National Response Center databases found no spill locations in the study area.

SEA evaluated the expected effects of construction and operation of the proposed rail line on hazardous waste sites based on the following considerations:

- Hazardous waste site type (Brownfield, LUST, UST, etc.), characteristics, and status (active, out of use, closed, etc.)
- Characteristics of surrounding topography, surface water, and apparent direction of groundwater flow
- Sensitive human and ecological receptors (schools, hospitals, wetlands, lakes, and streams)

SEA considers the effects of construction activities at hazardous waste sites to be significant if one or both of the following conditions would occur:

- The construction activities would create a potential threat to human health or the environment by disturbing sites that contain hazardous materials.
- The construction activities have the potential to disturb sites where other parties had contained the contaminants in place to reduce the possibility of threats to human health or the environment (for example, contaminants were covered with a clay, soil, or asphalt cap).

4.7.2 Alternative A (No-Action Alternative)

Under the No-Action Alternative, no construction activities would take place. Therefore, existing hazardous waste sites would not be disturbed.

4.7.3 Alternative B (Proposed Action)

Of the 26 USTs at the seven potentially hazardous waste sites in the study area, 18 have been removed, six are currently in use, and two have been closed in place. A total of three leaking underground storage tanks (LUSTs) are located at two of the sites (see Figure 4-9, Impacts to Potential Hazardous Waste Sites).

Removal or closure of a UST typically indicates that the site has been remediated or did not require remediation when the UST was removed or closed in place. However, contamination (if any) could have been left in place if it did not pose a threat to human health or the environment. For that reason, the proximity of the sites to proposed construction and operation areas should still be considered.

The following paragraphs group the seven potentially hazardous waste sites in the study area by general location and discuss site-specific considerations.

Near Levan. The northernmost UST (Site 2000654), which was removed in 1992, was used to store gasoline. The site is located near the northern project limits about 0.3 mile northeast of the proposed wye connection with the UPRR mainline and on the opposite side of the tracks. Of the seven potentially hazardous waste sites, this former UST location is the closest to the proposed construction activity. The potential of environmental risk is reduced because the UST has been removed and no LUST occurrence is listed for the site. The surface water and assumed groundwater gradients are such that, if any leaking and contamination occurred when the UST was removed, the contamination could migrate toward the proposed wye connection area. As discussed in Section 3.7, Hazardous Materials and Waste Sites, appropriate measures will be put in place to protect workers and the environment from undocumented hazards.

Near Redmond. The second UST (Site 2000114) was used to store diesel fuel and was removed in 1993. The site is located in Sanpete County about 0.7 mile north of the Sanpete County–Sevier County border and about 0.7 mile east of Alternative B. Surface water drainage in the vicinity of the proposed rail line near Site 2000114 is generally from west to east. Any contamination from the former UST site would migrate away from the proposed rail line.

In Salina. Five potentially hazardous waste sites are located close to one another in western Salina. The distances from the sites to Alternative B are between 0.7 mile and 1 mile. A total of 24 USTs have been or are located at the five sites. Of these, 16 have been removed, six are currently in use, and two have been closed in place. Materials stored in the USTs include gasoline, diesel, used oil, and new oil. A total of three LUSTs are located at two of the sites. The proposed construction activity would not disturb the UST or LUST sites. Surface water from the general area of the UST and LUST sites naturally drains toward Salina Creek or the Sevier River, and it is assumed that groundwater follows this same pattern. If any contamination migrates from the sites, it would likely be intercepted by these waterways. Alternative B is located on the opposite side (the west side) of the Sevier River; therefore, the environmental risk from the properties in Salina during construction is low.

As described above, no potentially hazardous waste sites would be directly affected by construction or operation activities associated with Alternative B. SEA determined that neither the USTs nor the LUSTs pose an environmental risk to construction activities. The topography and drainage characteristics of the sites currently in use are such that any

contamination would migrate away from Alternative B and/or would be intercepted before reaching the alignment.

Based on the available information, SEA does not anticipate that significant adverse impacts to human health or the environment are likely to result from disturbances to hazardous materials spill sites and hazardous waste sites during construction or operation activities associated with Alternative B.

4.7.4 Alternative C

Near Levan. Of the seven potentially hazardous waste sites in the study area, only one is located within 1 mile of Alternative C. Site 2000654 near Levan is located near the northern project limits where Alternatives B and C share a common alignment. The impacts associated with this site would be the same as those from Alternative B.

Near Salina. In the southern portion of the study area, Alternative C is located west of Alternative B and is also at a higher elevation. The potentially hazardous waste sites near Redmond and in Salina are located more than 1 mile east of Alternative C, and the topography and drainage are such that any contamination migrating from the sites would not reach Alternative C.

In addition to the seven potentially hazardous waste sites mentioned above, a junk yard is also located within the study area. The junk yard, which was identified by HDR during field reconnaissance, is located near Alternative C at US 50. Based on aerial photography, it appears that most of the junk yard is located west of Alternative C. SEA did not determine whether hazardous materials are present at the junk yard, but the construction contractor should use the mitigation measures identified in Section 3.7, Hazardous Materials and Waste Sites, in the vicinity of the junk yard.

Based the available information, SEA does not anticipate that significant adverse impacts to human health or the environment are likely to result from disturbances to hazardous materials spill sites and hazardous waste sites during construction or operation activities associated with Alternative C.

4.7.5 Mitigation Measures for Impacts to Hazardous Materials

Mitigation measures for impacts to hazardous materials are discussed in Section 6.3.7, Hazardous Materials, and Section 6.4.6, Hazardous Materials.

4.8 Air Quality Impacts

4.8.1 Methodology

A qualitative air quality impact assessment was conducted for this project that considered the following factors:

- SEA's air quality impact thresholds (an increase of at least eight trains per day, an increase in rail traffic of at least 100% as measured in gross ton-miles annually, or an increase in rail yard activity of at least 100% as measured by carload activity),
- The existing regional air quality status (that is, attainment or non-attainment status),
- The Applicant's Proposed Action (one to two loaded trains per day), which does not meet SEA's impact threshold for detailed air quality modeling and analysis,
- No appreciable increased production at the SUFCO mine if the proposed new rail line is completed,
- No change in customer base for coal from the SUFCO mine if the proposed new rail line is completed,
- No change in coal distribution for the SUFCO mine as a result of the proposed new rail line, and
- The undeveloped nature of the right-of-way, including the lack of substantial air emission sources in the project area.

The qualitative analysis consisted of determining the reduction in vehicle-miles traveled under the Proposed Action and comparing that with the addition of one to two trains per day in the study area.

4.8.2 Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new rail construction or rail operations would occur. Therefore, there would be no truck-to-rail diversion and no change in vehicle-related air emissions. However, due to the greater pollutant emissions associated with truck operations, pollutant emissions associated with the No-Action Alternative would be greater than those from Alternatives B and C.

4.8.3 Alternative B (Proposed Action)

The study area is rural and undeveloped. The air quality in the study area is good, and the region is in attainment for all criteria pollutants. Existing sources of emissions in the study area include automobiles, trucks, and farm equipment. Vehicle traffic in the study area is responsible for tailpipe emissions including nitrogen oxides, carbon monoxide, and sulfur dioxide. The primary pollutant produced by locomotives and farm equipment is nitrogen

dioxides from diesel fuel. Farming and ranching activities and vehicles using unpaved roads are sources of fugitive dust.

4.8.3.1 Construction Impacts

Fugitive dust would be released during construction (for example, during grading) of the alignment which could be a short-term, minor inconvenience to people near the alignment. Because construction of the alignment would occur over several years, fugitive dust emissions would vary depending on what portion of the alignment was being constructed. Due to the undeveloped nature of the study area and lack of emission sources in the region, fugitive dust emissions are not expected to exceed the NAAQS.

4.8.3.2 Impacts from Railroad Operation

Under Alternative B, a change in vehicle-related air emissions would occur due to the truck-to-rail diversion of traffic. Under existing operations, about 750 coal trucks make a round trip (two movements which equals one full load and one empty back-haul) of 163 miles per day from the SUFCO mine to Salina and back (122,250 vehicle-miles traveled per day). The same quantity of coal will continue to be shipped to existing customers in Nevada and Utah and, therefore, would not result in any additional air emissions to any new areas within the United States (K. May 2006).

Under Alternative B, coal would be hauled by truck from the SUFCO mine to the proposed loading facility north of I-70 near Salina's industrial park. Each day about 1,500 truck trips (750 round trips) would be made, and the round-trip distance for each truck would be 66 miles (49,500 vehicle-miles traveled per day). From there, between 100 and 110 rail cars would be used to transport the coal about 43 miles (86 miles round-trip) to the UPRR mainline. Under Alternative B, truck-related vehicle-miles traveled would be reduced by 247%, which would greatly reduce pollutant emissions associated with truck traffic. Although there would be pollutant emissions associated with locomotives, in total they would be less than those from truck traffic, with the resulting impact of a minor improvement in air quality in the study area.

4.8.4 Alternative C

The air quality impacts from Alternative C would be the same as those from Alternative B.

4.8.5 Mitigation Measures for Impacts to Air Quality

Mitigation measures for impacts to air quality are discussed in Section 6.3.8, Air Quality, and Section 6.4.7, Air Quality.

4.9 Noise Impacts

4.9.1 Methodology

A qualitative, screening-level noise impact assessment was conducted for this project that took into consideration the following factors:

- SEA's threshold for conducting an environmental noise analysis is an increase in train traffic of at least eight trains per day or an increase in rail traffic of at least 100% measured in gross ton-miles annually.
- SEA's threshold for noise impacts is an increase in the day-night noise levels (L_{dn}) to greater than 65 dBA or an increase in existing noise levels by 3 dBA L_{dn} .
- The Applicant's Proposed Action (one to two loaded trains per day) does not meet SEA's impact threshold for detailed modeling and analysis.
- The project right-of-way is mostly undeveloped and contains few sensitive noise receptors near the right-of-way.

The assessment included measuring noise levels in the right-of-way to determine the impact of two trains per day on sensitive noise receptors in the project area.

4.9.2 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the Central Utah Rail project would not be built. No change in noise levels is anticipated under the No-Action Alternative.

4.9.3 Alternative B (Proposed Action)

The project area is rural and mostly undeveloped with low existing noise levels. Automobile and truck traffic on SR 28, farm machinery, and natural noise sources such as wind are the primary sources of noise in the project area. As noted in Section 3.9, Noise, existing noise levels range from about 37 dBA to 48 dBA. SEA considers residences, schools, libraries, parks, hospitals, retirement homes, and nursing homes as sensitive to noise and therefore considers these buildings to be sensitive noise receptors. There are 150 residences within 1 mile of Alternative B.

The nearest sensitive noise receptor to Alternative B is Yuba Lake Recreation Area. The Painted Rocks Campground is about 0.5 mile southwest of Alternative B. Isolated farmsteads are located throughout the right-of-way.

Wayside noise includes the noise generated by a passing train. Locomotive engine noise, rail noise, and rail car noise contribute to wayside noise. Additionally, as a safety measure, trains are required to sound a warning horn when approaching a public grade crossing. Horn noise is substantially louder and more intrusive than wayside noise and is designed to warn motorists and pedestrians of an approaching train. Horn soundings are required from

0.25 mile prior to a crossing until the locomotive passes through the crossing. There are about nine public at-grade crossings along Alternative B that would likely be subject to this requirement. In addition, there are a number of private, unpaved crossings in the study area. In general, warning horns are not sounded at these private crossings.

Sensitive noise receptors along Alternative B could be exposed to one or both types of noise. Because horn noise is significantly louder than wayside noise, it extends farther from the rail line and affects a greater number of noise receptors. Because of the relatively low background noise levels in the project area, the residences would likely hear train warning signals sounded at the public crossings.

Under the Applicant's proposal, one round trip (two movements which equals one full load and one empty back-haul) per day would pass through study area. Wayside and warning horn noise associated with two trains per day in the study area would not increase day-night noise levels (L_{dn}) to greater than 65 dBA or increase existing noise levels by 3 dBA L_{dn} . The nearest sensitive noise receptor to Alternative B is Yuba Lake Recreation Area. The park contains campground facilities within about 0.5 mile of Alternative B. One to two trains per day passing through the Yuba Lake Recreation Area could create a short-term disturbance to recreational campers but would not exceed the Board's noise thresholds.

4.9.4 Alternative C

The noise impacts from Alternative C would be the same as those from Alternative B.

4.9.5 Mitigation Measures for Noise Impacts

Mitigation measures for noise impacts are discussed in Section 6.3.9, Noise, and Section 6.4.8, Noise.

4.10 Impacts to Energy Resources

4.10.1 Methodology

SEA evaluated the impacts to energy resources including energy use and other energy resources. The discussion of energy use includes a quantitative analysis of changes in energy consumption due to the proposed truck-to-rail diversion (see Section 4.10.2, Impacts on Energy Consumption) and a qualitative evaluation of energy use associated with grade crossing delay and idling vehicles (see Section 4.10.3, Impacts on Other Energy Resources). Items addressed in Section 4.10.3 include energy distribution (including transmission lines), transportation of energy resources, and transportation of recyclable commodities. Impacts to pipelines are addressed in Section 4.1.3.3, Impacts on Pipeline Crossings.

4.10.2 Impacts on Energy Consumption

4.10.2.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new rail construction or rail operations would occur, so there would be no energy savings from diverting traffic from truck to rail and no increase in energy consumption from vehicles waiting at grade crossings. Overall, the energy requirements of the No-Action Alternative would be greater than those of Alternatives B and C.

4.10.2.2 Alternative B (Proposed Action)

Truck-to-Rail Diversion

Alternative B would cause a change in energy consumption because truck traffic would be diverted to rail. As stated in Section 3.10.2, Existing Energy Use, the average daily energy consumption of SUFCO coal truck traffic is 2,832 million Btu. This energy consumption value was based on 750 coal trucks and a round-trip haul route of 163 miles. This route includes about 60 miles from the SUFCO mine to Salina and back and a loop of about 103 miles starting in Salina and traveling through Centerfield, Gunnison, Levan, Nephi, and Scipio before returning to Salina.

