Fortune 500 Headquarters and Freight Patterns

As the pattern of economic activity shifts, so does the geography of global corporations. The distribution of Fortune Global 500 companies has radically changed since the collapse of the Soviet Union (Figure 3-4). Asia has established a significant lead, with Europe and North America falling further behind. The United States, once the dominant center of corporate headquarters, is now being challenged by China, the nation with the single largest gain since 1990. Southeast Asia, Latin America, Russia, and the former Soviet Bloc nations have also experienced increases. While some European nations have added Fortune 500 headquarters, most have experienced significant losses, as has Japan, the United States, and to a lesser degree, Canada. As regions connect and develop to become larger and more competitive, companies move and merge together in ways that increase their competitive advantage and allow for more cost-effective operations. Nations, regions, and metros that have world 500 headquarters have a competitive advantage as these companies play a vital role as partners at the local, state, and national level in competing for global economic activity. In the western United States, only four states are home to Fortune Global 500 headquarters: California with 14, Washington with three, and Arizona and Oregon with one each (Fortune, 2015).

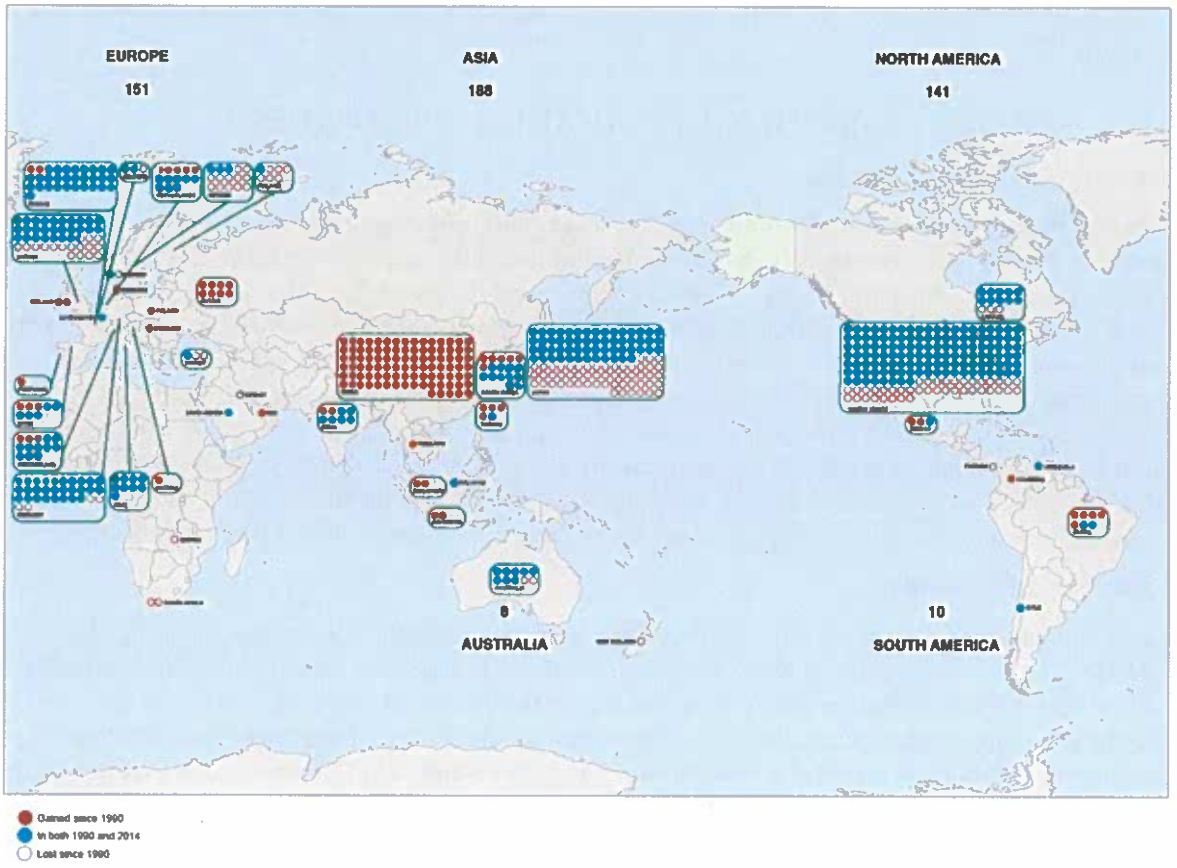

Figure 3-4. Distribution of Fortune Global 500 Companies
Blue Circles represent the number of Fortune Global 500 companies that existed in 1990 and remain by 2014, while red circles represent the number of Fortune Global 500 companies gained since 1990, and empty red circles represent the number of companies lost since 1990 (Source: MG&A, 2015, based on Fortune Magazine data).

While there are limited numbers of the Fortune Global 500 in the western United States, there are a significant number of the Fortune U.S. 500 companies. The distribution of U.S. Fortune 500 companies across the western United States in 2015 reveals an uneven pattern in both the number and types of companies located in the different states and metropolitan areas. California has the most Fortune 500 companies with a total of 53, 31 of which are located in Northern California and 22 in Southern

California (Fortune, 2015). Washington ranks second in the western United States with 10 Fortune 500 companies, followed by Colorado with nine, Arizona with five, Nevada with four, Oregon with three, and Idaho and Utah with one each (Ibid). There are no U.S. Fortune 500 companies in Wyoming, Montana, or New Mexico (Ibid).

The presence of Fortune Global and U.S. 500 company headquarters is one measure indicating the strength of a metro area in the national or global marketplace. The shift of companies to Asia is a sign of their increasing economic strength in the world economy. Headquarters are the location of high-end jobs, have significant influence on public policy and investment, partner with governments in creating jobs, and are typically innovators in new product development to reach world marketplaces. The type of headquarters in Northern California indicates the regions' strength in high tech. Nevada's proximity to these headquarter concentrations allows it to build stronger relationships that can attract new business, as illustrated by the symbiotic relationship between Tesla's battery factory in Reno as a manufacturing center and the Tesla headquarters in the Bay Area. Las Vegas-based Fortune 500 companies are all in the hospitality and accommodations industry; they do not produce any products for export, but rather support the economy of consumption. However, with the recent announcement of a financial company moving to the region, Nevada may continue the trend of economic diversification and attract yet more headquarters.

3.2 A Freight System for Economic Development

Economic Implications of Hub Status

Each tier of hubs (global, inland port, and local) has a very different effect on the local economy. Local hubs affect existing industries found within the area, but have little power to attract other industry to the area. Inland ports and global hubs are a major attraction for industry and have a positive effect on growing and diversifying metro economies. The reason that global hubs and inland ports attract industry is that high-cost freight transfers to inland points are overcome by such factors as the lower net line haul costs and the superior fit of hub services with a shippers' overall distribution network, bolstered by value-added processing, such as final product assembly and brand labeling at sites where the goods are being transferred. While improving the freight infrastructure in local hubs has a beneficial effect on the local economy, it may not serve to attract additional industry, as does the diversity and volume of goods flow and infrastructure additions that can result in the development of an inland port or global hub.

The Missing Major Corridor

The I-11 and Intermountain West Corridor provides a means to fulfill the congressionally designated CANAMEX Corridor, which was originally intended to connect Mexico, the United States, and Canada via the US 93 corridor to I-15. Rather than connecting from Las Vegas to Salt Lake City via I-15, a recent I-11 study found it more advantageous to connect major Intermountain West activity centers, including Reno, thereby creating the vision of a new corridor between I-5 and I-15. This new corridor would create economic synergies between the two largest metros in Nevada and facilitate greater production sharing between Las Vegas, Phoenix, and Mexico (Figure 3-5).

Importantly, the proposed I-11 and Intermountain West Corridor would provide both Las Vegas and Reno with a strong northwest-southeast connection that could be the foundation for greater NAFTA trade and an eastward expansion of West Coast economic activity that is currently hindered by the highly congested transportation network, relative scarcity of developable industrial land, and complex regulatory requirements. This would allow Nevada's population centers to become crossroads serving distribution functions.

Figure 3-5. The Potential Future Freight System Serving Nevada

This figure highlights the major road and rail corridors that currently serve the state and the western United States, highlighting the possible future I-11 corridor that could serve the region (Source: MG&A, 2015, based on Cambridge Systematics, AAPA, USDOT (FHWA, FRA), Oak Ridge National Laboratory, BEA, Fortune, Rand McNally).

The West Coast Corridor that extends from Southern California to Vancouver is a short corridor that does not extend far into Mexico or Canada at either end. At the south end, it connects to Mexico in Tijuana and Ensenada, but not to Baja California because it is a peninsula with very little settlement. At the north end, it is blocked just past Vancouver because of the mountainous terrain. The I-11 corridor could extend from Mexico City, the central hub of the Mexican economy, and further to reach a greater portion of the western Canadian economy by connecting to Edmonton and Calgary. Because of the greater access to the Mexican and Canadian economies, I-11 has the potential to become a continental trade corridor feeding metropolitan areas in the western United States.

Conclusion: Increasing Export Functions and North-South Connectivity

Nevada is an import economy with a significant imbalance between inbound and outbound flows at a ratio of two to one. In order to build a stronger freight infrastructure, the state must build its export functions. Nevada is well situated in the western United States with freight delivery distances of 2 days or less by truck to several major metros despite the widely spaced urban networks. However, with only east-west corridors that do not interact, Nevada has limited access to the western region and serves mainly O&D functions. I-80 serves the northern and eastern regions of the state, while I-15 serves the state's southern region. Most truck and rail freight passes through the state along these corridors. Nevada's hubs and freight facilities are essentially stops along corridors.

Without a north-south corridor creating crossroads through the two major hubs, Nevada's ability to become an integral part of the NAFTA and Western regional markets, and attract new industries from the highly constrained West Coast economic zone will be severely limited. The state's economic development strategy should aim to strengthen its multimodal and multidirectional services to improve its links to Western ports and Eastern markets. Among other things, this involves integrating new intermodal rail terminals with highway and airport assets to capture more value-added distribution functions

3.3 Nevada's Economic and Freight Relationships

Economic Regions

States are political units and their boundaries do not reflect economic regions. The economic regions of the western United States do not follow political jurisdictional lines, but rather are defined by the MTAs. The state of Nevada is divided between three MTAs: San Francisco, Los Angeles, and Salt Lake City (Figure 3-6). The economy of the San Francisco region includes Reno, Los Angeles that includes Las Vegas, and Salt Lake City that includes parts of eastern Nevada are each very different in their economic function and role in the economy of the western United States. As a result, Nevada's relationship to each is very different as the Nevada components of the three economic regions are themselves very different. Therefore, the type of infrastructure that will evolve in each of the three regions will be different.

Figure 3-6. Major and Minor Trade Areas

The economic geography of the state of Nevada is divided between three major trade areas. Northern Nevada is part of the San Francisco MTA, southern Nevada is part of the Los Angeles MTA, and the East-Central section of Nevada is part of the Salt Lake City MTA (Source: MG&A, 2015 based on Rand McNally 2010 data; Fortune 2015; BEA 2013).

Because Nevada does not have its own MTA, understanding the economies of northern, southern, and eastern Nevada must be understood in the context of the greater economic trade area in which they are located. This relationship can be understood by analyzing their freight logistics and trade functions as expressed in commodity flows and logistics infrastructure, the economic structure of Nevada's regional economies and their relationships to the MTAs, and the industrial real estate that is the primary indicator of development activity and dependent on logistics infrastructure. Each of these has an influence on the relationship and defines Nevada's hub functions and its role in the western U.S. regional economy.

Economic Activity and The Freight Network

Economic activity and the freight and logistics network are closely related, as freight networks have developed to serve the economy. In the global economy, economic activity is increasingly attracted to efficient supply chain hubs and networks as they provide the highest level of access and greatest efficiency in the distribution of products. As a result, economic growth is increasingly centered in the urban areas where freight logistics infrastructure, including airports, rail yards, and truck terminals concentrate, as evidenced by the increasing proportion of people and jobs located in urban centers. Within the United States, the top 100 Metro areas produce more than 80 percent the value of all goods traded, 75 percent of U.S. GDP, and contain 66 percent of the national population (Brookings, 2013).

The current freight logistics network serving the three Nevada regions has evolved to fit the size of their populations and the type and structure of economic activity. Currently in Nevada, more than 90.4 percent of the state's population and over 87.8 percent of its gross state product (GSP) are located in the Las Vegas and Reno-Sparks-Carson City metro areas (U.S. Census Bureau, 2014; U.S. Bureau of Economic Analysis [BEA], 2013). Las Vegas is the largest concentration with just over 2 million people, 72.9 percent of the state total, and economic activity at $92.9 billion, or 70.4 percent of GSP (U.S. Census Bureau, 2014; BEA, 2013). The Reno-Sparks-Carson City area is the second largest concentration with 498,512 people, 17.6 percent of the state's population, and economic activity representing a proportional $23 billion or 17.4 percent of the state total (U.S. Census Bureau, 2014; BEA, 2013). The remainder of the state's population, 270,906 people or 9.5 percent, and economic activity, $16.1 billion or 12.2 percent, are dispersed in larger and smaller towns, mining centers, and agricultural areas across the state (U.S. Census Bureau, 2014; BEA, 2013).

Las Vegas' freight infrastructure has largely evolved to serve its tourism economy, heavily dependent on imports and producing few exports. Machinery and mixed freight, which are heavily represented by consumer goods, is its largest value-traded commodity. Reno traditionally had evolved the same way as Las Vegas, but has begun an evolution towards a more diverse manufacturing and service economy. Electronics and mixed freight's consumer products are its highest value-traded commodities. The rural areas in north-central Nevada remain primarily mining and agriculture, and are home to the nation's largest gold reserve and a variety of non-metallic mineral mines. Thus, the natural resources and mining industry sector is very important from a real GDP contribution perspective. The ores, minerals, and their products, mainly produced in the state's metro areas, have national and global markets.

Each region of Nevada has to attract industry based on either a cost advantage in land, labor, and buildings, or on a compatibility basis, based on similar industries that share similar labor and management skills. With California's tax rates and regulations changing, Nevada is becoming a popular alternative for distribution centers (Bauman, 2013). However, crossroad cities that become distribution centers are able to attract industry because they have a structural advantage in that as more goods are handled for distribution to larger markets, it provides a very different infrastructure that supports a wider range of business activity. Thus, the growth of Nevada's logistics functions will be a function of its growth as a more diversified economy with stronger export functions and volumes and major investments in its surface grid of highway interstates and rail to transform the northern and southern Nevada regions into crossroads.

3.3.1 Major Trade Area Overviews: Logistics Infrastructure, Economy, and Industrial Real Estate

3.3.1.1 Northern Nevada/California

The Northern Nevada/California economic region represents the second largest economic concentration in the western United States. Traditionally, the Reno-Sparks market area operated as a market relatively independent market of the Northern California market, although it was long a tourist destination for residents of the Northern California area. However, recent developments in this market area indicate that Northern California companies are increasingly seeing Reno as an extended submarket that has competitive advantages over the markets in the San Francisco Bay Area and Central Valley. As a result, the Reno-Sparks-Carson City area is moving toward greater economic integration and becoming a more diverse and integral subcomponent of the Northern California market.

The $5 billion investment made by Tesla for its Gigafactory in the 100,000-square-foot (ft^2) TRIC represents an example of this trend. The growing and diversifying export economy of Reno and the northern Nevada region is creating significant potential to develop a much stronger infrastructure platform that can attract a much wider range of freight-related economic activity. Some of the infrastructure development will involve internal improvements to the northern Nevada regional infrastructure, higher levels of modal integration, and increased capacity and performance. A second set of improvements will have to address external conditions focused on northern Nevada's access to the Mexican and Canadian markets via the proposed I-11 corridor. Due to the issues of crossing the Sierra Nevada Mountains, a deeper partnership with California will be required to resolve reliability and safety issues in the trans-Sierra freight movements.

Logistics Infrastructure Overview

Currently, Reno is only a stop along the I-80 corridor and not a crossroads that could evolve into a transshipment or transloading point that could reach other markets. As a result, the only intermodal service that could be provided in Reno would be relative to the Northern California market. To start, development agencies in northern Nevada could work with the region's shippers, UPRR and BNSF, to determine what volume of freight is needed to build unit trains at Reno and at what cost point this service would become viable to justify the establishment of a major intermodal rail yard. It may be possible for the Reno rail yard to develop an exchange relationship with Lathrop that favors Reno intermodal consolidation for east-west moves and Lathrop for north-south rail connections. Such a relationship over an immediate and interim period would improve freight connectivity for Reno as its direct north-south capabilities while an I-11 multimodal corridor can be designed and completed. A strong NAFTA corridor connection is needed to allow Reno shippers to efficiently distribute north into the Northwest and Canada, and south into Southern California, Arizona, and Mexico.

Economic Overview

The San Francisco Bay Area within Northern California is the high-tech center of the world and one of the greatest wealth-producing regions on the planet. The population of Northern California and northern Nevada combined is approximately 14,611,069 as of 2014 (U.S. Census Bureau, 2014). The

addition of micro areas brings that total to 15,215,336 (U.S. Census Bureau, 2014). The total GDP of these metros as of 2013 was nearly a $1 trillion economy, at $910.4 billion (BEA, 2013). Within the San Francisco MTA, the northern Nevada subarea holds 2.5 percent of the total good manufacturing practice (GMP) and 4 percent of the employment; a smaller GMP than employment percentage, meaning the jobs are lower-wage in northern Nevada than they are in the San Francisco region.

The rapid growth in size and value of the San Francisco Bay Area economy has resulted in a large shift of industrial activity out of the Bay Area and into the Central Valley. The Central Valley was traditionally a rural agricultural area with small towns and cities that provided services to the farming areas surrounding them. With the growth in the San Francisco Bay Area, these cities along the I-99 corridor from Sacramento to the north, and especially south towards Fresno and Modesto, are being transformed into industrial and manufacturing areas.

More recently, Northern California companies have come to realize that Reno-Sparks area has cost and logistics advantages that can better serve the growth in the Northern California economy. No longer is Reno considered a separate location on the other side of the Sierra Nevada Mountains, but is in the process of becoming more integrated into the San Francisco Bay Area economy.

Industrial Real Estate Overview

Of the western U.S. markets analyzed, the San Francisco Economic region is the second largest market at 617,019,989 ft^2, of which 197,023,051 ft^2 are in Oakland, 170,035,673 ft^2 in Sacramento, 101,888,757 ft^2 in Silicon Valley, 77,082,219 ft^2 in Reno, and 70,990,289 ft^2 in the Peninsula (Figure 3-7) (CBRE, 2015). Thus, the Reno area contains 12.5 percent of the MTA's industrial space, a number that will increase as TRIC builds out.

From 2005 to 2015, the San Francisco Peninsula, Silicon Valley, and Sacramento grew slowly with a range of 2.9 million to 4.9 million ft^2 in growth, while Reno's industrial market grew by 14.6 million ft^2 (CBRE, 2015). Net absorption in the Reno market exceeded Las Vegas by approximately 2.5 million ft^2 in the period from 2009 through 2014, and has been positive every year since 2010 (CBRE, 2015). This is indicative of Reno's efforts to capitalize on its proximity to Northern California markets. However, vacancy rates have fluctuated dramatically over the past decade during the economic downturn and recovery.