Under Alternative B, coal would be hauled by truck from the SUFCO mine to the proposed loading facility north of I-70 near Salina's industrial park. Each day about 1,500 truck trips (750 round trips) would be made, and the round-trip distance for each truck would be 66 miles. Between 100 and 110 rail cars would then be used to transport the coal about 43 miles (86 miles round-trip) to the UPRR mainline.

Table 4.10-1 below shows the typical daily energy consumption associated with transporting coal by truck and rail under either Alternative B or Alternative C. The daily truck and rail energy consumption would total about 1,301 million Btu, or about 46% of the existing average daily energy consumption (which consists of truck traffic only). SEA anticipates that no more than one additional round trip (two movements which equals one full load and one empty back-haul) per week would be used to ship other miscellaneous products by rail.

The additional train would consume up to about 154 million Btu and would bring the total anticipated daily energy consumption to 1,455 million Btu, or 51% of the existing average daily energy consumption. Diverting coal shipping from truck to rail would improve the efficiency of coal transportation in support of the National Energy Policy Act of 2005 (Public Law 109-58).

Table 4.10-1. Typical Daily Energy Consumption under the Proposed Alternatives

Haul Type	Coal Truck/ Rail Car Traffic (trips per day)	Coal Traffic (vehicle/rail car-miles traveled)	Fuel Consumption and/or Energy Intensity Rates	Energy Consumption (million Btu)
Truck	1,500	49,500	6.0 miles/gallon ^a 139,000 Btu/gallon ^b	1,147
Rail	220	9,460	16,250 Btu/car-mile ^c	154
Total	—	—	—	1,301

^a Heavy single-unit trucks are assumed to achieve diesel fuel efficiency of 6.0 miles per gallon (EIA 2004).

^b 1 gallon diesel fuel = 139,000 Btu (EIA 2004).

^c 1 car-mile requires 16,250 Btu (derived from AREMA 2002).

Grade Crossing Delay

Grade crossing delays are addressed in Section 4.1.3.2, Impacts on Grade Crossing Safety. Based on the anticipated train volume of one round trip (two movements which equals one full load and one empty back-haul) per day and the low volume of traffic on roads in the study area, the additional energy consumption from vehicle delays at grade crossings is considered to be insignificant.

4.10.2.3 Alternative C

Truck-to-Rail Diversion

Under Alternative C, the impacts from diverting truck traffic to rail would be similar to those under Alternative B. The southern portions of the Alternative B and C alignments differ, but the overall proposed rail length (43 miles) and the corresponding energy consumption would be approximately equal. The truck trips described in Section 4.10.2.2 for Alternative B would also be required for Alternative C, and the typical daily energy consumption would be 1,301 million Btu (see Table 4.10-1 above, Typical Daily Energy Consumption under the Proposed Alternatives). About once each week, daily energy consumption would increase by up to 154 million Btu due to a shipment of miscellaneous commodities, which would bring the daily total to 1,455 million Btu.

Grade Crossing Delay

Under Alternative C, the impacts to energy consumption from grade crossing delays would be the same as those from Alternative B.

4.10.3 Impacts on Other Energy Resources

4.10.3.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts on other energy resources. There would be no impacts to transmission lines, no change in the transportation of energy resources, and no change in the transportation of recyclable commodities under this alternative.

4.10.3.2 Alternative B (Proposed Action)

Energy Distribution

A high-voltage transmission line runs generally north-to-south from a point west of Levan to Aurora and near Alternative B (see Figure 4-10, Energy Impacts). The proposed rail line would cross the transmission line corridor at one location about 3 miles north of Yuba Narrows. Six segments of the proposed rail line, including the crossing location, would be located within 500 feet of the transmission lines. The length of these segments totals about 7.1 miles.

SEA does not anticipate any interruption of electricity transmission during construction of the proposed rail line. However, special safety precautions would be required, particularly with regard to large equipment such as cranes.

The proximity of the proposed rail to the transmission lines is not a safety concern under normal operating conditions. However, in the unlikely event of a derailment, the transmission line could be affected. In such an event, a derailed car could damage a pylon and disrupt electricity transmission. Other than the single crossing location, the closest the proposed rail would come to the transmission lines is about 130 feet. Given this distance and the low probability of derailment, SEA expects the effects of Alternative B on transmission lines to be negligible.

Transportation of Energy Resources

Alternative B would result in the truck-to-rail diversion of coal, an energy resource. The origin and destination of this energy resource would be the same, and no adverse impacts to the transportation of energy resources would occur. SEA anticipates that the proposed rail line would be used to transport other commercial supplies or products that would require one additional round trip (two movements which equals one full load and one empty back-haul) per week. Based on available information (see Section 3.5.7, Minerals and Mining), less than 5% of these commodities would be energy resources.

Transportation of Recyclable Commodities

SEA does not anticipate that Alternative B would change the transportation of recyclable commodities. The proposed rail line would be used primarily for transporting coal.

4.10.3.3 Alternative C

Energy Distribution

As noted in Section 4.10.3.2, Alternative B (Proposed Action), a high-voltage transmission line runs generally north-to-south from a point west of Levan to Aurora. The proposed rail line crossing and the six segments of the transmission line within the study area are all located along the alignment that is common to both Alternatives B and C. Therefore, the impacts to transmission lines would be the same as those from Alternative B.

Transportation of Energy Resources

Under Alternative C, the impacts to transportation of energy resources would be the same as those from Alternative B.

Transportation of Recyclable Commodities

Under Alternative C, the impacts to transportation of recyclable commodities would be the same as those from Alternative B.

4.10.4 Mitigation Measures for Impacts to Energy Resources

SEA has determined through its analysis that the Proposed Action and Alternatives would have a negligible effect on energy resources. Therefore, no mitigation measures are proposed.

4.11 Socioeconomic Impacts

4.11.1 Methodology

Socioeconomic impacts were based on the assumption that the volume of coal produced by the mine and subsequently shipped by train or truck would remain stable for at least 25 years (the life of the mine reserves). The SUFCO mine is currently operating at capacity and coal production is driven primarily by mine infrastructure, not by client demand or coal transportation mode (K. May 2006). The Central Utah Rail Feasibility Study (Washington Infrastructure Services, Inc. and others 2001) states that SUFCO would need to ship 38,000 carloads annually to provide the economic foundation to proceed with proposed project. Marketing studies show that, without increased production, SUFCO would be shipping 42,410 to 44,175 carloads annually (Washington Infrastructure Services Inc. and others 2001). Therefore, available information does not suggest that any appreciable increased

production is planned, nor is there a foreseeable need for increased production, if the proposed new rail line is completed (*Federal Register* 2004).

The methodology for determining the impacts to employment, income, and population described in this section was adapted from the Central Utah Rail Feasibility Study. The economic analysis presented in that study used an economic impact model called Regional Economic Models Incorporated (REMI). The analysis included a complete history of the growth in jobs and population in Sanpete and Sevier Counties between 1969 and 1998.² Through the use of the REMI model, the Applicant determined that Sanpete and Sevier Counties are the only counties that would experience statistically significant impacts from the railroad (Washington Infrastructure Services, Inc. and others 2001). The REMI model is widely considered acceptable for this analysis for estimating population and economic impacts. Note that, for this analysis, REMI provided only low and high economic scenarios that bracket the range of expected possible outcomes. REMI did not assign probabilities to either end of the range, so the analysis did not indicate whether the low scenario or the high scenario is more likely to occur. For the purpose of this section, the midpoint between the low and high scenarios is considered to be the most likely outcome.

Impacts to agriculture were calculated using statistics from the 2002 Census of Agriculture (NASS 2002). The Census of Agriculture contains statistics on acres of farmland, farm size, employment, market value of output from farms, and employment by county. These statistics were used to create ratios for market value of output per acre of farmland and for employment per acre. The ratios were applied to the acres of affected agricultural land to generate estimates of the impacts of the proposed rail line on agricultural production.

Two sets of impacts to the tax bases of the counties were calculated. The first is impacts to the sales tax base; the second is impacts to the property tax base. Impacts to the sales tax base were calculated using ratios of sales tax collections for the State of Utah to total personal income in the state. The ratios were applied to the changes in personal income from the analysis in the Central Utah Rail Feasibility Study (Washington Infrastructure Services, Inc. and others 2001).

Impacts to the property tax base were calculated using approximated assessable values of land obtained from county assessors in the counties and from assessed values of land by type from the Farmland Assessment Act. The values were multiplied by the number of acres, and the property tax rates were applied to get impacts to the tax rolls. Land for which no data are available was left out of the analysis because tax classifications were not available. Since specific affected lots had not been determined at the time of the analysis, the methodology assumes that the rail right-of-way will be routed to avoid land with structures; therefore, the analysis includes only impacts to the property tax rolls for land without structures.

² Sanpete and Sevier Counties were the only counties that SEA believes will experience measurable impacts from the project. It is likely that Juab County and other surrounding counties would receive a regional benefit as well, but that impact is not quantified here.

The impacts to emergency response were determined by calculating the increase in emergency response times caused by the alternatives. Increases in emergency response times would be due to emergency responders waiting at crossings for trains to pass.

Emergency response delays were determined by assuming that one round trip (two movements which equals one full load and one empty back-haul) per day, traveling at about 49 mph, would use the proposed rail line. With a normal train length of about 1.3 miles, this amount of train traffic would cause about 3 minutes 12 seconds of delay per day at any given point along the right-of-way.

4.11.2 Impacts to Population and Demographics

4.11.2.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so the existing population and demographic trends described in Section 3.11.2, Population and Demographics, would continue. As a result, no change in the population and demographic composition of the study area due to the development of the rail line would occur.

4.11.2.2 Alternative B (Proposed Action)

Based on the potential for increased economic development under Alternative B (see Section 4.11.3, Impacts to Employment and Income), this alternative would likely cause a small increase in the population of Sanpete and Sevier Counties over the No-Action Alternative. This increase is estimated to be 60 to 65 people over the next 20 years and is an increase of less than 1%, based on the 2003 population estimates in Section 3.11.2, Population and Demographics. (Because REMI included only Sanpete and Sevier Counties, the population in Juab County is not included in this number.) This expected increase in population would primarily be due to an increase in the manual labor pool required for economic development in these two counties and would likely result from in-migration from surrounding areas.

4.11.2.3 Alternative C

Under Alternative C, the impacts to population and demographics would be the same as those from Alternative B.

4.11.3 Impacts to Employment and Income

4.11.3.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built, so the existing employment and income trends described in Section 3.11.3, Employment, and Section 3.11.4, Income, would continue. As a result, no change in employment and income due to the development of the rail line would occur.

4.11.3.2 Alternative B (Proposed Action)

Under Alternative B, construction and operation of the rail line would affect multiple sectors of the local economies, namely the lumber; stone, clay, and glass; petroleum products; mining; construction; and railroad sectors (based on REMI calculations in the Central Utah Rail Feasibility Study, Washington Infrastructure Services, Inc. and others 2001). The impacts would be both positive and negative and would be experienced at different times as discussed below.

The lumber; stone, clay, and glass; and petroleum products sectors of the local economies would be the primary users of the rail. Over time, these sectors would benefit from lower transportation costs, which would increase profit margins for the firms in these sectors and free up internal resources to expand business, hire more employees, and increase their output.

The construction sector would benefit from the railroad by providing services during construction. In particular, construction of the rail line would add 77 jobs in the construction sector of the local economy. Those jobs would contribute \$24,430 (Utah Department of Workforce Services 2004) in wage and salary earnings (about \$1.9 million in total income contributions) annually for both years of construction.³ However, the jobs would add only a short-term boost to the local economies because the jobs would contribute dollars until the construction phase of the project is complete.

Once the railroad is operational, about 108 jobs would be lost from the trucking industry as SUFCO and other companies reduce the length of trucking routes and switch to using the rail line. According to the Utah Department of Workforce Services, average wages for the trucking industry in central Utah are \$29,480 (Utah Department of Workforce Services 2004), which translates to a loss of about \$3.1 million in wages in the study area.

The loss in trucking jobs would be partially offset by 19 railroad jobs that would be added when the railroad is operational. (Railroad jobs were assumed to be those from rail conductors and operations.) The average wage of the railroad jobs would be \$61,010 (Utah Department of Workforce Services 2004), resulting in a total of about \$1.2 million in wages, which is 39% of the lost wages from trucking jobs. For example, employment in stone, clay, and glass sector would be helped by continuing demand for ballast for the railroad after construction; an estimated \$30,000 to \$60,000 of ballast would be purchased annually over the following 20 years.

Coal production would not increase; therefore, no new jobs at the SUFCO mine would result from rail operation. The sectors that would benefit from construction of the railroad, namely the lumber; stone, clay, and glass; petroleum products; mining; and railroad sectors, would continue to produce benefits for the local economy in the long term. For example, although

³ Wages and salaries are one component of total personal income. Wages and salaries are often referred to as a contribution to personal income.

the local economy would lose some income from truck wage earnings, construction of the railroad would more than offset that loss with higher employment and income, which would be spent in the economy on goods and services. This new indirect demand caused by higher profits and new employment would spur additional rounds of spending and drive increased economic development benefits in the local economies.

These economic benefits have been estimated using REMI and reported in the Central Utah Rail Feasibility Study (Washington Infrastructure Services, Inc. and others 2001). The results are shown in Table 4.11-1. The study established high and low projections of economic impacts from 2004 to 2025. The midpoint of the projections demonstrates that the proposed rail line would contribute 328 net new jobs to the economy over the life of the analysis. These 328 jobs would add about \$23 million through total personal income.⁴

Table 4.11-1. Total Annual Increases to Employment and Income under the Proposed Alternatives from the REMI Low and High Scenarios (2004–2025)

Alternative	Low Scenario		High Scenario	
	Employment	Total Personal Income ^a	Employment	Total Personal Income ^a
Alternative A	No change	No change	No change	No change
Alternative B	+ 238 jobs	+ \$6.4 million	+ 419 jobs	+ \$39.6 million
Alternative C	+ 238 jobs	+ \$6.4 million	+ 419 jobs	+ \$39.6 million

^a Total personal income measures income received by individuals from all sources including wages and salaries, interest, dividends, rent, workers' compensation, proprietors' earnings, and transfer payments.
 Source: Washington Infrastructure Services, Inc. and others 2001, REMI calculations

4.11.3.3 Alternative C

Under Alternative C, the impacts to employment and income would be the same as those from Alternative B.