At 38 cents, Reno has a competitive lease rate advantage over any of the four Northern California markets, including the San Francisco Peninsula at 90 cents, Silicon Valley at 61 cents, Oakland at 56 cents, and Sacramento at 44 cents (GOED, 2015). Reno has remained low and fairly stable over the decade, with a range of only 11 cents between its maximum of 38 cents per ft^2/month and its minimum of 27 cents ft^2/month (CBRE, 2015). This makes it very competitive for capturing potential spillover. However, once the Tesla plant is complete and in operation, it is expected that there may be a significant increase in at least short-term rates as suppliers and others react to the growing demands of the Tesla plant.

Recent Developments Indicating Future Trends

Powdered Milk Processing Plant in Fallon

Nearby in Fallon, Perazzo Brother's dairy company has added a new milking barn and is capitalizing on a new market overseas using a new powdered milk processing plant that opened a short 5 miles from its dairy farm in 2014 (Breen, 2015). Alan Perazzo has stated that he now has the opportunity to increase production with a stable market that does not require shipping to California anymore (Ibid).

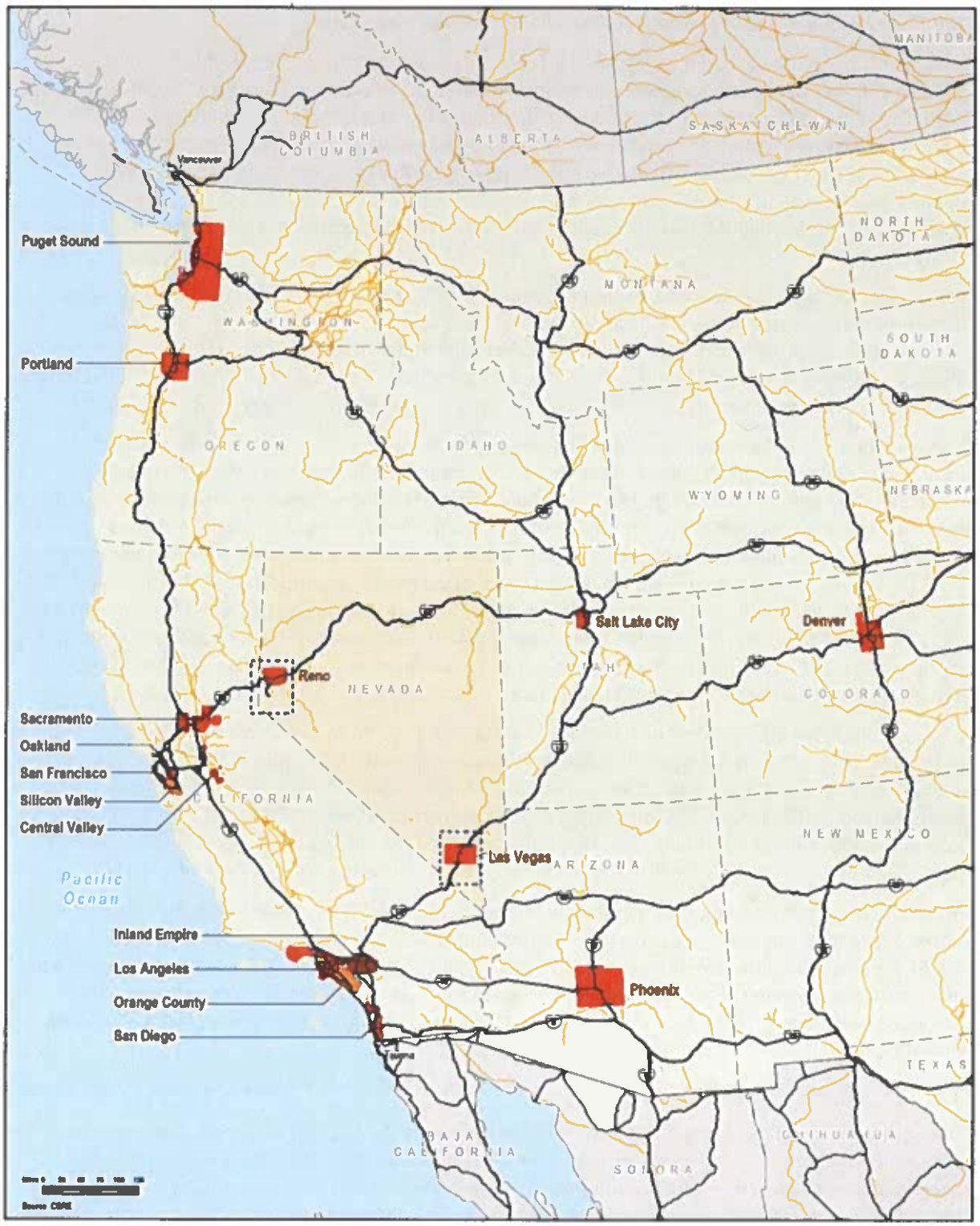

Figure 3-7. Western United States - CBRE Industrial Real Estate Markets

This figure shows the geographic location and size of each industrial real estate market included in this study of the western United States, as defined by CBRE (Source: MG&A, 2015).

The Tesla Example: World's Largest Industrial Park Located near Reno

Northern Nevada has captured widespread attention as Tesla Motors, Inc. has decided to build a $5 billion lithium battery factory, which is currently under construction in TRIC (Hull, 2015). Tesla chose this location not only because of the $1.25 billion in subsidies, but because Nevada's high unemployment rate meant an available workforce, not only to work in the plant, but also to build it (Cohn, 2015). The deal was also made because of land availability and the active lithium mining operation in Nevada (Business Facilities, 2015). As a technology and manufacturing company, Tesla has diverse needs, hiring high-tech workers with doctorates as well as employees for the assembly line (Ibid).

Tesla's Gigafactory in Reno will be the largest lithium battery production plant in the world located in the world's largest industrial park, TRIC, at 110,000 acres (Business Facilities, 2015; CalSTA, 2014). This highlights Reno's projected major rise as a manufacturing and distribution location. The project has already increased commercial and residential real estate values, added a direct flight from Reno to New York, and spurred the movement of Bay Area and other future employees to relocate (Hull, 2015).

This investment represents an incredible opportunity for transformation, with long-term benefits including economic diversification and attracting more manufacturing to the region. An economic impact analysis completed through the Governor's Office of Economic Development (GOED) stated that Tesla will support transportation and utility infrastructure improvements to "greatly enhance the region's competitiveness for future manufacturing and logistics projects," while the state has committed to "$100 million in infrastructure improvements to support the Gigafactory" (Applied Economics, 2014; Business Facilities, 2015). This investment will include the state purchasing the right of way needed to link I-80 and US 50 to the TRIC site in Storey County with the proposed USA Parkway Project (Business Facilities, 2015; NDOT). The 20-year forecast is that Tesla will generate $97 billion in economic activity and boost regional GDP by 26 percent (Hull, 2015).

A key requirement built into the deal is the guarantee that half of the factory workers must be residents of Nevada (Hull, 2015). It is projected that the company will create 6,500 jobs in the next 4 years at an average wage of $27.35 per hour, thereby increasing the metro area's manufacturing employment by more than 50 percent (Applied Economics, 2014). Construction of the facility will create 9,000 direct jobs and 4,700 indirect jobs (Ibid). Overall, this represents a tremendous gain: state employment will rise 2 percent and regional employment will increase by 10 percent (Business Facilities, 2015).

Additionally, large technology companies have relocated some of their operations to Reno, including an Apple data center, an Amazon distribution center, and a Microsoft licensing unit (Business Facilities, 2015). Reno is capitalizing on its proximity to Silicon Valley and emphasizing the lack of corporate and inventory taxes (Business Facilities, 2015). In order to truly capitalize on the job growth potential associated with these developments, the region will need to ensure, create, and attract a technically skilled workforce.

3.3.1.2 Southern Nevada/California

The Southern Nevada/California economic region represents the largest population, logistics, and economic concentration in the western United States. While the Las Vegas regional economy is becoming a more diverse, it remains a primarily tourism market based on accommodations, entertainment, retail, and gaming. As it has traditionally, it continues to attract a large percentage of its tourists from the Southern California area. Unlike Reno-Sparks, Southern California companies do not view Las Vegas as an extended submarket that has competitive advantages over the traditional California markets centered in the Los Angeles Area or the Inland Empire. The Las Vegas area announced a $4 billion investment in a new resort on the Strip along with the recent completion of the City of Rock and the new Las Vegas Arena. All of these investments reinforce the continued focus on tourism as the primary sector of the southern Nevada economy. However, recent announcements by Switch indicate a

billion-dollar investment in Las Vegas, a distribution center announced by Amazon, and Zappos' focus on developing an innovation economy in downtown Las Vegas point toward a long-term interest in economic diversification. Additionally, UNLV has published its Tier One Initiative: its vision to become Nevada's first top 100 American Public Research University by 2025 (UNLV, 2015).

Despite the trend towards greater diversity, it remains a small fraction of the larger and dominant tourism economy that remains a consumption- rather than export-oriented economy. Under the present freight model, Las Vegas' economy will grow in increments related to population increases and general freight activity, but not in its relationship to attracting spillover from the Los Angeles economy. As a result, freight will continue to be import dominated. Both Phoenix and Las Vegas are essentially freight satellites of the Los Angeles logistics concentration and do not function as freight centers on their own as neither forms a crossroads in the western U.S. distribution network.