4.11.4 Impacts to the Trucking Industry

4.11.4.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built. Consequently, the local trucking industry would continue to transport commodities (including coal from the SUFCO mines) within portions of Juab, Sanpete, and Sevier Counties at current levels.

⁴ Total personal income is the sum of income received by individuals from all sources including wages and salaries, interest, dividends, rent, workers' compensation, proprietors' earnings, and transfer payments.

4.11.4.2 Alternative B (Proposed Action)

Alternative B is projected to cause the loss of 108 jobs in the local trucking industry (Washington Infrastructure Services, Inc. and others 2001). The jobs would be lost because the length of coal-haul routes would be reduced. Coal would still need to be trucked from the SUFCO mine to the rail line's southern terminus in Salina and possibly to the proposed power plant outside Sigurd. This job loss would primarily affect Barney Trucking and Robinson Transport, the main freight carriers for the SUFCO mine, both of which are located in Sevier County.

In December 2004, Barney Trucking employed 225 people, including 200 drivers, at the company's Salina location. Robinson Transport employed 140 people, 110 of which were drivers. Assuming that these two companies account for all of the 108 lost trucking jobs, the result is a reduction of 30% of the current positions between the two companies. The response of these companies to such an impact is unknown at this time. SEA anticipates that the terminated trucking employees would be able to find jobs in areas that are expected to experience growth as a result of the project (see Section 4.11.3, Impacts to Employment and Income).

Additionally, Alternative B would likely reduce the amount of daily truck traffic in central Utah. Most roadways in use by trucks are an asphalt cement concrete that is designed to carry the projected traffic load for 10 to 20 years. The service life of existing road surfaces would be extended, which would decrease the need for roadway repairs in the near term. UDOT estimates the cost to repair a 1-mile stretch of 4-inch-deep, two-lane highway at \$325,000 (Hawks 2001). Reduction in necessary road repairs would create significant cost savings for UDOT and the public.

4.11.4.3 Alternative C

The impacts to the trucking industry from Alternative C would be the same as those from Alternative B.

4.11.5 Impacts to Agriculture

4.11.5.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built. Present conditions and trends in the agricultural economy of the three counties would continue.

4.11.5.2 Alternative B (Proposed Action)

As shown in Table 4.11-2 below, Alternative B would remove about 165 acres from agricultural use in the three counties. This is less than one-tenth of a percent of the total land in farms in each of the three counties (see Section 3.11.6, Agriculture). Affected grazing allotments located on SITLA lands would devalue funds given to Utah schools and other

beneficiaries of trust lands. However, the resulting impacts on the market value of output from farms in the three counties would be negligible (less than one-tenth of a percent of the total farm output). Additionally, the ratio of agricultural land to farm operators is large in each of the counties.⁵ Given the high land-to-operator ratios, removing such small amounts of land from agricultural use would likely have no impact on farm employment.

Table 4.11-2. Impacts to Agricultural Production

County	Land Removed from Agricultural Use (acres)		Impacts to the Market Value of Agricultural Products		Impacts to Employment in Farms (employees)	
	Alt. B	Alt. C	Alt. B	Alt. C	Alt. B	Alt. C
Juab	126.39	126.39	\$5,700	\$5,700	0	0
Sanpete	1.23	1.14	\$300	\$300	0	0
Sevier	37.52	115.72	\$11,900	\$36,700	0	0
Total	165.14	243.25	\$17,900	\$42,700	0	0

4.11.5.3 Alternative C

Alternative C would remove about 243 acres from agricultural use in the three counties. This is less than one-tenth of a percent of the total land in farms in each of the three counties (see Section 3.11.6, Agriculture). The resulting impacts on the market value of output from farms and employment in farms in the three counties would be the same as those from Alternative B.

4.11.6 Impacts to the Tax Base

4.11.6.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, the proposed rail line would not be built. As a result, no change in the tax base due to the development of the rail line would occur.

4.11.6.2 Alternative B (Proposed Action)

Sales Tax Base

Table 4.11-3 below shows the average annual and net cumulative impacts to the sales tax base over the period 2004 to 2025 for each proposed alternative. Since the analysis here is based on calculations from REMI in the Central Utah Rail Feasibility Study (Washington Infrastructure Services, Inc. and others 2001), it includes only impacts to the tax base of Sanpete and Sevier Counties. Depending on the extent of the positive impacts, the gross sales tax base in the two counties could increase by 0.05% to 0.2% over 2002 levels annually.

⁵ The ratio of agricultural land to farm operators in Juab, Sanpete, and Sevier Counties is 2,216 acres, 893 acres, and 549 acres per farm operator in each county, respectively.

Table 4.11-3. Impacts to the Sales Tax Base

Alternative	Low Scenario		High Scenario	
	Average Annual	Net Cumulative	Average Annual	Net Cumulative
Alternative A	No change	No change	No change	No change
Alternative B	\$182,900	\$3,657,700	\$1,131,600	\$22,631,938
Alternative C	\$182,900	\$3,657,700	\$1,131,600	\$22,631,938

There is no foreseeable change in coal production at the SUFCO plant. Additionally, the proposed project would not change the current distribution of coal to customers, the customer base, or the market base for SUFCO. Therefore, the impacts to the sales tax base shown in Table 4.11-3 above would not be a result of increased production or a change in market base by the SUFCO mine (K. May 2006).

Property Tax Base

As shown in Table 4.11-2 above, Impacts to Agricultural Production, Alternative B would remove about 165 acres of privately owned land from the tax base of the study area. (Neither state nor federally owned lands appear on the assessed property tax rolls.) Of the private land that would be affected by Alternative B, the majority of the land in each county is agricultural with some riparian and idle lands in Sanpete and Sevier Counties.

In the analysis, agricultural land is assumed to be greenbelt agricultural land.⁶ All land is assumed to be of the highest productive value possible in each county (Irrigable Class II).⁷ Conversations with county assessors in Sanpete and Sevier Counties provided possible values for idle land and riparian land (in Sevier County only) (Nash 2005).

The analysis assumes that the rail line would be publicly owned and the land would be removed from the property tax rolls. Table 4.11-4 below summarizes the impacts from each proposed alternative. The result would be a loss to the property tax base of less than 0.1% per county for Alternative B. The impact is small because the property tax base includes lands with higher-valued uses (commercial and residential) and also land with structures.

If the ownership of the rail line were private, then the land and rail line would be centrally assessed by the Utah Property Tax Division. The assessment process for the rail line would follow current processes used by the State Assessor's office for centrally assessed utilities. The rail company would report the value of all property (land, tangible assets, etc.) to the State Assessor's office. The State Assessor's office would then share the total property value

⁶ Utah has two designations for agricultural land: greenbelt (FAA) or non-greenbelt (non-FAA) land. Greenbelt land is land that meets the classifications and specifications to make it assessable under the Utah Farmland Assessment Act (FAA). The FAA authorizes qualifying agricultural land to be assessed according to its productive capability rather than the true market value.

⁷ Classifications used by the Utah State Tax Commission, Property Tax Division, under the guidelines of the Utah Farmland Assessment Act. Most current FAA taxable values per acre are available on the Property Tax Division Web site at propertytax.utah.gov/faa/faa.html.

with each county in which the rail operates, and the counties would apply their corresponding property tax rates to the share of the total property value applied to their county. The process does not allow each county to identify separate property values for tangible assets and land. At the time of this analysis, ownership of the rail line had not been determined.

Table 4.11-4. Impacts to the Property Tax Base under Public Ownership

County	Alternative A	Alternative B	Alternative C
Juab	No impact	\$55,000	\$55,000
Sanpete	No impact	\$7,900	\$7,300
Sevier	No impact	\$46,200	\$96,000

4.11.6.3 Alternative C

Sales Tax Base

Table 4.11-3 above, Impacts to the Sales Tax Base, shows the average annual and net cumulative impacts to the sales tax base over the period 2004 to 2025 for each proposed alternative. Since the analysis here is based on calculations from REMI in the Central Utah Rail Feasibility Study (Washington Infrastructure Services, Inc. and others 2001), it includes only impacts to the tax base of Sanpete and Sevier Counties. Depending on the extent of the positive impacts, the gross sales tax base in the two counties could increase by 0.05% to 0.2% over 2002 levels annually.

There is no foreseeable change in coal production at the SUFCO plant. Additionally, the proposed project would not change the current distribution of coal to customers, the customer base, or the market base for SUFCO. Therefore, the impacts to the sales tax base shown in Table 4.11-3 above would not be a result of increased production or a change in market base by the SUFCO mine (K. May 2006).

Property Tax Base

As shown in Table 4.11-2 above, Impacts to Agricultural Production, Alternative C would remove about 243 acres of privately owned land from the tax base of the study area. (Neither state nor federally owned lands appear on the assessed property tax rolls.) Of the private land that would be affected by Alternative C, the majority of the land in each county is agricultural with some commercial and idle lands in Sanpete and Sevier Counties.

In the analysis agricultural land is assumed to be greenbelt agricultural land.⁸ All land is assumed to be of the highest productive value possible in each county (Irrigable Class II).⁹

⁸ See footnote 6 on page 75.

⁹ See footnote 7 on page 75.

Conversations with county assessors in Sanpete and Sevier Counties provided possible values for idle land and riparian land (in Sevier County only) (Nash 2005).

The analysis assumes that the rail line would be publicly owned and the land would be removed from the property tax rolls. Table 4.11-4 above, Impacts to the Property Tax Base under Public Ownership, summarizes the impacts from each proposed alternative. The result would be a loss to the property tax base of less than 0.1% per county for Alternative C. The impact is small because the property tax base includes lands with higher-valued uses (commercial and residential) and also lands with structures.

If the ownership of the rail line were private, then the land and rail line would be centrally assessed by the Utah Property Tax Division. The assessment process for the rail line would follow current processes used by the State Assessor's office for centrally assessed utilities. The rail company would report the value of all property (land, tangible assets, etc.) to the State Assessor's office. The State Assessor's office would then share the total property value with each county in which the rail operates, and the counties would apply their corresponding property tax rates to the share of the total property value applied to their county. The process does not allow each county to identify separate property values for tangible assets and land. At the time of this analysis, ownership of the rail line had not been determined.

4.11.7 Impacts to Community Facilities

4.11.7.1 Alternative A (No-Action Alternative)

As stated in Section 3.11.8, Community Facilities, there are very few community facilities near the proposed rail line. Under the No-Action Alternative, the proposed rail line would not be built, so there would be no impacts to existing public services and community facilities from development of the rail line. Current trends in the demand for services and facilities would continue.

4.11.7.2 Alternative B (Proposed Action)

Alternative B would contribute to the economic development and population growth of the three counties over 20 years. The majority of the identified public services and community facilities (those within 4 miles of the alternative) are in Salina. Increased population and economic development would increase the demand for community facilities and services provided by those facilities including education, law enforcement, churches, and post offices. Growth in the demand for services and facilities can be expected to follow the trend of the economic impacts from the project. An initial spike in the demand for services and facilities would occur with the construction phase of the project and then decline, followed by gradual growth in demand as economic development and population increase over time.

4.11.7.3 Alternative C

Under Alternative C, the impacts to public services and community facilities would be the same as those from Alternative B.

4.11.8 Impacts to Emergency Response

4.11.8.1 Alternative A (No-Action Alternative)

The No-Action Alternative would not affect any existing emergency response routes in the study area, so emergency response times would remain unchanged.

4.11.8.2 Alternative B (Proposed Action)

Alternative B would not cause significant impacts to existing emergency response times in the study area. The major roadways used by emergency responders are US 89, which would be spanned by a grade-separated crossing; SR 28, which would not be crossed by the proposed rail line; SR 50, which would have an at-grade crossing with automatic crossing gates; and SR 24, which would also have an at-grade crossing with automatic crossing gates. Although the project would require nine new at-grade public road/rail crossings and 43 new at-grade private (farm) road/rail crossings, the likelihood of an emergency responder being delayed by the amount of train traffic described in Section 4.1.1, Methodology, is small, especially since the study area is mainly rural.

During the scoping phase of the project, Yuba Lake Recreation Area personnel stated concerns about the possible impacts to emergency response times for the Painted Rocks Campground at Yuba Lake Recreation Area (Rasmussen 2005). Alternative B would cross the access road to Painted Rocks Campground about 200 yards east of the campground entrance. This at-grade crossing would have a sign but would not have lights or crossing arms.

After SEA calculated the frequency of train crossings at the campground and the duration of the delay, SEA contacted park personnel and informed them that trains would cross the campground access twice per day for 1.5 minutes per crossing. Park personnel stated that emergency responders respond to one to two emergency calls per year, and that these emergencies are unlikely to occur during the short, infrequent delays expected to be caused by the project. For these reasons, park personnel felt that the project would not cause a major impact to emergency response times at Painted Rocks Campground (Evans 2006).

The type of crossing (at-grade or grade-separated) and the level of safety controls at each crossing were determined by the USDOT Accident Prediction Equation (Washington Group 2004). This equation takes into account several factors including type of traffic control, highway traffic volume, and train traffic volume. However, the equation does not consider emergency responder traffic. SEA further coordinated with the involved counties' emergency management departments and determined that these local agencies were unable to quantify

the frequency of emergency response situations on the roadways proposed to be crossed by the railroad. These agencies also stated that the severity of a delay in emergency response due to delay at a rail crossing would vary based on the severity of the emergency that required the response (Barney 2006; Harwood 2006; Hight 2006).

4.11.8.3 Alternative C

For the northern two-thirds of the alignment (including the access road to Painted Rocks Campground) and the area west of the southern third of the alignment, the impacts from Alternative C would be the same as those from Alternative B.

South of the point where the proposed alternatives split and east of the Alternative C alignment, the impacts to emergency response would be less than those from Alternative B. Because all emergency responders are based in locations east of the alternatives and Alternative C is farther west than Alternative B (that is, farther from the base locations of the emergency responders), there is a slightly larger area east of Alternative C that can be accessed by emergency responders without having to cross the proposed rail right-of-way.