Logistics Infrastructure Overview

Las Vegas sits atop one of three primary corridors (I-15, I-40, and I-10) connecting Southern California to the East Coast markets; it is only a stop along the I-15 corridor and not a crossroad. Its rail services, especially intermodal connections, are limited. UPRR serves southern Utah on a line that runs northeast-southwest through Clark County and has access to several industrial sites. Its intermodal facility at Valley yard offers inbound service from Chicago to Las Vegas and outbound service from Las Vegas to Los Angeles; however, there is no outbound service from Las Vegas to Chicago or any other destination (Mesquite Regional Business, Inc., 2015). These limiting service factors make the crossroad strategy with improved direct intermodal connections more difficult to realize than it may be in northern Nevada. Nevertheless, Las Vegas does have a well-established logistics and operation base that employs more than 38,000 workers (which constitute the labor base of its logistics supply services) and that sector has increased the number of jobs in this category by nearly 4,000 between 2004 and 2014 (GOED, 2015).

One of the strongest beneficial connections between tourism and trade in greater Las Vegas is McCarran International Airport, which connects to nearly 140 different destinations, including points in Central America, Europe, and Asia (Las Vegas Global Economic Alliance [LVGEA]). Each day, the airport transports approximately 611,000 pounds of arriving/departing cargo (Mesquite Regional Business, Inc., 2015). It is the base for air cargo operations of several airlines including US Airways and Southwest, and also serves freight logistics specialist UPS and FedEx (LVGEA). Its 200,000-foot freight and distribution facility completed in 2010 is a transfer hub for approximately 611,000 pounds of cargo arriving/departing daily (LVGEA). Based on national statistics, Las Vegas may be served well with growth in international connectivity. Air freight between the United States and the rest of the world in December 2014 increased 10 percent from December 2013 to 867,093 tons (USDOT, 2014).

One of the major limiting factors for Las Vegas logistics development is the high inbound to outbound ratios: 42 million tons of freight arrive and only 8 million tons go out; and in terms of value, inbound moves generate $44 million while outbound movements yield less than $13 million. Likewise, the truckload shipping costs suffers from a similar imbalance: truckload rates from Los Angeles to Las Vegas are $875 while Las Vegas to Los Angeles is $450 (RCG Economics, LLC and Schlottmann, A., 2012).

Las Vegas may be able to serve intermediary distribution and value-added services, with consolidation and cross dock services on triangular traffic lane involving Los Angeles, which is only 270 miles from Las Vegas, Phoenix, which is 292 miles away, and Salt Lake City, at a distance of 518 miles (Figure 3-8). This puts Las Vegas in the range for one day out-and-back trucking operations between each of these points with an opportunity to limit some of the imbalance of flows for services between these points. As is the case with Reno, the growth in industrial output would strengthen its regional opportunities.

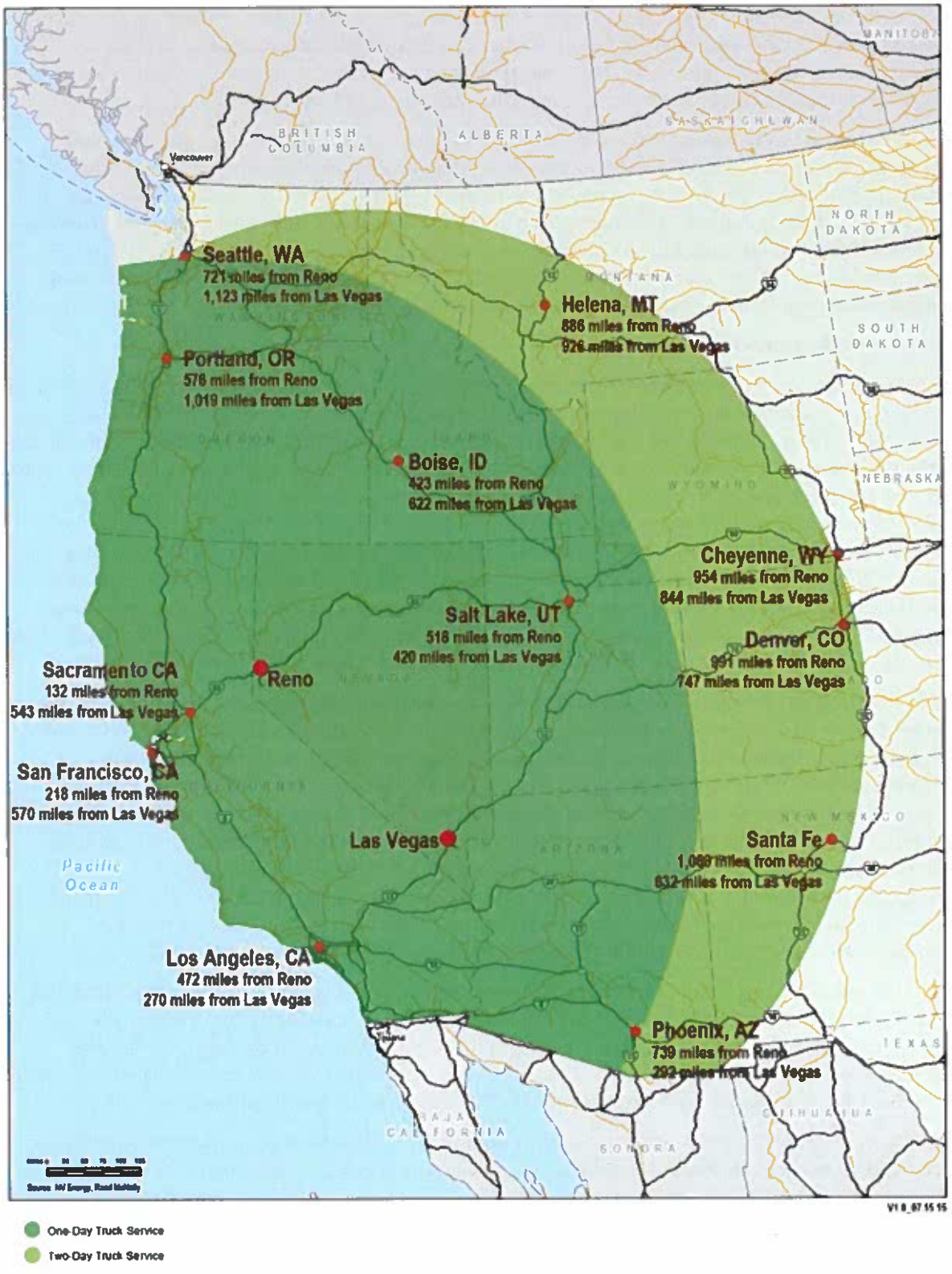

Figure 3-8. Approximate Truck Distances from Las Vegas and Reno

This figure indicates truck travel times from Reno and Las Vegas, showing their extensive reach for one- and two-day truck services within the western United States. Nevada's metros are well positioned with great potential to grow and evolve as crossroads to serve the entire western U.S. market (Source: MG&A 2015, based on NV Energy and Rand McNally data).

There is little doubt that growth in transportation logistics in Las Vegas would significantly benefit from the development of an I-11 interstate and rail corridor that could transform it into a crossroads to serve a larger market region. Growth in Mexican-related trade is likely as relative time distances between the Nevada and Mexican markets shorten. Las Vegas' best intermodal rail connections may lie just to the south in Arizona, where UPRR's major east-west intermodal route passes from California through to Texas and continues east. A combination of improved drayage from both Las Vegas and Phoenix to a new intermodal facility on this route may produce enough volume, increasing Las Vegas' logistic choices and accessibility to larger markets.

Economic Overview

The population of Southern California and southern Nevada combined is approximately 25,860,192 as of 2014 (U.S. Census Bureau, 2014). The total GDP of these combined metros as of 2013 is $1,375.7 billion (BEA, 2013). This economy has increased by 10.3 percent over the 3-year period between 2010 and 2013 (BEA, 2013). The southern Nevada subarea holds 7 percent of the total GMP and 8.3 percent of total employment within the Los Angeles MTA, a larger portion than northern Nevada, but a similar trajectory of lower-wage jobs, though GOED is currently pursuing efforts to attract higher wage jobs to Nevada.

Although Las Vegas is located in close proximity to Southern California, the companies that choose to locate in Las Vegas want to be there because of the resorts or to serve the population (Roberts in Baumer, 2013). The region is more focused on supplying the resort and entertainment industry than on exporting goods (Baumer, 2013). Las Vegas was the only metro in which accommodation and food services was a top industry, accounting for 27 percent of jobs in Clark County (GOED, 2015). Manufacturing accounted for only 3.3 percent of the Las Vegas GDP for 2013, the lowest percentage for any metro analyzed (BEA, 2013).

Industrial Real Estate Overview

The industrial markets in the western United States are dominated by the sheer size of the Greater Los Angeles market (Figure 3-9). This market is about 6.5 times larger than the other markets on average, ranging from about 2.25 the size of the Inland Empire market to 14 times larger than the San Francisco Peninsula and Reno markets. In the first quarter of 2015, the combined size of the Los Angeles MTA markets analyzed was 1,791,939,472 ft^2 of which 993,852,371 ft^2 is in the Greater Los Angeles market, 441,986,528 ft^2 in the Inland Empire, 253,661,243 ft^2 in Orange County, and 102,439,330 ft^2 in Las Vegas (CBRE, 2015).

Over the decade from 2005 to 2015, the Inland Empire exhibited the largest increase in industrial market size by 84.3 million ft^2, while Las Vegas increased by 19.5 million ft^2 (CBRE, 2015). With its close proximity to the Ports of Los Angeles and Long Beach, the Inland Empire has seen great increases in net absorption since 2008, reaching a level much higher than the other western U.S. markets (CBRE, 2015). The Las Vegas industrial lease rate of 56 cents per ft^2/month is 17 cents higher than the current average lease rate in the Inland Empire at 39 cents and, therefore, less competitive as an alternative to continued expansion in the Inland Empire (CBRE, 2015). Based on the lease rate, it is unlikely that these markets will capture excess demand generated in the Southern California region until rates in the Inland Empire significantly exceed those in Las Vegas and Phoenix.

Overall, there is great competition for Las Vegas in absorbing Southern California spillover with the nearby Inland Empire and Phoenix submarkets as well as the Stockton, Barstow, and Bakersfield locations, which are closer to the ports and within state lines.

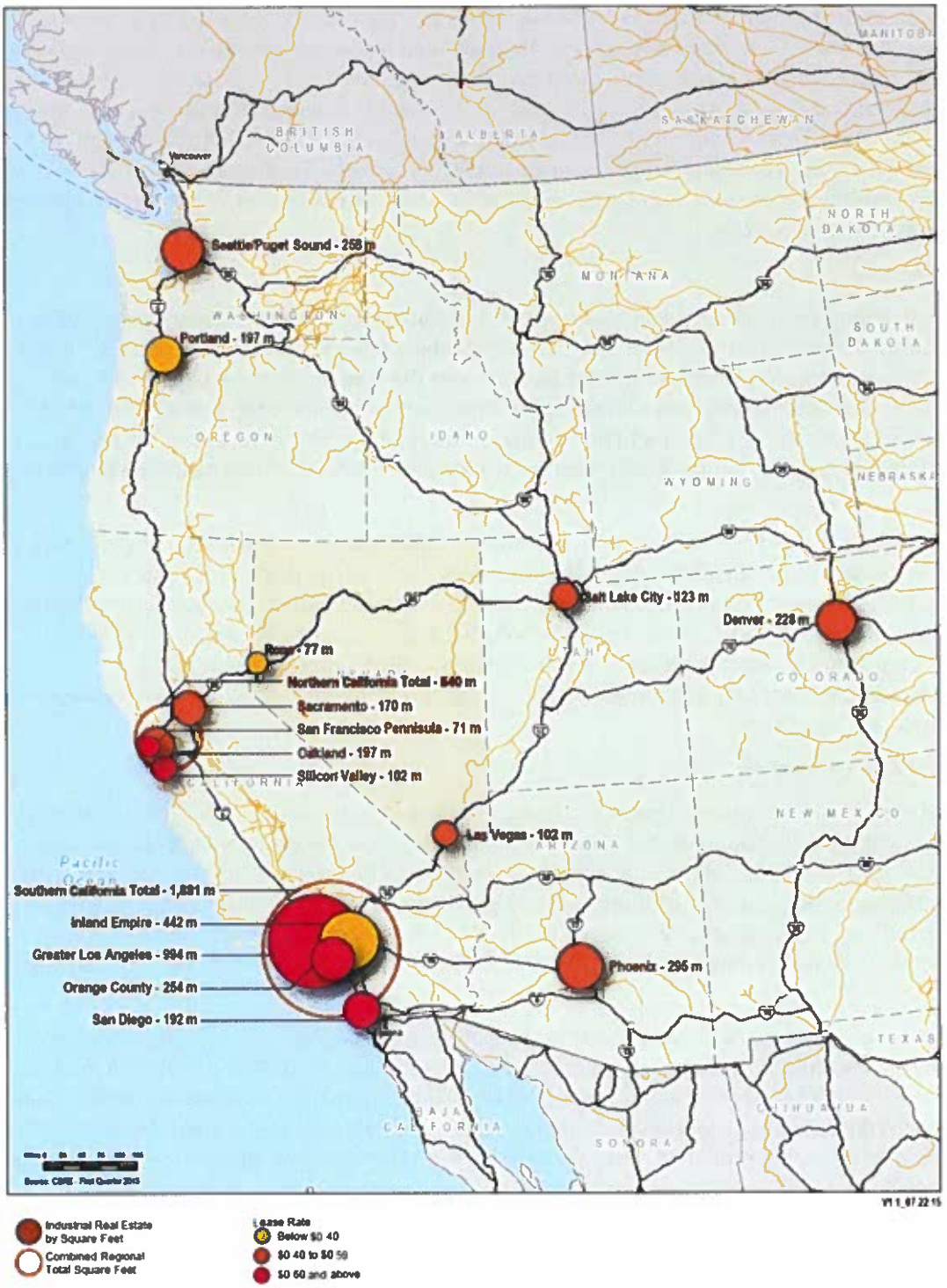

Figure 3-9. Industrial Real Estate Market Size in the Western United States

This map depicts the industrial real estate market size and lease rate in each of the western U.S. markets analyzed for this study: Las Vegas, Reno, Sacramento, San Francisco Peninsula, Oakland, Silicon Valley, Inland Empire, Greater Los Angeles, Orange County, San Diego, Seattle/Puget Sound, Portland, Salt Lake City, Phoenix, and Denver. It also shows the combined sizes of the Northern and Southern California markets, revealing the vast amount of industrial space in Southern California. The cost advantage that Reno has over markets in Northern California is clear, while Las Vegas and Phoenix are more expensive than the Inland Empire in Southern California (Source: MG&A, 2015 based on CBRE, Q1 2015 data).

Recent Developments Indicating Future Trends

Genting Resort Investment Indicating Continued Dominance of Tourism Industry

Southeast Asia's Genting Group is constructing a $4 billion gaming resort on the Las Vegas Strip (Stutz, 2014). This investment is similar in dollar amount to Tesla in Reno and will act to reinforce and grow the tourism economy and increase the import side of the freight logistics movements. Development will create several thousand short-term construction jobs in Las Vegas (Stutz, 2014) and produce long-term employment effects that will be concentrated in accommodations and food service.

Beyond the Rack Distribution Center in North Las Vegas

Since March 2012, North Las Vegas has been home to the West Coast Distribution Center of Beyond the Rack (BTR), one of the fastest growing e-commerce sites in North America. BTR is a private online shopping club for men and women seeking designer brand apparel, accessories, and home goods at up to 80 percent off. The factor that drove the decision to open a facility in this part of the country was to reduce shipping times to U.S. customers. The company originally considered locating its West Coast Distribution Center in Los Angeles, the source of many of the apparel items it sells, but upon closer examination, the executive team decided on southern Nevada. With its lower rents, larger work force, and greater support from state government leaders, Las Vegas was the smartest choice (LVGEA).

3.3.1.3 Eastern Nevada/Utah

Logistics Infrastructure Overview

Eastern Nevada is primarily a rural region with a mining, energy, and agricultural-based economy. The pattern of cities and towns grew up to serve the local economy and is generally located along the primary transportation corridors, I-80 and I-15, the major roads traversing the region, US 93, US 50, and US 6, and the resource extraction and agriculture communities. While the I-80 corridor is considered part of the San Francisco trade area, the more eastern section, including Elko and Wells, would appear to be equally oriented toward Utah and the Salt Lake City region. Due to the energy reserves in Utah, Eastern Nevada has opportunities to participate in the energy economy that originates in Utah. Unlike northern and southern Nevada, the eastern Nevada freight logistics infrastructure is not concentrated in a single location, but rather developed on a more site specific basis to serve the specific needs of the industry or combination of industries (mining, agriculture, or energy) that are located in that specific area. These improvements tend to be either capacity or performance enhancements rather than hub related strategies.

Economic Overview

The eastern Nevada economy is mainly focused on mining and subject to rather dramatic cycles based on the commodities market and the cycle of the general economy. Gold mining is especially significant, as 79 percent of all gold in the United Sates is mined in Nevada. Not surprisingly, it is Nevada's number one and most volatile value export, as export values fluctuate dramatically. Copper ores and concentrates export value follows a similar pattern, susceptible to major highs and lows in value from year to year.

Since the late 19th century, the boom-and-bust cycle in metals prices have had dramatic effects on population and economic activity. General economic cycles that affect the national economy also have significant impacts on the local economy due to the downturn in manufacturing and construction that reduces the demand for minerals and energy. Unlike northern and southern Nevada, the cities and towns in the eastern portion of the state tend to be smaller. Due to their size, they tend to be more industry-specific rather than diversified economic centers, making them more vulnerable to single industry trends. Economic diversification is also a major economic goal for this region as it is for the state as a whole and there are signs of diversity based on the value of its outbound production. For

example, mixed freight, pharmaceuticals, and electronics produce more than 25 percent of its $11.7 billion total (Freight Plan Existing Freight Flows Tech Memo, 2015).

Industrial Real Estate Overview

The eastern Nevada industrial market tends to be a single tenant market developed in response to the specific needs of the mining, energy, and agricultural sectors. Unlike northern and southern Nevada, there is not a significant multi-tenant market that results in speculative industrial construction. The major national real estate information services, including CBRE, the company used as the real estate data source for this report, do not track industrial real estate markets in eastern Nevada because they tend to serve only single tenant who builds on an as-needed basis to fulfill specific industry needs.

3.4 Employment and Earnings Analysis

The purpose of this chapter is to provide a deeper understanding of employment and personal earnings by two-digit NAICS codes, or industry sectors, in the San Francisco and Los Angeles MTAs. The analysis is intended to determine the industry focus and strengths of each MTA and the profile of northern and southern Nevada within them in order to define the potential impact that an improved freight system could have on each industry.

The economic geography of the western United States has little relationship to the political geography. Economic regions are defined as market areas with interactive economic activities and are not defined by political boundaries. Economic geography is defined MTAs, which are anchored by major urban areas that form the primary economic concentrations and transportation hubs of larger areas with many smaller cities and towns. MTAs are named according to their major urban areas or anchors. While Nevada is one state from political point of view, it is divided into three different regions from an economic point of view. Parts of Nevada are contained within three MTAs: San Francisco, Los Angeles, and Salt Lake City. The Salt Lake City MTA includes only one Nevada county, White Pine, located in eastern Nevada. Because this section is based on MSA data and as there are no MSAs in White Pine County, there is no ability to include comparison of eastern Nevada as defined within the economic geography.