4.11.9 Mitigation Measures for Socioeconomic Impacts

Mitigation measures for socioeconomics are discussed in Section 6.3.11, Socioeconomics, and Section 6.4.9, Socioeconomics.

4.12 Impacts to Cultural Resources

4.12.1 Methodology

SEA has determined that the proposed project could have adverse effects on 36 historic properties that are eligible for or listed in the National Register of Historic Places (National Register). Nineteen additional properties have been identified in the project area but have been determined to be ineligible for listing in the National Register (see Table 3.12-1, Historic Properties Identified within the Project Area; Table 4.12-1 below, Archaeological Sites within the APE of Alternative B; and Table 4.12-2 below, Archaeological Sites within the APE of Alternative C).

The area of potential effect (APE)¹⁰ for each Build Alternative (Alternative B and Alternative C) generally consists of a corridor that is 160 feet wide. The APE for some sections within each alternative near the loading loop and near the existing rail line was expanded to 900 feet to ensure the widest consideration of historic properties in these larger impact areas.

¹⁰ Adverse effects are those actions that have the potential to directly or indirectly alter the historic integrity of a historic property that qualifies the property for inclusion in the National Register of Historic Places.

The historic properties identified in the project area consist of prehistoric and historic archaeological sites and some sites that include both prehistoric and historic components (multi-component sites).

No traditional cultural properties have been identified within the APE for either Alternative B or Alternative C. So far, SEA has consulted with 12 federally recognized tribes to determine the potential location of traditional cultural properties within the project area and will continue to seek tribal input to identify any properties of traditional religious and cultural significance to tribes.

In 2006, SEA analyzed a wider area outside the APE for direct impacts to determine the potential for indirect, cumulative, and visual impacts to historic properties.¹¹ The result of this assessment indicated that no such impacts would likely occur from construction of either Alternative B or Alternative C. The consideration of the potential cumulative, indirect, and visual impacts of the proposed project was completed by SEA in consultation with the SHPO, BLM, other Section 106 consulting parties, and UDOT (see Section 5.2.5, Cultural Resources, for a summary of the cumulative impacts to cultural resources).

4.12.2 Resolving Adverse Effects

Proposed measures to avoid, minimize, or mitigate adverse effects to historic properties located within the project area will be determined in consultation with the SHPO, federally recognized tribes, the Applicant, and other consulting parties according to 36 CFR 800.6(a). Measures to mitigate adverse effects will be set forth in an agreement document (either a Memorandum of Agreement or a Programmatic Agreement) in consultation with the appropriate Section 106 parties. SEA has discussed potential options for resolving adverse effects with the SHPO including avoidance, data recovery, and educational outreach initiatives. SEA anticipates that any agreement document that will be developed will include a treatment plan that will address tribal concerns and the disposition of materials that will result from any data recovery efforts.

An assessment of the sites that would be affected within each alternative's APE is presented below. SEA has also assessed the expected impacts of Alternative A (No-Action Alternative).

4.12.2.1 Alternative A (No-Action Alternative)

Under the No-Action Alternative, no construction of the proposed rail line would take place, so no adverse effects to historic properties are anticipated.

¹¹ Note that the Class I data review conducted by SEA included a 0.5-mile buffer zone along each side of the original proposed alternative in order to obtain a representation of along both the proposed corridor and surrounding areas (see Appendix G, Cultural Report).

4.12.2.2 Alternative B (Proposed Action)

In total, SEA has identified 27 prehistoric archaeological sites, 16 historic archaeological sites, and two multi-component sites (with both historic and prehistoric resources) within the APE of Alternative B. The prehistoric sites identified within the APE consist of lithic scatters, temporary camps, and one possible permanent habitation site. The historic sites include irrigation canals, railroad lines, a farmstead, corrals, and hay derricks (see Table 4.12-1 below).

Based on the results of SEA's cultural resource studies, consultations with federally recognized tribes, the SHPO, BLM, and other consulting parties, SEA has determined that 33 of the archaeological sites identified within the APE of Alternative B are National Register eligible properties that would be adversely affected by the construction of Alternative B (see Table 4.12-1). The potentially affected prehistoric sites include 15 lithic scatters, eight temporary camps, and one possible habitation site. Seven potentially affected historic sites include the Union Pacific Railroad tracks and buildings; a hay derrick; a farmstead; segments of the Piute Canal, Rocky Ford Canal, and Vermillion Canal; and remnants of the Denver and Rio Grande Railroad. The two multi-component sites are a prehistoric temporary camp/historic trash scatter and a prehistoric lithic scatter/historic trash site (see Table 4.12-1).

The significant sites located within the APE for Alternative B could also be subjected to adverse effects from clearing vegetation, mechanized grading, vibration, and any future data-recovery efforts that might be conducted. With the construction of Alternative B, archaeological sites could also be affected through increased access to the area and the resulting potential for vandalism, littering, collecting of surface artifacts, and subsurface looting.

SEA intends to continue working with the SHPO, federally recognized tribes, the BLM, and other consulting parties to determine appropriate measures to avoid, minimize, or mitigate adverse effects to historic properties identified within the APE of Alternative B if the proposed project is constructed within this corridor.

Table 4.12-1. Archaeological Sites within the APE of Alternative B

Smithsonian Site No.	Site Age	Site Type	NRHP Eligibility	Recommendation
42Jb1041	Historic	Union Pacific Railroad line	Eligible (A, D)	Resolve Adverse Effects
42Jb1396	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Jb1397	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Jb1398	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Jb1399	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Jb1400	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp18 Addendum	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp19 Addendum	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp213 Addendum	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp570	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp571	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp572	Historic	Piute Canal	Eligible (A)	Resolve Adverse Effects
42Sp573	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp575	Historic	Trash scatter	Not Eligible	No Action Required
42Sp579	Historic	Trash scatter	Not Eligible	No Action Required
42Sp580	Historic	Can scatter	Not Eligible	No Action Required
42Sp581	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sp582	Historic	Powerline poles	Not Eligible	No Action Required
42Sp583	Historic	Trash scatter	Not Eligible	No Action Required
42Sp584	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp585	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp586	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp587	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp588	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects

Smithsonian Site No.	Site Age	Site Type	NRHP Eligibility	Recommendation
42Sp589	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp590	Prehistoric	temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp591	Prehistoric	Temporary camp	Eligible (D)	Resolve Adverse Effects
42Sp592	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp593	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp594	Prehistoric	Possible habitation site	Eligible (D)	Resolve Adverse Effects
42Sp595	Prehistoric/Historic	Prehistoric temporary camp/historic artifact scatter	Eligible (D)	Resolve Adverse Effects
42Sp596	Prehistoric	Lithic SCATTER	Eligible (D)	Resolve Adverse Effects
42Sp597	Prehistoric/Historic	Lithic scatter/trash scatter	Eligible (D)	Resolve Adverse Effects
42Sp598	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sv2342	Historic	Rocky Ford Canal	Eligible (D)	Resolve Adverse Effects
42Sv2343	Historic	Vermillion Canal	Eligible (A)	Resolve Adverse Effects
42Sv2502 Addendum	Historic	Denver and Rio Grande Railroad	Eligible (A)	Resolve Adverse Effects
42Sv2737	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv2738	Historic	Farmstead	Eligible (D)	Resolve Adverse Effects
42Sv2739	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sv2740	Historic	Corral	Not Eligible	No Action Required
42Sv2741	Historic	Hay derrick	Not Eligible	No Action Required
42Sv2742	Historic	Hay derrick	Eligible (C)	Resolve Adverse Effects
42Sv2743	Historic	Corral	Not Eligible	No Action Required
42Sv2744	Historic	Little ditch	Not Eligible	No Action Required

4.12.2.3 Alternative C

A total of 13 National Register eligible historic properties would be adversely affected by the construction of Alternative C. Seventeen other archaeological sites identified within the APE for Alternative C were determined ineligible for listing in the National Register. The significant sites identified within the APE for Alternative C consist of five prehistoric sites (all lithic scatters) and seven historic sites (two remnants of the Piute Canal, the Vermillion Canal, the Rocky Ford Canal, the Denver and Rio Grande Railroad, a farmstead, and a hay derrick). These sites would be subject to a combination of direct physical impacts and effects associated with clearing vegetation, mechanized grading, vibration, and soil excavation. Because the project would result in improved access to nearby archaeological sites, other impacts could include increased potential for vandalism, littering, collecting of surface artifacts, and subsurface looting.

Table 4.12-2 lists the sites located within the APE for Alternative C including significant sites where adverse effects will need to be resolved through future discussions with the Section 106 consulting parties.

Table 4.12-2. Archaeological Sites within the APE of Alternative C

Smithsonian No.	Site Age	Site Type	NRHP Eligibility	Recommendation
42Sp570	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp571	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp572 ^a	Historic	Piute Canal	Eligible (A)	Resolve Adverse Effects
42Sp573	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sp575	Historic	Trash scatter	Not Eligible	No Action Required
42Sp579	Historic	Trash scatter	Not Eligible	No Action Required
42Sp580	Historic	Can scatter	Not Eligible	No Action Required
42Sp581	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sp582	Historic	Powerline poles	Not Eligible	No Action Required
42Sp603	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sp604	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sv2342	Historic	Rocky Ford Canal	Eligible (A)	Resolve Adverse Effects
42Sv2343	Historic	Vermillion Canal	Eligible (A)	Resolve Adverse Effects
42Sv2344 ^a	Historic	Piute Canal	Eligible (A)	Resolve Adverse Effects
42Sv2502	Historic	Denver and Rio	Eligible (A)	Resolve Adverse

Smithsonian No.	Site Age	Site Type	NRHP Eligibility	Recommendation
Addendum		Grande Railroad		Effects
42Sv2737	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv2738	Historic	Farmstead	Eligible (D)	Resolve Adverse Effects
42Sv2739	Prehistoric	Lithic scatter	Eligible (D)	Resolve Adverse Effects
42Sv2740	Historic	Corral	Not Eligible	No Action Required
42Sv2741	Historic	Hay derrick	Not Eligible	No Action Required
42Sv2742	Historic	Hay derrick	Eligible (C)	Resolve Adverse Effects
42Sv2743	Historic	Corral	Not Eligible	No Action Required
42Sv2744	Historic	Little ditch	Not Eligible	No Action Required
42Sv2746	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv2747	Historic	Farmstead	Eligible (D)	Resolve Adverse Effects
42Sv2748	Historic	Farm equipment concentration	Not Eligible	No Action Required
42Sv2749	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv2750	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv2751	Prehistoric	Lithic scatter	Not Eligible	No Action Required
42Sv5752	Historic	Trash scatter	Not Eligible	No Action Required

^a Note that the different segments of the Piute Canal have different site numbers.

4.12.3 Mitigation Measures for Impacts to Cultural Properties

SEA has determined that the proposed project would have adverse effects to cultural resources within the project's APE. The construction of Alternative B would adversely affect 33 National Register eligible or listed sites, while construction of Alternative C would adversely affect 13 significant archaeological sites. SEA will continue to consult with the SHPO, federally recognized tribes, BLM, and other Section 106 consulting parties to develop appropriate measures to resolve adverse effects to historic properties.

Potential mitigation measures for impacts to cultural resources are further discussed in Section 6.3.12, Cultural Resources, and Section 6.4.10, Cultural Resources.

4.13 Impacts to Environmental Justice Communities

4.13.1 Methodology

SEA followed a five-step process to evaluate the expected impacts of the proposed alternatives on environmental justice communities. The five-step process draws on the general approach previously used by SEA as well as the USEPA Region VI Environmental Justice methodology (USEPA 1996).

1. SEA analyzed the expected effects of the proposed alternatives on environmental justice populations.
2. SEA determined whether any environmental justice populations are located in the study area. The presence or absence of environmental justice populations was analyzed for each census tract in the study area. An environmental justice population is defined as one that meets any of the following criteria:
 - Over one-half of the census tract residents are minorities.
 - Over one-half of the census tract households are low-income households.
 - The percentage of minorities in the census tract is more than 10 percentage points higher than the percentage of minorities in Juab, Sanpete, and Sevier Counties.
 - The percentage of low-income households in the census tract is more than 10 percentage points higher than the percentage of low-income households in the involved counties.
3. SEA assessed whether any expected effects to environmental justice populations could be high and adverse. To make this determination, SEA considered whether effects would be significant as defined by NEPA (CEQ 1997).
4. SEA analyzed the spatial distribution of potential environmental justice populations (that is, minority and low-income populations) relative to the proposed alternatives. SEA mapped available economic and demographic information in order to identify areas of potential impact.
5. SEA determined whether any potentially high and adverse effects would be disproportionately borne by environmental justice populations.

SEA identified minority and low-income populations using data from the 2000 U.S. census. Low-income households include all households below the Department of Health and Human Services poverty threshold for a family of four. In 1999 (the year that census data were collected), this value was \$16,700 per year for a family of four and \$8,240 per year for a single person. According to the 2000 U.S. census data, there are minority and low-income populations in the study area (see Table 3.13-1, Minority and Low-Income Populations in Utah and the Study Area). However, none of these populations meet the criteria for environmental justice populations listed above.

As a result of this five-step process, SEA determined that there are no environmental justice populations in the study area according to the criteria listed above.

4.13.2 Alternative A (No-Action Alternative)

According to Table 3.13-1, Minority and Low-Income Populations in Utah and the Study Area, none of the minority or low-income populations in the study area meet the criteria for environmental justice populations listed in Section 4.13.1, Methodology. Therefore, the No-Action Alternative would not cause any impacts to environmental justice populations.

4.13.3 Alternative B (Proposed Action)

According to Table 3.13-1, Minority and Low-Income Populations in Utah and the Study Area, none of the minority or low-income populations in the study area meet the criteria for environmental justice populations listed in Section 4.13.1, Methodology. Therefore, Alternative B would not cause any disproportionately high or adverse effects to environmental justice populations. This alternative would be built in an undeveloped, rural area. No residential relocations would be required as a result of Alternative B.

Although there are vulnerable age groups¹² in the study area, no persons would be displaced or relocated. Access to services or transportation would not be denied to any group. Therefore, the project would not impact vulnerable age groups.