The BEA was found to contain the most complete and geographically refined earnings and employment data that allows for comparison of economic activities by industry across the MTAs. All numbers outlined herein are directly from, or calculated from, BEA 2013 datasets (see Appendix 3B).

Of the 20 two-digit NAICS codes, eight are considered to be freight-dependent to different degrees; the remaining 12 are not considered freight-dependent because they use the freight system to a much lesser degree. The eight freight-dependent industries identified are: Agriculture, Forestry, Fishing and Hunting (11), Mining (21), Utilities (22), Construction (23), Manufacturing (31), Wholesale Trade (42), Transportation and Warehousing (48), and Accommodation and Food Services (72).

Companies classified under these industries depend on the freight system either to obtain raw materials from another region or to ship their final products to market. Produce from the Agriculture, Forestry, Fishing and Hunting, and Mining are bulk commodities; the companies in these industries depend on the freight transportation system to transport their goods to the next destination. Construction depends on the freight transportation system to obtain the raw materials needed for construction. Wholesale Trade depends on the freight transportation to coordinate and facilitate the movement of goods between manufacturers and distribution to retail outlets. In Accommodation and Food Services, the freight transportation system is especially important to the convention activity component as large scale displays that are required to be delivered, set up, broken down, and removed in short amounts of time depend on efficient freight service.

3.4.1 The Economic Regions and Subareas

Despite Nevada being one state politically, it is divided into three different economic regions or MTAs within the national economy. Each MTA has a different type and structure of economic activity and contains multiple subareas, one of which is part of Nevada and others that are parts of an adjoining state or states. Each subarea has its own specific pattern and structure of economic activity. As a result, it is important to recognize the economic pattern and structure of the Nevada subareas in comparison to the other subareas within their MTAs as well as to the overall economy of their MTA. Understanding the uniqueness of economic activity within the MTAs and within each of Nevada's subareas provides the framework for understanding the type of infrastructure investments that have the greatest impact on growing Nevada's economy.

3.4.2 Employment Analysis

Basic Employment Characteristics

There are four basic employment characteristics that need to be understood as the foundation for infrastructure investments that can grow economic activity. The first is the share of employment and earnings that each of the Nevada subareas contain relative to the MTA in which they are located. The second and third are to understand the similarities and differences between the employment characteristics in northern and southern Nevada. The fourth is to compare the individual categories in the two subareas.

Nevada Subareas' Relative Shares of MTA Employment

Both the northern and southern Nevada subareas have a relatively small share of employment within their respective MTAs (Figure 3-10). The northern Nevada subarea holds only 4 percent of the employment within San Francisco MTA, while the southern Nevada subarea holds 8.3 percent of total employment within the Los Angeles MTA. Thus, the southern Nevada subarea contains more than double the share of employment within its MTA than northern Nevada.

Similarities and Differences in Nevada Subareas' Employment Profiles

The northern and southern Nevada subareas have many similarities in their employment characteristics among the 22-digit NAICS code categories and some notable exceptions. The top three employment categories in the northern Nevada subarea each contains over 10 percent of the region's total employment: Public Administration at 12.7 percent, Accommodation and Food Services at 11.7 percent, and Retail Trade at 10.4 percent. Six employment categories contain more than 5 percent: Health Care and Social Assistance, Professional, Scientific, and Technical Services, Administrative and Waste Management Services, Real Estate and Rental and Leasing, Manufacturing, and Finance and Insurance. The remaining 11 categories contain fewer than 5 percent of employment.

The top industries in the southern Nevada subarea are the same three as northern Nevada. However, in southern Nevada, Accommodation and Food Services account for nearly 22 percent, a much larger share than in northern Nevada where the industry ranks second at near half of the southern Nevada percentage. This reveals the high degree of specialization and lack of diversity within southern Nevada's economy. The other two of the top-three employment categories have relatively similar shares as northern Nevada with Retail Trade at 10.8 percent and Public Administration at 10 percent. Another five employment categories have over 5 percent of southern Nevada's total employment, while northern Nevada has six. However, these five are also over 5 percent in northern Nevada: Health Care and Social Assistance, Administrative and Waste Management Services, Real Estate and Rental and Leasing, Finance and Insurance and Professional, Scientific, and Technical Services. The missing category over 5 percent in southern Nevada is manufacturing, which has only 2.3 percent in the region, less than half of that found in northern Nevada.

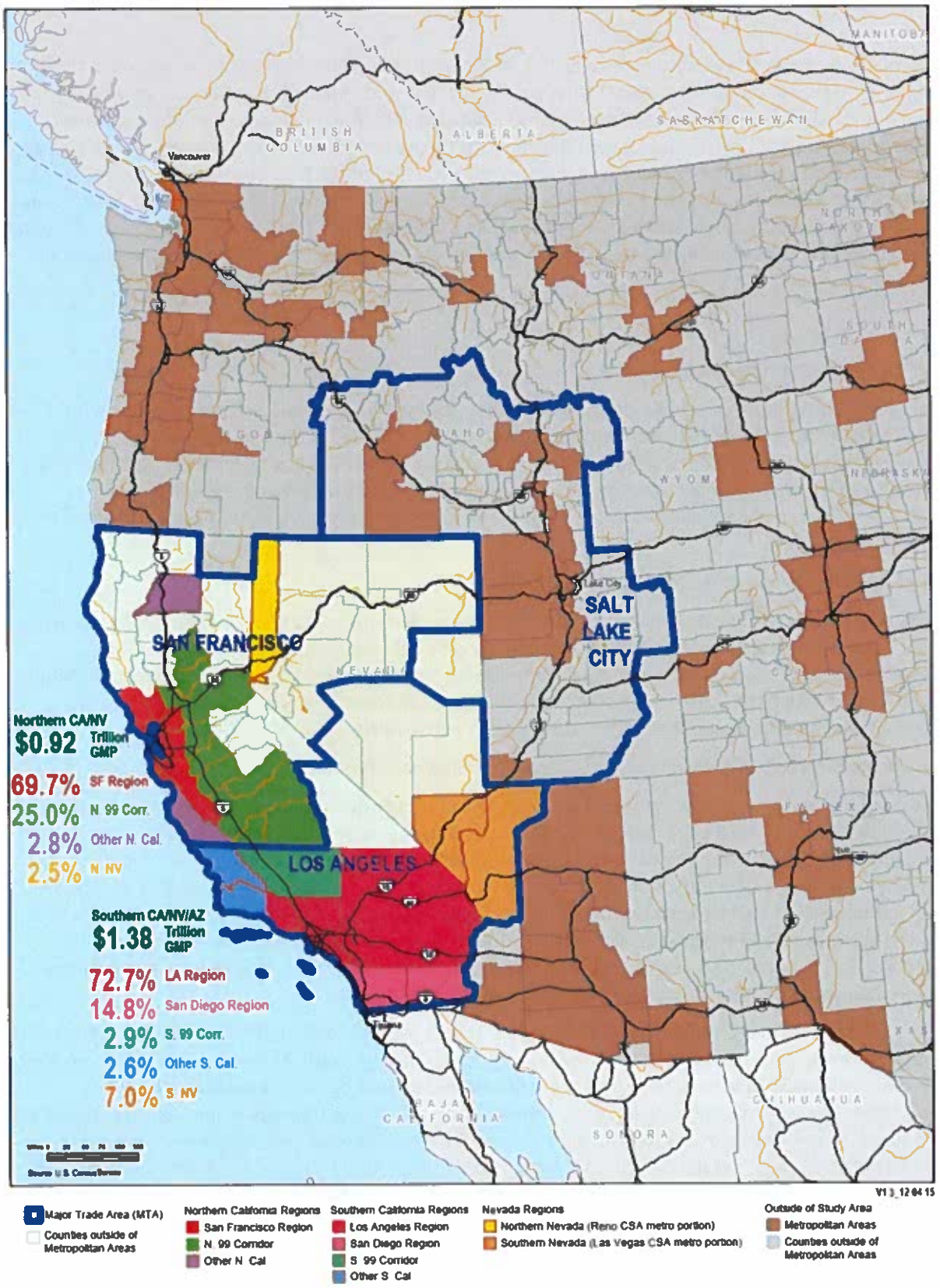

Figure 3-10. Major Trade Areas and Subareas

This map depicts outlines of Nevada's Major Trade areas and the MG&A-defined subareas with relative percentages of GMP.

Figure 3-10 caption continued:

The San Francisco MTA includes most of Northern California (one Northern California County is included in the Portland MTA) and all of northern Nevada. There are 13 BTAs within the San Francisco MTA, one of which contains all of northern Nevada and a portion of Northern California in the Lake Tahoe area. The San Francisco MTA was divided into four economic subareas by MG&A according to the interactions and geographic proximity of the basic trade areas. The four subareas are the San Francisco region, Northern 99 Corridor, Other Northern California peripheral, and northern Nevada.

The Los Angeles MTA contains seven Basic Trade Areas and includes all of Southern California, all of southern Nevada, and a county in northwest Arizona. All of southern Nevada and a portion of northwest Arizona comprise one BTA in the Los Angeles MTA. The Los Angeles MTA was divided into five subareas by MG&A: the Los Angeles region, San Diego region, Southern 99 Corridor, other Southern California peripheral, and southern Nevada (Source MG&A, 2015).

Thus, although northern and southern Nevada have very similar percentages in 18 of the 20 NAICS code categories; there are two important exceptions. Northern Nevada has more than double the percentage of employment in Manufacturing in comparison to southern Nevada. The southern Nevada subarea has nearly double the percentage of employment in Accommodation and Food Services in comparison to northern Nevada.