4.13.4 Alternative C

According to Table 3.13-1, Minority and Low-Income Populations in Utah and the Study Area, none of the minority or low-income populations in the study area meet the criteria for environmental justice populations listed in Section 4.13.1, Methodology. Therefore, Alternative C would not cause any impacts to environmental justice populations. This alternative would be built in an undeveloped, rural area. No residential relocations would be required as a result of Alternative C.

Although there are vulnerable age groups in the study area, no persons would be displaced or relocated. Access to services or transportation would not be denied to any group. Therefore, the project would not impact vulnerable age groups.

4.13.5 Mitigation Measures for Impacts to Environmental Justice Populations

SEA has determined through its analysis that no environmental justice populations are present and that the Proposed Action and Alternatives would have a negligible effect on environmental justice populations. No mitigation measures are proposed.

¹² Vulnerable age groups would include children (age 18 and under) and senior citizens (age 65 and over). These populations are not specifically defined as environmental justice populations in Title VI and Executive Order 12898.

4.14 Impacts to Recreation

Section 3.14, Recreation, presents existing and anticipated recreation opportunities in the project study area. This section describes the expected impacts of construction and operation of the proposed rail line on recreation including access roads, general recreation uses and specific recreation sites, off-highway vehicle (OHV)–based recreation, and Special Recreational Management Areas. Appropriate measures to avoid, minimize, or mitigate the expected impacts on recreation resources are also proposed. Other impacts that could affect recreation resources such as noise and visual impacts are discussed in their respective sections.

4.14.1 Methodology

SEA considered the expected effects of the proposed alternatives on recreation in the study area. Impacts to recreation can occur when construction of a proposed action results in:

- The loss of recreation lands or suitability of lands for recreation
- The disturbance of recreation opportunities or access to these opportunities
- The introduction of noise

4.14.2 Alternative A (No-Action Alternative)

Under the No-Action Alternative, no new rail line construction would take place. Central Utah shippers would continue to transport commodities by surface roads throughout Sanpete and Sevier Counties. No impacts to recreation would occur as a result of the No-Action Alternative.

4.14.3 Alternative B (Proposed Action)

Alternative B would involve construction of a new rail line that would connect the UPRR mainline to shippers throughout the Sevier Valley and central Utah. Alternative B would run from the UPRR mainline near Juab, about 16 miles south of Nephi, to the industrial park about 0.5 mile southwest of Salina.

4.14.3.1 BLM Recreation Land

The dominant recreation activities in the study area are hunting in the fall and ATV use year-round as conditions permit. Other activities include hiking and camping. About 9,747 acres of BLM-administered land in the study area are open for these recreational uses (Bonar 2006). Alternative B would impact about 20.43 acres of this recreation-designated BLM land, or 0.02%. Impacts to the Painted Rocks Campground would occur during the construction phase of the rail line. However, given the small percentage of acreage impacted and the specific acreage impacted (a linear right-of-way about 75 feet wide and about 3 miles long), SEA does not consider the long-term impacts to recreation from Alternative B to be significant.

Alternative B would not impact any specially designated areas such as the Sevier Bridge Reservoir, wilderness areas, or areas of critical environmental concern.

4.14.3.2 Paiute ATV Trail System

Alternative B would cross the Paiute ATV trail system (Fishlake National Forest 2006). The crossing would be at-grade and would directly affect about 62 linear feet of the trail (see Figure 4-11, Recreation Impacts). ATV users would have to wait at the crossing for trains to pass. SEA anticipates that one round trip (two movements which equals one full load and one empty back-haul) per day would use the proposed rail line, resulting in about 3 minutes 12 seconds of wait time per day (two trains at 1 minute 36 seconds each). This wait time is considered relatively short and would not cause major disruptions to trail users. Appropriate railroad crossing signs would be used to alert ATV users to watch for approaching trains.

4.14.3.3 Chicken Creek Reservoir

Alternative B would not cause any recreation impacts to Chicken Creek Reservoir.

4.14.3.4 Yuba Lake Recreation Area and Sevier Bridge Reservoir

Alternative B would impact about 11 acres of Yuba Lake Recreation Area near Painted Rocks Campground as shown in Figure 4-11, Recreation Impacts.

4.14.3.5 Painted Rocks Campground

Painted Rocks Campground is adjacent to the Sevier Bridge Reservoir, and the campground is accessed from SR 28 by a 1-mile-long dirt road. Alternative B would cross this dirt access road about 200 yards from the main entrance. No campground or picnic facilities would be directly impacted, and the short duration of delay at the crossing (less than 2 minutes per train) would not cause a major impact. Appropriate railroad crossing signs would be used to alert recreationists to watch for approaching trains. Noise impacts would be minor and are discussed in Section 4.9, Noise Impacts.

4.14.3.6 Yuba Narrows

Under Alternative B, the rail alignment would cross the Sevier Bridge Reservoir on a 300-foot-long bridge approximately midway between the dam and the Sevier River inlet. The bridge would have a 14-foot clearance to allow boats on the Sevier Bridge Reservoir to pass underneath it (the average height of a speedboat is 12.5 feet). The bridge may hinder use of some sailboats depending on mast height. Boating activities might be disrupted during construction of the bridge, but impacts would be minor.

4.14.3.7 Sevier River

Alternative B would not cause any recreation impacts to the Sevier River. The noise analysis conducted for this project found that noise levels would not increase significantly and access to fishing and hunting would not be impaired (see Section 4.9, Noise Impacts).

4.14.3.8 Redmond Lake

Alternative B would not cause any recreation impacts to Redmond Lake or the Redmond WMA.

4.14.4 Alternative C

4.14.4.1 BLM Recreation Land

About 9,747 acres of BLM-administered land in the study area are open for recreational uses (Bonar 2006). Alternative C would impact about 63.46 acres of this recreation-designated BLM land, or 0.06%. Given the small percentage of acreage impacted and the specific acreage impacted (a linear right-of-way about 75 feet wide and about 9 miles long), SEA does not consider the impacts to recreation from Alternative C to be significant. Alternative C would not impact any specially designated areas such as wilderness areas or areas of critical environmental concern.

4.14.4.2 Paiute ATV Trail System

Under Alternative C, in order to accommodate the rail line, a filled berm up to 75 feet high and a maximum of 550 feet wide would be required as the rail line approaches the southern terminus. This berm would cut off a loop of 1,570 linear feet of the Paiute ATV trail. Because of the difficulty of altering the existing trail to cross the raised berm, this portion of the Paiute ATV trail would need to be abandoned or relocated to avoid the berm.

4.14.4.3 Chicken Creek Reservoir

Alternative C would not cause any recreation impacts to Chicken Creek Reservoir.

4.14.4.4 Yuba Lake Recreation Area and Sevier Bridge Reservoir

The impacts to Yuba Lake Recreation Area and the Sevier Bridge Reservoir under Alternative C would be the same as those from Alternative B because the alternatives are on the same alignment in this location.

4.14.4.5 Painted Rocks Campground

The impacts to Painted Rocks Campground under Alternative C would be the same as those from Alternative B.

4.14.4.6 Yuba Narrows

The impacts to Yuba Narrows under Alternative C would be the same as those from Alternative B.

4.14.4.7 Sevier River

The impacts to the Sevier River under Alternative C would be the same as those from Alternative B.

4.14.4.8 Redmond Lake

Alternative C would not cause any recreational impacts to Redmond Lake or the Redmond WMA.

4.14.5 Mitigation Measures for Recreation Impacts

Mitigation measures for impacts to recreation are discussed in Section 6.3.14, Recreation, and Section 6.4.11, Recreation.

4.15 Impacts on Aesthetics

Impacts on visual quality are based on the BLM class objectives described in Section 3.15, Aesthetics. This section identifies expected impacts from the proposed new rail line construction and operation on any areas determined to be of high visual quality as well as impacts on any waterways designated or considered for designation as wild and scenic. Changes in the visual environment can be generally classified as either short-term, construction-related impacts or long-term impacts from permanently altering the landscape. This section also identifies mitigation measures to avoid, minimize, or reduce adverse visual impacts.

4.15.1 Methodology

SEA reviewed the expected effects of the proposed alternatives on the landscape and the visual context of the project area. Effects on visual resources are often difficult to characterize due to the subjective nature of scenic value and differing perceptions of visual quality. SEA considers adverse effects to result from the intrusion of aesthetic elements that are out of character with the current visual setting.

Impacts were determined using the BLM Visual Resource Management (VRM) Program. BLM's VRM system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. Visual impacts were assessed from 11 KOPs in the study area as described in

Appendix I, Visual Resource Management, and shown in Figure 4-12, Impacts to Visual Resource Management.

4.15.2 Visual Characteristics

4.15.2.1 Alternative A (No-Action Alternative)

Construction-Related Visual Impacts

Under the No-Action Alternative, no new rail line construction would take place. Central Utah shippers would continue to transport commodities by surface roads in Sanpete and Sevier Counties. Because no rail line would be built, no large topographic changes or soil disturbances from construction-related cuts, fills, or tunnel and bridge construction would occur. The physical and visual character of the project area would remain unchanged by rail line construction.

Long-Term Visual Impacts

Under the No-Action Alternative, the Central Utah Rail project would not be built. However, the study area would experience continued residential, commercial, industrial, and recreational development that could affect visual resources. The exact nature of the potential effects to visual resources from future development is not known at this time.

4.15.2.2 Alternative B (Proposed Action)

Construction-Related Visual Impacts

Alternative B would involve construction of a new rail line that would connect the UPRR mainline to shippers in Sanpete and Sevier Counties. The alternative would run from the UPRR mainline near Juab, about 16 miles south of Nephi, to the industrial park about 0.5 mile southwest of Salina. Under Alternative B, short-term construction-related impacts in the study area would include construction vehicle activity and accompanying staging areas, stockpiling of excavated material, and construction-related dust.

During construction, the work zone would be cleared of vegetation. The exposed bare ground would likely contrast visually with the surrounding agricultural and residential areas that the viewer is used to seeing. Visual quality from sensitive viewer locations would be temporarily reduced during construction. Until the construction is completed and the right-of-way is revegetated, the construction area would stand out.

Construction-related visual impacts from the rail line itself would likely be greatest where construction would require the largest cut slopes. Mitigation for large cut slopes is addressed in Section 6.4.12, Aesthetics. Additionally, where Alternative B is farther from large viewer groups, its construction-related visual impacts would be apparent to fewer people, while in locations where Alternative B is closer to viewer groups, construction-related visual impacts

would be more obvious. Construction-related visual impacts would likely be greatest in locations where Alternative B is closer to U.S. highways and I-15, near the Painted Rocks Campground, at the Sevier Bridge Reservoir, at the Redmond WMA, and in the town of Salina.

Long-Term Visual Impacts

The long-term visual impacts from Alternative B would result from a new rail line including cut-and-fill slopes, bridges, loss of agricultural land and other vegetation, and drainage structures. The long-term visual impacts of Alternative B were assessed from 11 KOPs as described in Appendix I, Visual Resource Management. The railroad tracks would not be under continuous use; there would be one round trip (two movements which equals one full load and one empty back-haul) per day expected. For this reason, the users are not likely to have a high sensitivity to the tracks because the tracks themselves are not very visible by most viewers. In addition, any maintenance buildings or storage yards would follow federal, state, and local policies and regulations to maintain the integrity of visual resources in the project area.

4.15.2.3 Alternative C

Construction-Related Visual Impacts

Construction-related visual impacts from Alternative C would be the same as those from Alternative B.

Long-Term Visual Impacts

Alternative C would result in similar long-term visual impacts as Alternative B. However, Alternative C would not involve any crossings of the Piute Canal and associated irrigation facilities since the entire alternative would be west of and upslope from the canal. The visual impacts from Alternative C would be greater in the southernmost 2.5 miles of the study area since the rail line would be placed on a 75-foot-tall berm through the agricultural land between the foothills and the loading facility north of I-70. There would be fewer visual impacts from canal/irrigation crossing structures, but more disturbance of agricultural land that would be highly visible to users of the highway and residents of the study area. The long-term visual impacts of Alternative C were assessed from 11 KOPs as described in Appendix I, Visual Resource Management.

4.15.3 User Groups

There are two basic user groups associated with the rail line: those using the rail line (who have views from the rail line) and those looking at the rail line (who have views of the railroad tracks). No passengers would use the rail line since the purpose of the rail line is commercial and industrial rather than recreational. The other user group, which is difficult to

quantify, includes local residents and agricultural landowners as well as commercial and industrial owners. There are also scattered recreational users such those using the Sanpete Fish and Game Club and boaters at the Sevier Bridge Reservoir.

These groups experience a visual sensitivity that depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. The visual sensitivity is generally higher for the group viewing the new transportation right-of-way than for the group that uses the rail right-of-way (U.S. Forest Service 1995; FHWA 1983). Residential and agricultural viewers typically have extended viewing periods and are concerned about changes in their views. Viewers using recreation areas are also concerned about the changes in their views.

The railroad tracks would not be under continual use, because only one round trip (two movements which equals one full load and one empty back-haul) per day is expected. Therefore, users are not likely to have a high sensitivity to the tracks because the tracks themselves are not very visible by most viewers.

4.15.4 Wild and Scenic Rivers

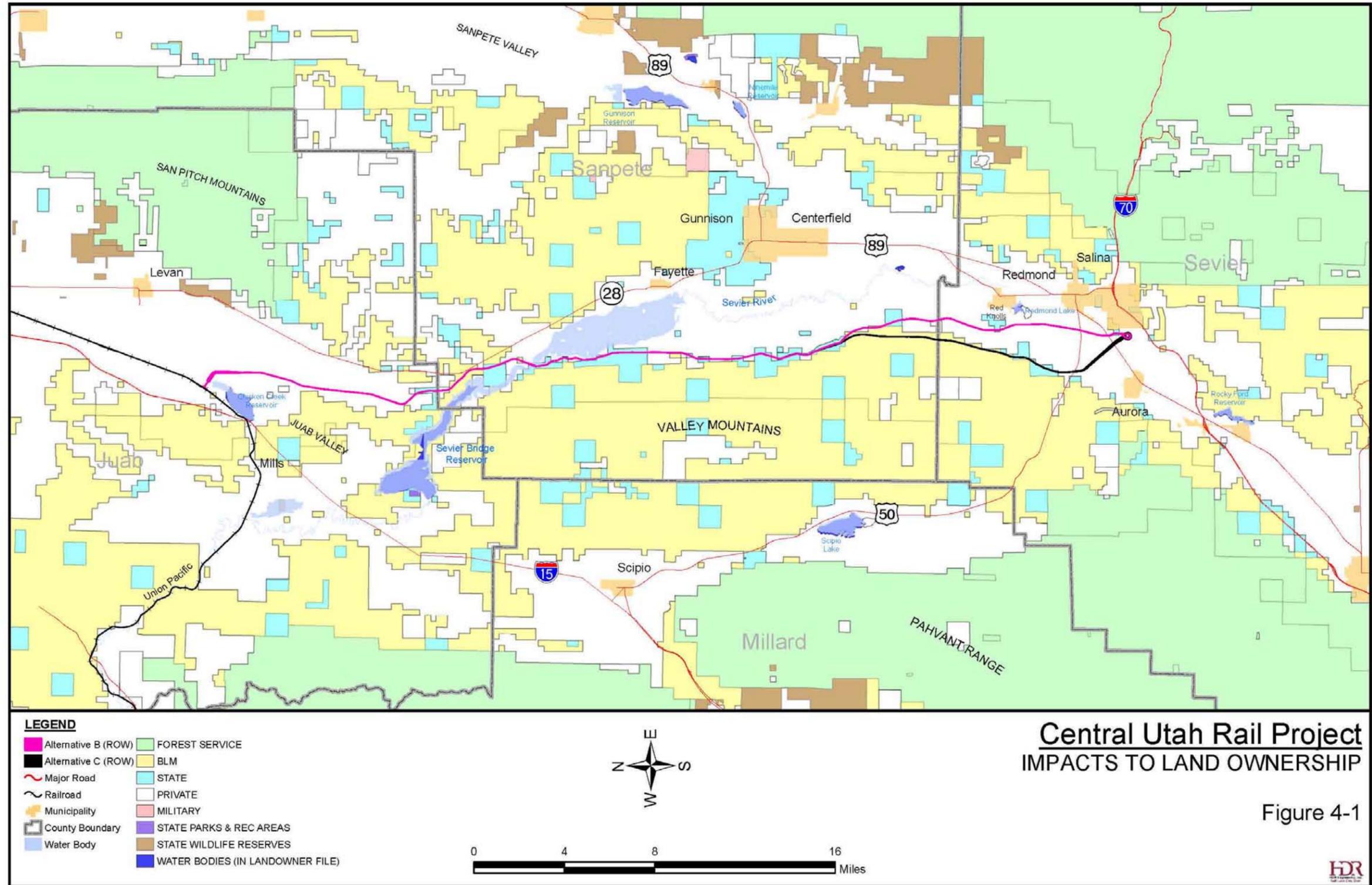
Since there are no potentially eligible wild, scenic, or recreational river segments in the study area (BLM 2005), the proposed new rail line construction and operation would not impact wild and scenic rivers.

4.15.5 Mitigation Measures for Impacts on Aesthetics

Mitigation measures to visually harmonize the rail line with existing structures and other landscape elements in the project area and other impacts to aesthetics are discussed in Section 6.4.12, Aesthetics.

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Figure 4-1. Impacts to Land Ownership



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Figure 4-2. Land Use Impacts

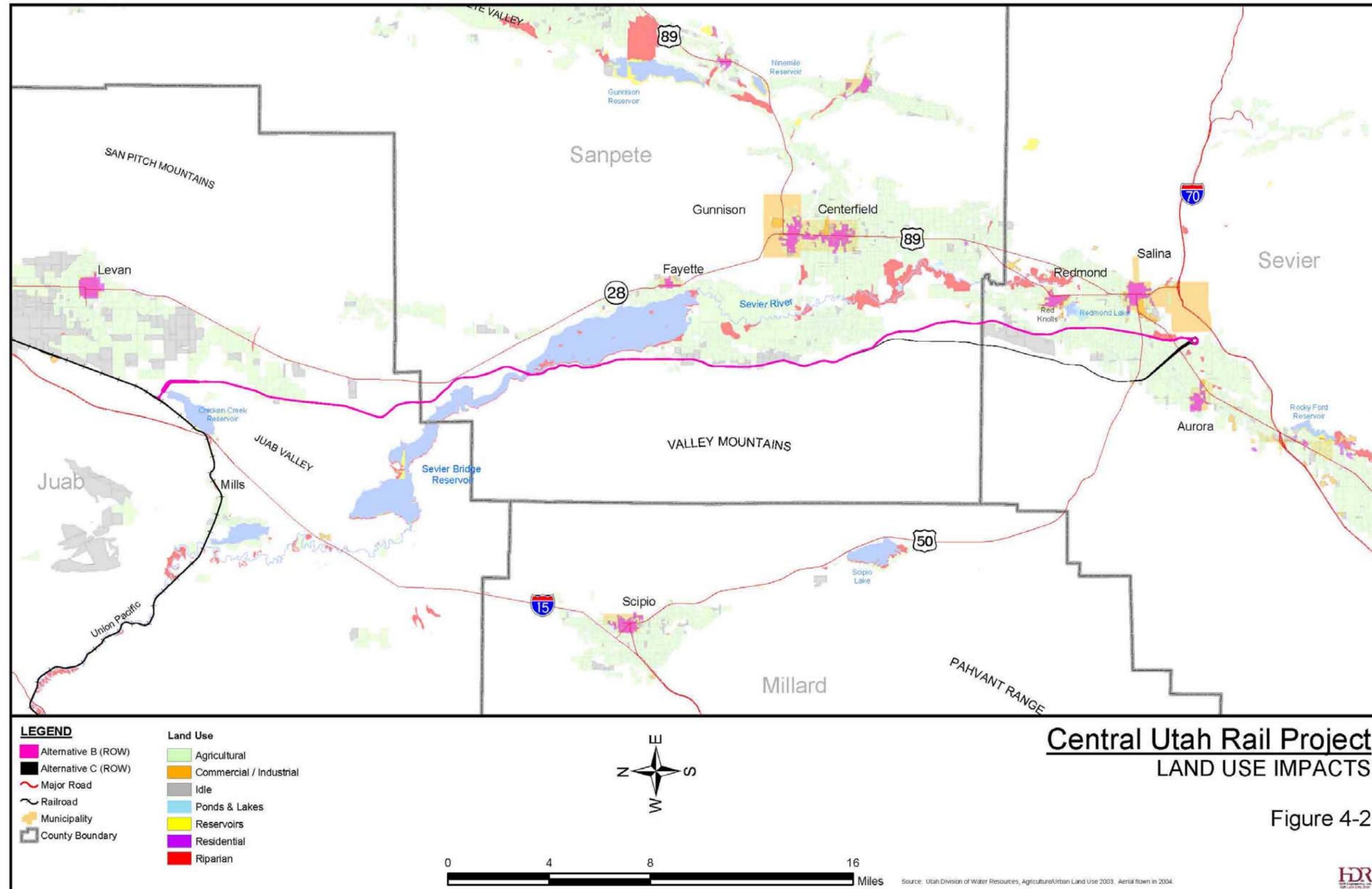


Figure 4-3. Impacts to Grazing Allotments

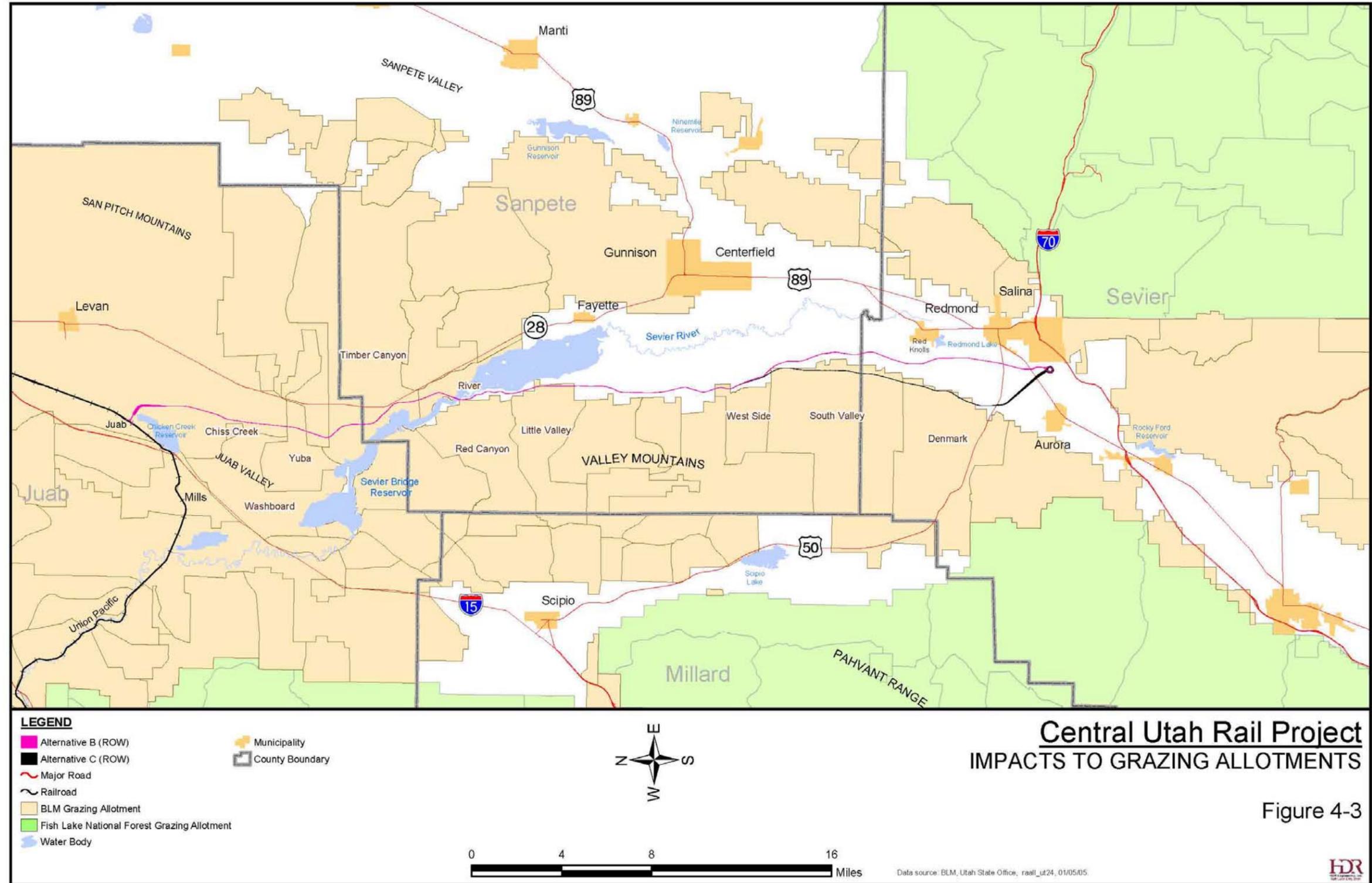
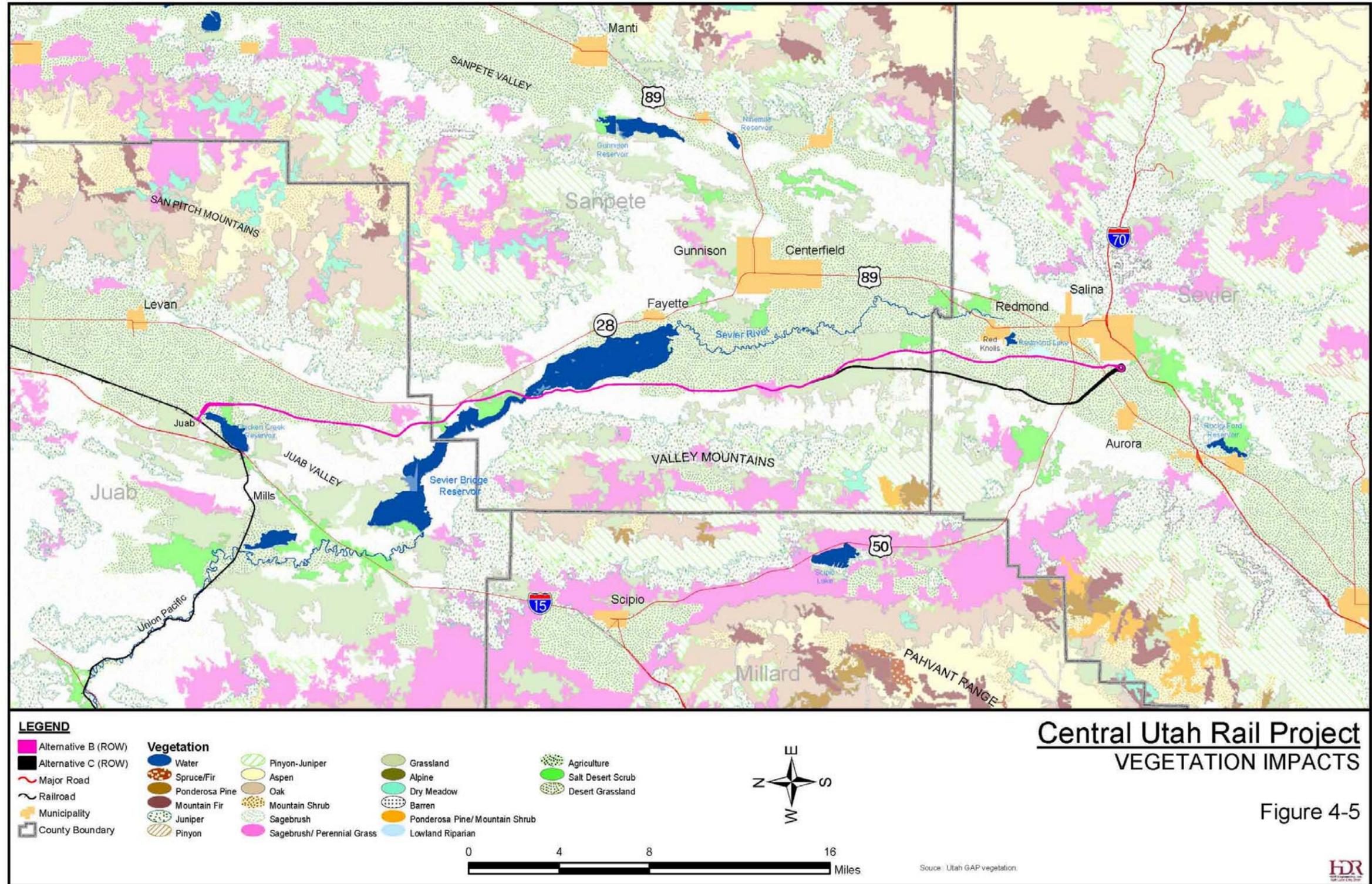