Comparison of Nevada Subareas' Employment Profiles

Comparing northern and southern Nevada subareas, northern Nevada has a higher percentage of employment in Agriculture, Forestry, Fishing and Hunting, Mining, Wholesale Trade, Transportation and Warehousing, and Public Administration, and a slightly higher percentage in Professional, Scientific, and Technical Services, Educational Services, Health Care and Social Assistance, and Arts, Entertainment, and Recreation.

Southern Nevada has a slightly higher percentage of employment in Information, Real Estate and Rental and Leasing and Administrative and Waste Management Services. Both the northern and southern Nevada subareas have nearly the same percentage of employment in Utilities, Construction, Retail Trade, Finance and Insurance, Management of Companies and Enterprises, and Other Services, Except Government.

As previously mentioned, the northern Nevada subarea doubles the percentage of employment in Manufacturing in comparison to the southern Nevada subarea, and southern Nevada doubles the percentage of employment in Accommodation and Food Services in comparison to northern Nevada.

3.4.3 Earnings Analysis

Nevada Subareas' Relative Shares of MTA Earnings

The northern and southern Nevada subareas have some similarities in their earnings characteristics, but their relationship to the MTAs they located in are very different. The average personal earnings in the northern and southern Nevada subareas are very similar, with a difference of only $569: $47,753 in northern Nevada and $48,322 in southern Nevada. However, because the average personal earnings are much higher in the San Francisco MTA than in the Los Angeles MTA, the Nevada comparisons to California differ greatly. The average personal earnings in northern Nevada are 30.9 percent lower than the San Francisco MTA average, while the average personal earnings in southern Nevada are only 15.7 percent lower than the Los Angeles MTA average. Thus, the gap between Nevada subareas and their respective MTA is larger for northern Nevada than for southern Nevada.

Similarities and Differences in Nevada Subareas' Earnings Profiles

In the northern Nevada subarea, the highest average personal earnings are in Utilities at $131,282, Management of Companies and Enterprises at $96,772, and Public Administration at $77,227. In the

southern Nevada subarea, the same three two-digit NAICS categories have the highest average personal earnings in the same ranking order but with different values: Utilities at $135,677, Management of Companies and Enterprises at $122,349, and Public Administration at $79,558. Thus, the average personal earnings of each of these categories are higher in southern than in northern Nevada.

Aside from these top three industries, average personal earnings in northern Nevada are 20 percent or more higher than the overall northern Nevada average in the following two-digit NAICS code categories: Wholesale Trade at $72,875, Manufacturing at $64,206, Mining at $58,790, Health Care and Social Assistance at $58,509, Construction at $57,330, and Professional, Scientific, and Technical Services at $57,201.

Aside from these top three industries, average personal earnings in southern Nevada are 20 percent or more higher than the overall southern Nevada average in the following industries: Wholesale Trade at $71,820, Professional, Scientific, and Technical Services at $68,150, Health Care and Social Assistance at $57,540, Construction at $65,581, Manufacturing at $61,853, and Information at $58,555.

These relatively high earning industry categories are similar in both northern and southern Nevada, except for in Mining and Information. Earnings in Mining are nearly 50 percent lower than overall average earnings in southern Nevada, while they are 23 percent higher in northern Nevada. Earnings in Information are more than 20 percent higher than the overall average in southern Nevada, while they are only 10 percent higher in northern Nevada.

Comparison of Nevada Subareas' Earnings Profiles

Comparing northern and southern Nevada, the northern Nevada subarea has higher (15 percent or more) average personal earnings than the southern Nevada subarea in Mining by 136 percent, Agriculture, Forestry, Fishing and Hunting by 52 percent, and Finance and Insurance by 19 percent. The southern Nevada subarea has higher (15 percent or more) average personal earnings than the northern Nevada subarea in Arts, Entertainment, and Recreation by 62 percent, Accommodation and Food Services by 40 percent, Management of Companies and Enterprises by 26 percent, Professional, Scientific, and Technical Services by 19 percent, and Real Estate and Rental and Leasing by 19 percent.

3.4.4 Freight Dependencies

Nevada has a high degree of economic dependency on freight-dependent industries as shown by the fact that both the northern Nevada and southern Nevada subareas have a high percentage of employment in freight-dependent industries then their MTA total percentages. Northern Nevada subarea has 32 percent of its employment and 33.2 percent of its personal earnings in freight-dependent industries. Southern Nevada subarea has 35.4 percent of its employment and 36.6 percent of its personal earnings in freight-dependent industries. Thus, the state has a high economic dependency on freight-dependent industries.

Employment to Earnings Relationships in Nevada

In contrast to the high percentage of employment in freight-dependent industries, average personal earnings in freight-dependent industries are low in northern and southern Nevada. Average personal earnings in freight-dependent industry categories are $49,355 in the northern Nevada subarea and $50,080 in the southern Nevada subarea. The gap between northern Nevada and the San Francisco MTA is much larger than that between southern Nevada and the Los Angeles MTA, at 30.1 and 14.1 percent lower, respectively.

Nevada's High Degree of Dependency

Both northern and southern Nevada have a high dependency on freight-dependent industries. As a result, an improved freight system with better connectivity between these two subareas and the dominant economy within their respective MTAs could be extremely beneficial for both northern and

southern Nevada. These two subareas can and should become more integrated parts of their respective MTAs in order to capture a larger share of economies and develop a competitive advantage in the global and western U.S. marketplace.

3.4.5 Nevada's Shares of Respective MTAs

The northern Nevada subarea is located in the same MTA as the San Francisco region, a well-developed and affluent subarea and a world leader in Technology. The San Francisco MTA, compared to Los Angeles MTA, is also leading in personal earnings. However, northern Nevada has a small share of the total economy of San Francisco MTA. In contrast, Los Angeles is a large employment region although not as affluent as San Francisco MTA, the southern Nevada subarea takes a larger share of the total economy of the Los Angeles MTA. It also indicates that the northern Nevada subarea has huge potential to grow and diversify to become a more competitive economic region if it can capture a larger share of employment and earnings within the San Francisco MTA.

3.5 Multimodal Freight Transportation Drivers, Critical Issues, Trends, and Implications for Nevada

3.5.1 A Changing Economic Order

End of Bi-Polar Political Divisions and Emergence of Trading Blocs

The emergence of a global economy after 1991 erased the division in the world's economy that resulted in a massive restructuring of the global trading network (Figure 3-11). Routes, hubs, industry, and businesses of all types began a process of rapid change that had powerful effects on established locations, routes, and businesses. These sweeping and dramatic changes are still in progress with industry consolidations, new capital investments in both established and new locations, and a shifting unstable world economy.

The massive restructuring led to a pattern of increased trade among nations; a dynamic pattern rooted in economic, geographic and/or cultural affinities. The creation of the European Union and the commercial rise of China and other nations in East and Southeast Asia are signs of ongoing changes in global economic relations. This restructuring is abetted by the lowering of tariff barriers and introduction of infrastructure and technology improvements that have linked production in low-cost labor markets with demand in developed economies. Population growth and increasing wealth in formerly underdeveloped countries has expanded both domestic and global commercial opportunities throughout much of the world. The West Coast has only three major points of entry, while the East and Gulf Coasts have many. The rise of Asia has made the West Coast the primary point of access to Asian economies. This has fueled the growth of trade flows through the West Coast seaports, with the dominant location being Los Angeles.

International commerce is evolving into patterns of regional and continental trading blocs, such as the European Union (EU), NAFTA, and Association of Southeast Asian Nations (ASEAN). Economic downturns among any one major trading partner can impact the prosperity of others well beyond their borders. Moreover, unstable political conditions create ongoing threats to global supply chains. These and other factors, such as advances in technology and demographic changes, are feeding greater inter-bloc trade.