Figure 4-5. Vegetation Impacts



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Figure 4-6. Wetland/Drainage Impacts

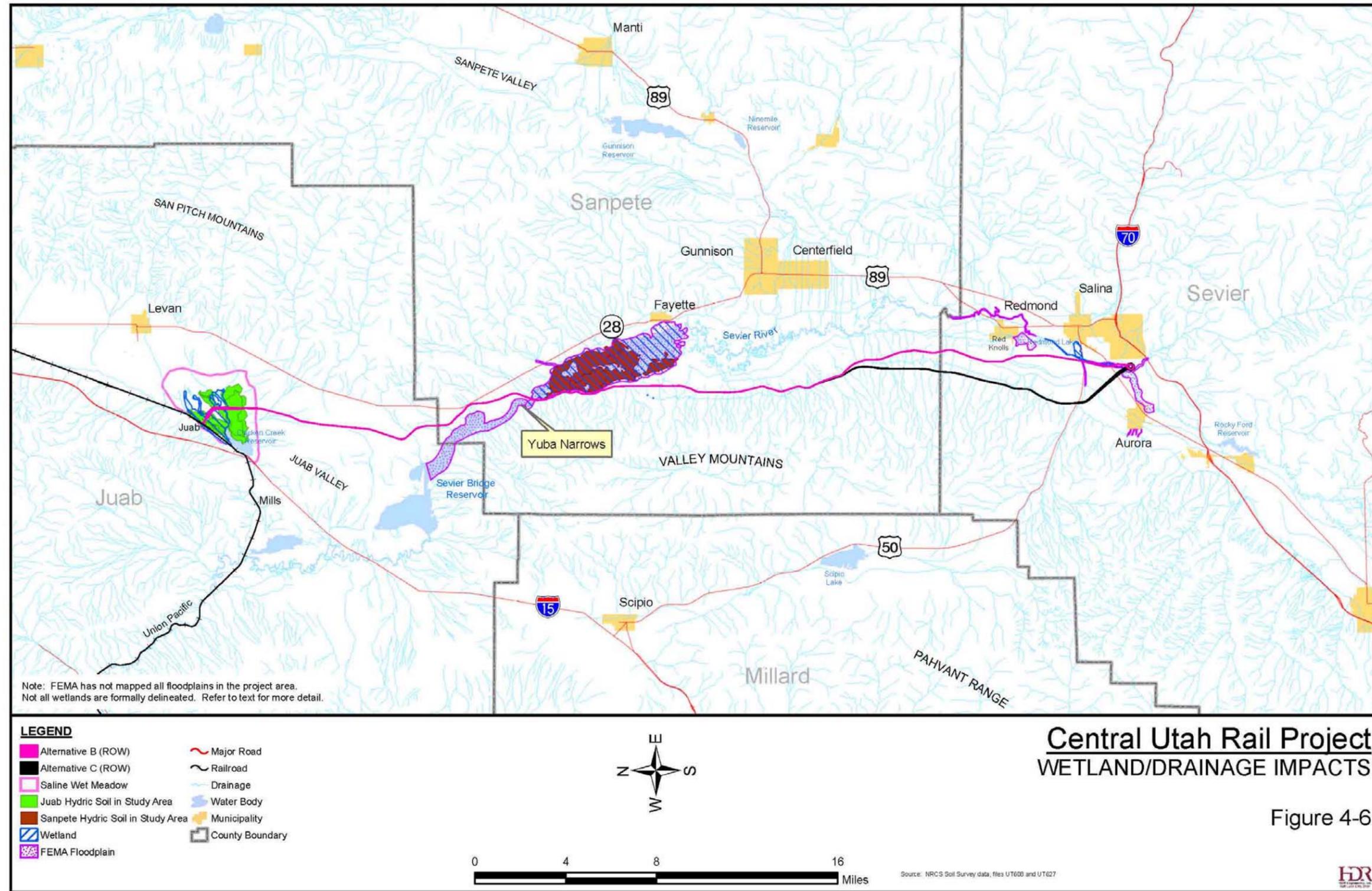


Figure 4-7. Impacts to Water Resources

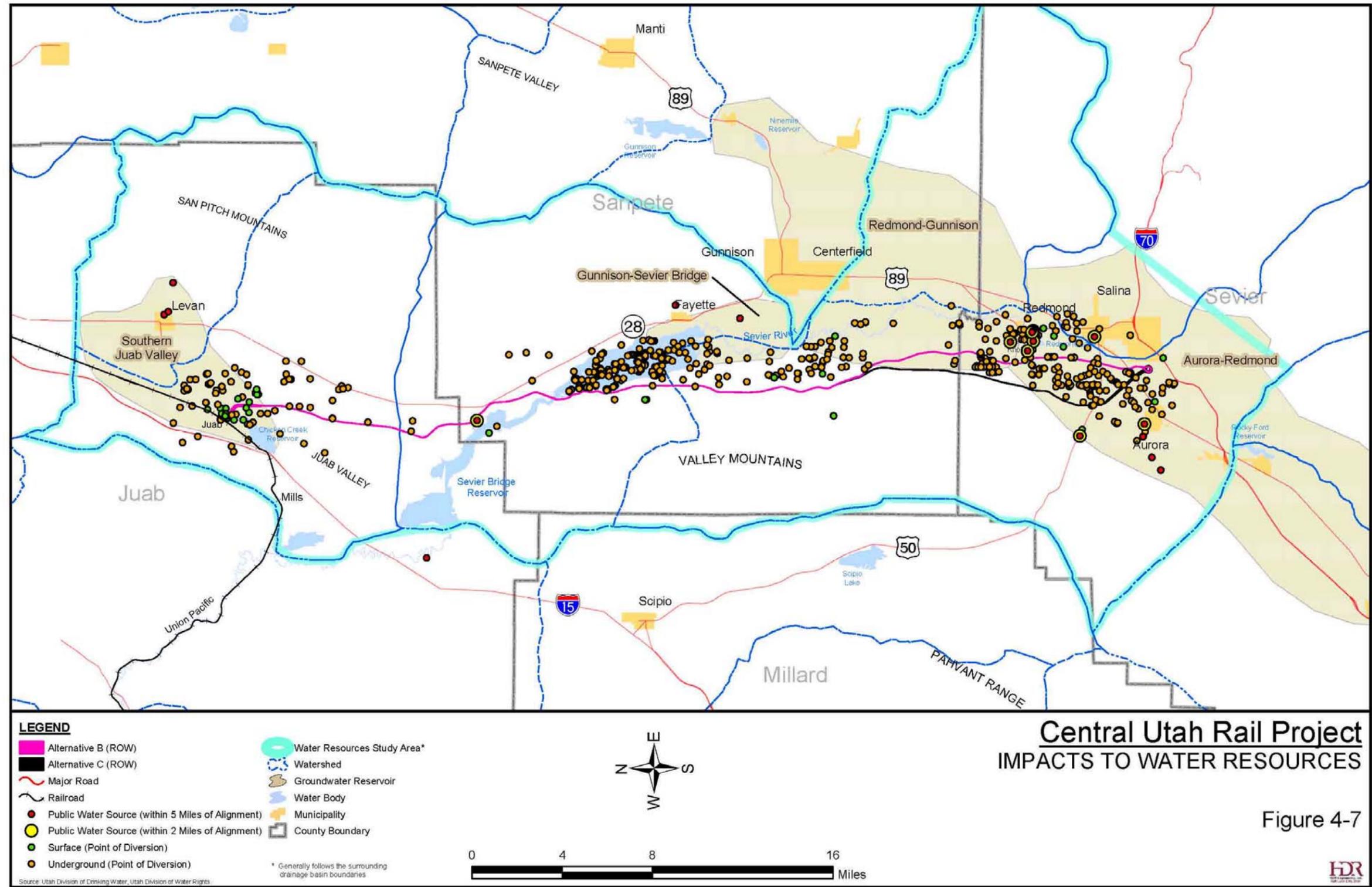


Figure 4-8. Impacts to Prime and State Important Farmland

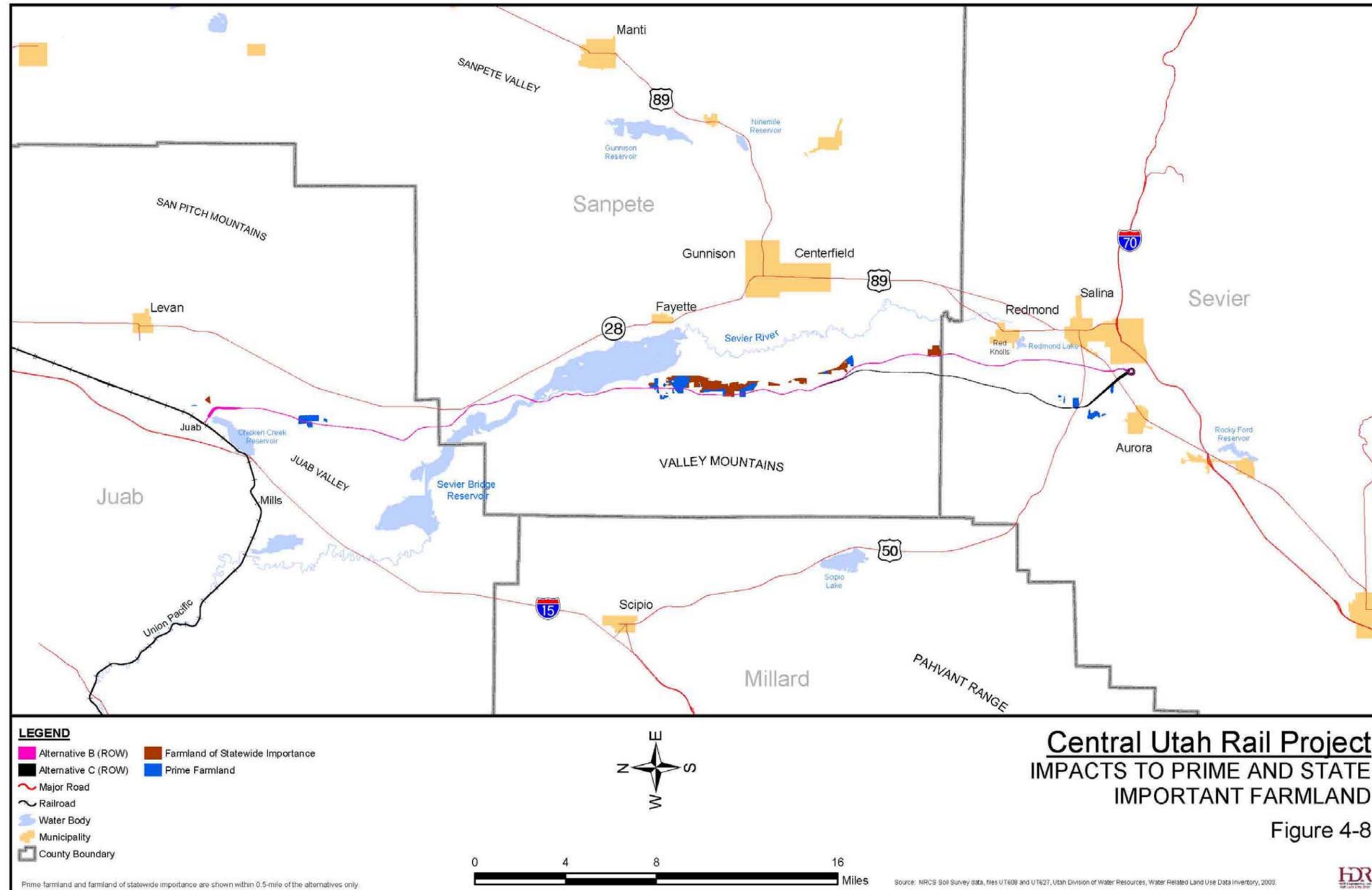


Figure 4-9. Impacts to Potential Hazardous Waste Sites

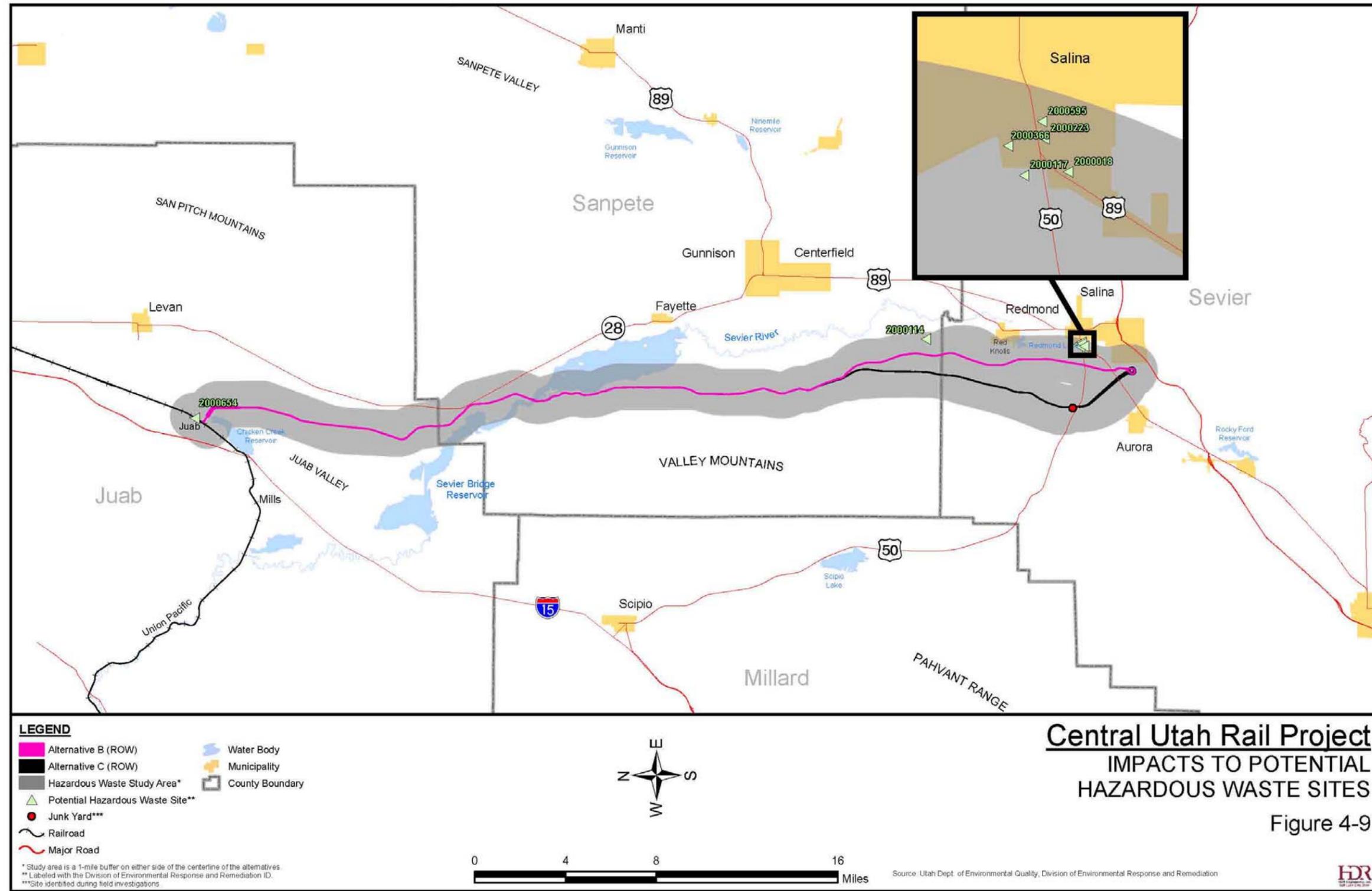
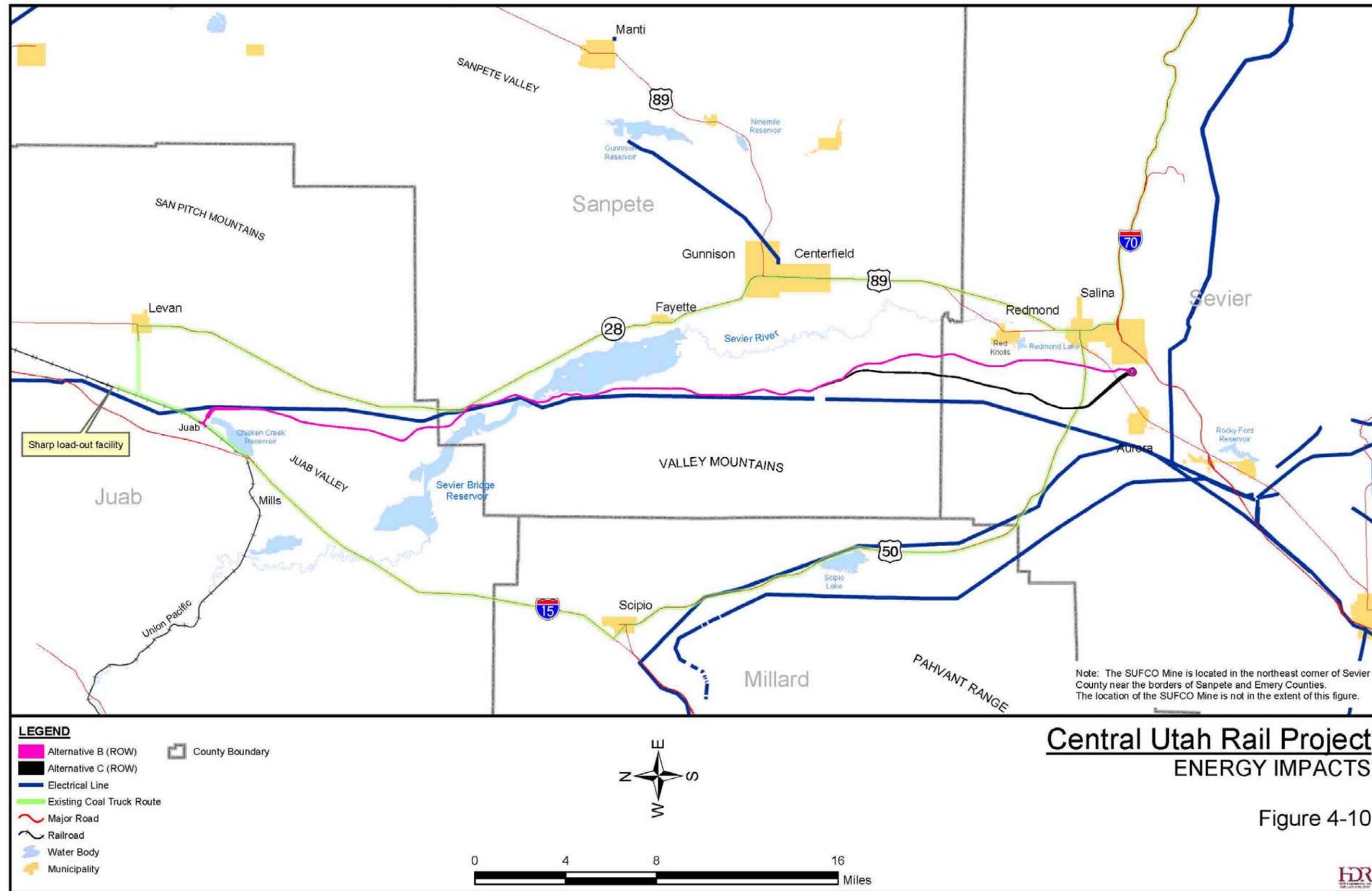
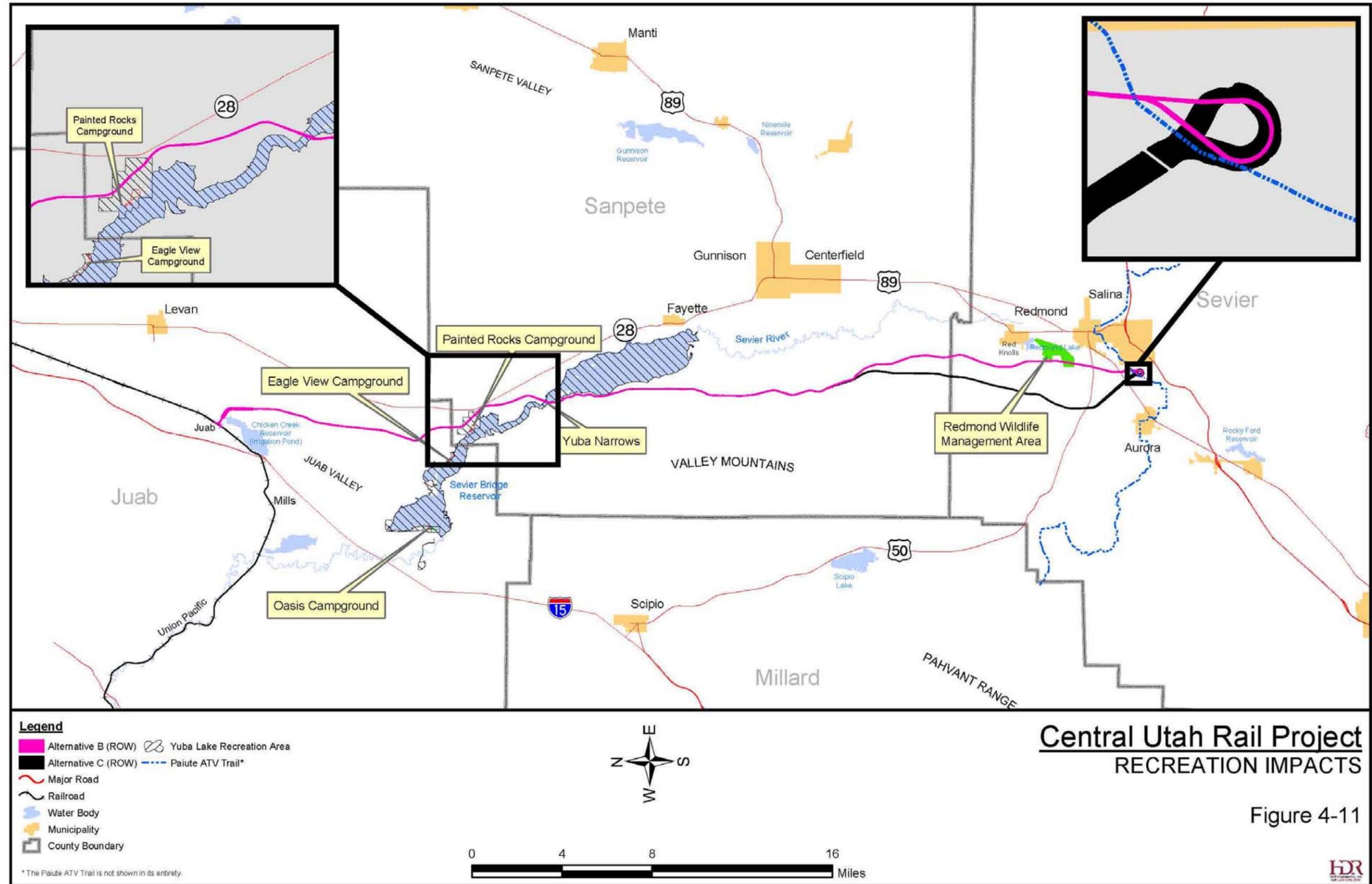


Figure 4-10. Energy Impacts



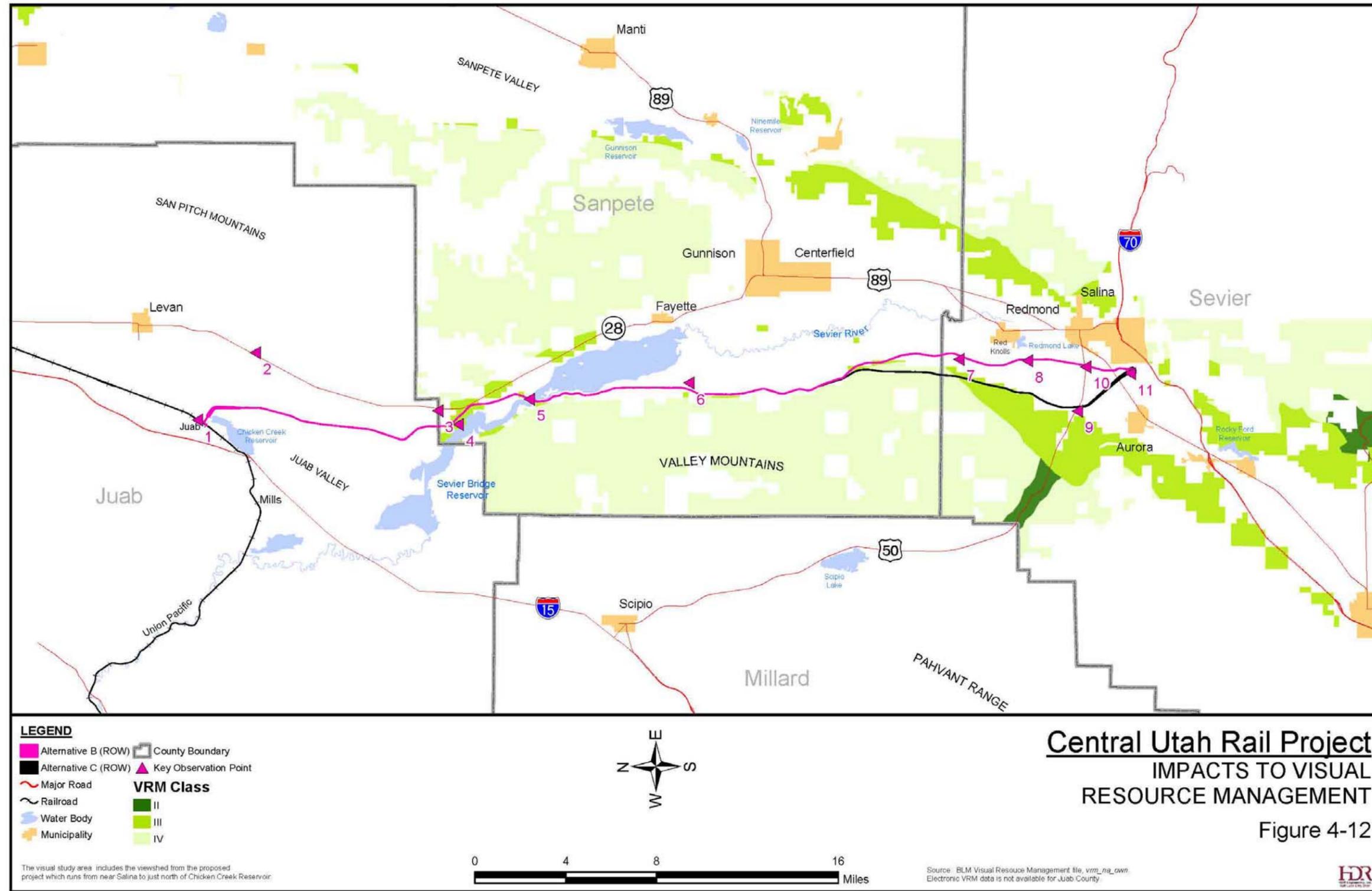
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Figure 4-11. Recreation Impacts



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Figure 4-12. Impacts to Visual Resource Management



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