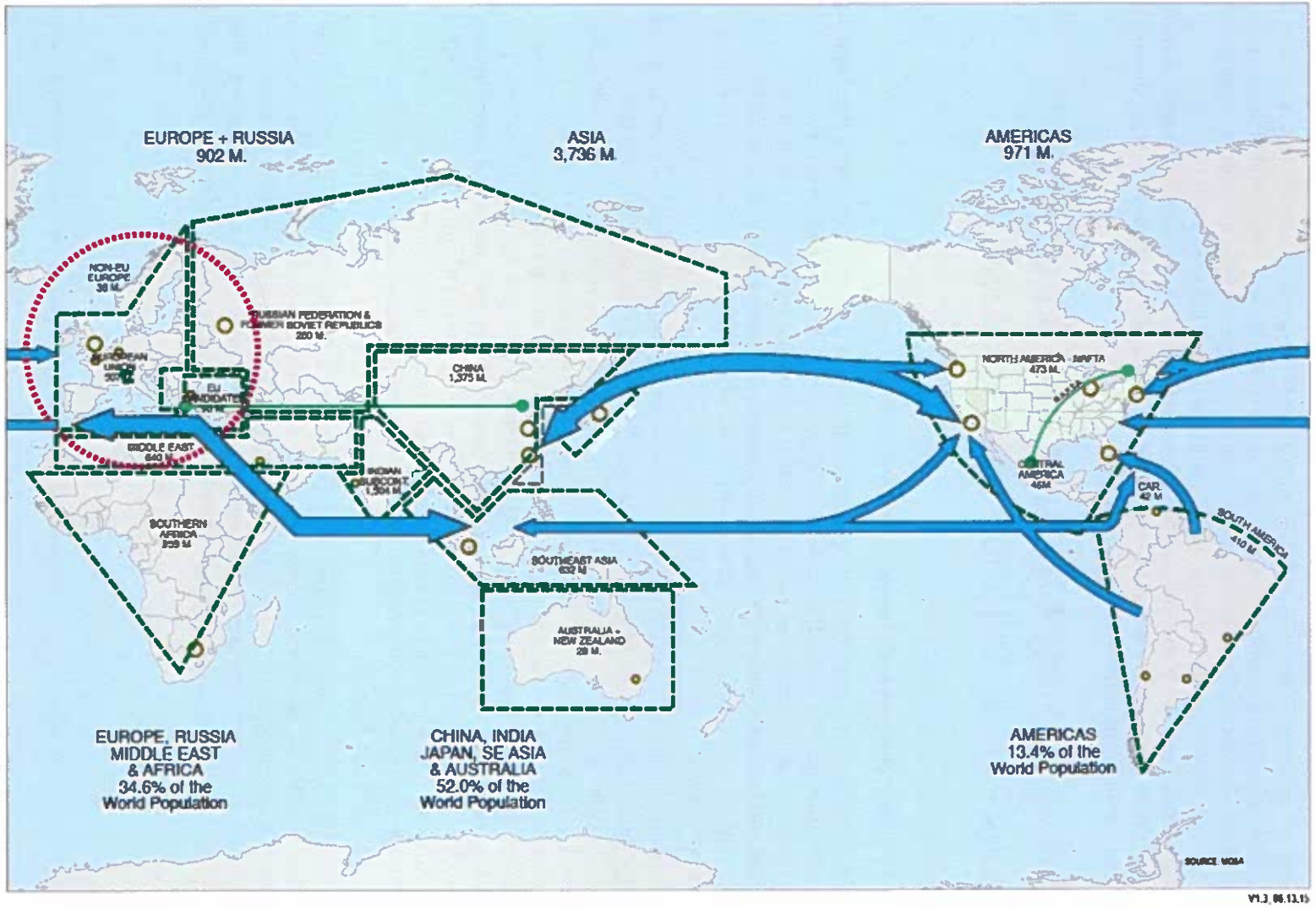

Figure 3-11. Global Trading Blocs

The emergence of large nations with populations over 1 billion, China and India, have provided them with the competitive advantage of economies of scale. This resulted in the need for smaller nations in Europe and North America to develop into trading blocs that compete more effectively in the integrated global marketplace. Massive investments in infrastructure provide greater reliability and cost effectiveness to move people and products to market (Source: MG&A, 2015).

2.3.1 Food and Allied Manufacturing

Overview

Food and allied manufacturing is a growing piece of the manufacturing industry in Nevada (GOED, 2015). This is due to its proximity to farming and agricultural resources, as well as to primary gateways for overseas imports and exports. Inputs to production, many of which are perishable foods such as fresh meat, vegetables, and milk, are sourced mainly from the western United States, while processed and preserved food outputs are sold to nationwide and global markets. Nevada has many global brands, such as NOW health foods, Hidden Valley Ranch salad dressings, French Gourmet frozen dough, and Pacific Cheese, that engage in manufacturing processed food and food supplements.

Employment Distribution and Growth Potential

Employment in this sector is concentrated in the metropolitan areas of Las Vegas and Reno, and is relatively even between them (see Figure 2-12). Employment is distributed mainly in bakeries, dairy-related manufacturing, perishable prepared foods and frozen specialty foods, coffee and tea manufacturing, and confectionary manufacturing from chocolate.

Based on the state's 10-year industry employment projections provided by the Nevada Department of Employment, Training and Rehabilitation (Nevada DETR, 2015), these industries are all expected to continue to grow in the Las Vegas region by more than 20 percent, while food and allied manufacturing in Reno is anticipated to increase by only about 10 percent.

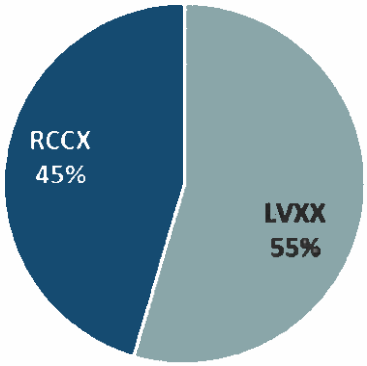

Figure 2-12. Employment Distribution in the Food and Allied Manufacturing Sector, 2013

This figure shows the locational breakout of Nevada's 6,135 employees in the food and allied manufacturing sector, which includes NAICS codes 311 - food manufacturing, 312 - beverage and tobacco product manufacturing. All employees in this sector work in the metropolitan areas, with 55% in the Las Vegas MSA (LVXX) and 45% in the Reno-Sparks-Carson City CSA (RCCX) *(Source: U.S. Census Bureau, 2013 County Business Patterns).*

Disclaimer: Due to disclosure limitation and confidentiality, data from County Business Patterns is missing values for some NAICS industries and counties in Nevada, particularly those counties with a limited number of establishments in the identified NAICS industries. The employment may in fact be higher than reported in the figure.

Production Inputs, Outputs, and Location Decisions

National input-output accounts (BEA, 2015b) show that food and allied manufacturing industries tend to rely on farms and themselves (trading with one another). This was further reflected in the interviews conducted, such as the dependence of this sector on other food processing and preservation industries, logistics for transport, and paper, plastics and fabricated metal for packaging, labeling, and canning. Both the Las Vegas and Reno metros have access to California's Central Valley agricultural region, a major source for farm inputs including dairy, fresh produce, and nuts, in approximately 4 hours, but access from Las Vegas was cited as better due to limited inclement weather events in the northern Nevada/California region.

Some food and allied manufacturing companies consider Nevada as a western U.S. hub for distribution of their manufactured goods, especially those companies that have strong ties to Asian suppliers and markets. They are likely to continue investing in manufacturing plant capacities and goods distribution services in Nevada as trade with Asia grows.

The importance of location to industries dealing with perishable products cannot be understated, as the costs of production and quality of the products can be heavily impacted by delays in transportation.

Nevada's current truck, rail, and air links demonstrate both strengths and weaknesses. Strengths include strong west-to-east highway connectivity, particularly to California as its dominant trading partner and gateway to overseas trade. Weaknesses include a lack of strong north-south connections and connectivity to intermodal rail services. Nevada lacks direct north-south highway and rail systems to efficiently move goods to its U.S., Mexican, and Canadian neighbors. Nevada gets little relief from its railroad services as freight trains mostly pass through the state. The state needs stronger intermodal rail connections to relieve highway congestion, especially for trade with California. Nevada needs to develop an outbound traffic base and requisite intermodal terminal facilities to create point-to-point shuttle services from rail yards at or near California port facilities. This would ensure economic-scale match-ups within a logistics supply chain that includes huge ocean carriers and large intermodal rail transfers emanating from the ports. Nevada's airports have the capacity to expand freight services to international markets if their direct air passenger service to those markets continues to grow.

Congestion outside the state border is limiting the efficiency of the highway system. Nevada is below the national average in its manufacturing output and participation in overseas and NAFTA trade. A major part of the remedy may rest with the success of the state's current efforts to diversify its economy; creating more output through manufacturing and distribution services and simultaneously improving multimodal and intermodal links. If Nevada is to have an attractive and balanced transportation system, it needs to produce more goods for export to other states and nations. Future success enjoyed by Nevada will have much to do with its relationship to the large California economy. With an increased output of goods or performance of value-added distribution functions, the freight system will become more balanced to Nevada's advantage.

3.5.2 A Changing Logistics Order

The global network is defined by a series of hubs and corridors. The hubs are points where the air, water, rail, and road freight handling facilities, such as ports, terminals, and yards, are found together with the ancillary services and massive industrial real estate that serves these points. Air and sea routes, major highways, and rail lines define corridors. Within the global network, there is a hierarchy of hubs and corridors from the largest global gateways connected to the largest freight corridors to the smallest rural towns connected to small rural highways. Two of the nation's major corridors traverse Nevada, but its hubs are only local service points. Being on a major corridor does not necessarily mean that a city is a major hub. Major hubs are defined by: their level of connectivity to major corridors, the market area they serve, and the value added functions they perform.

Freight Hubs: Global, Inland Port, and Local

Every city and town connected to the global transportation network is a hub in the network. There are three tiers of freight hubs: global, inland port, and local. Global hubs, the largest of the three tiers, are where international goods arrive by air and sea and where goods produced within the country are exported. Inland Ports, the second tier, are defined as those hubs within a nation that perform internal distribution or transloading functions (Figure 3-13). Local hubs, the third tier, only provide services for the communities where they are located.

All three tiers of hubs serve local distribution functions. In other words, every city and metro performs local distribution and consolidation functions, as each consumes and produces products and must have the facilities necessary to serve its local market.

Although not every city or metro region is an inland port or global hub, every inland port and global hub is also a local hub. Therefore, in addition to the infrastructure needed to serve the local market, the global hubs and inland ports have developed infrastructure to serve the transshipment or global shipping functions. This may take the form of expanding the existing rail, truck, air, or seaport facilities or adding other facilities that provide the services needed to handle larger volumes of freight. Global

hubs and Inland ports serve as junction points where freight bound for destinations other than the local metro area is transferred either within a mode or between modes.

Local hubs, such as Las Vegas and Reno-Sparks-Carson City, are considered O&D points of freight serving local demand created by its population, institutions, businesses, and industries. While the freight infrastructure in local hubs must serve the needs of that area, the only goods arriving and departing are those destined for that location or produced at that location. With the global population and economic growth, more freight is moving through expanding global networks. Some metropolitan areas are realizing the opportunity to grow their freight functions; taking the initiative to expand, add, or modify key components to their freight infrastructure in order to provide additional value-added services. Typically, these additions are inland port functions whereby they can attract a more diversified freight stream.

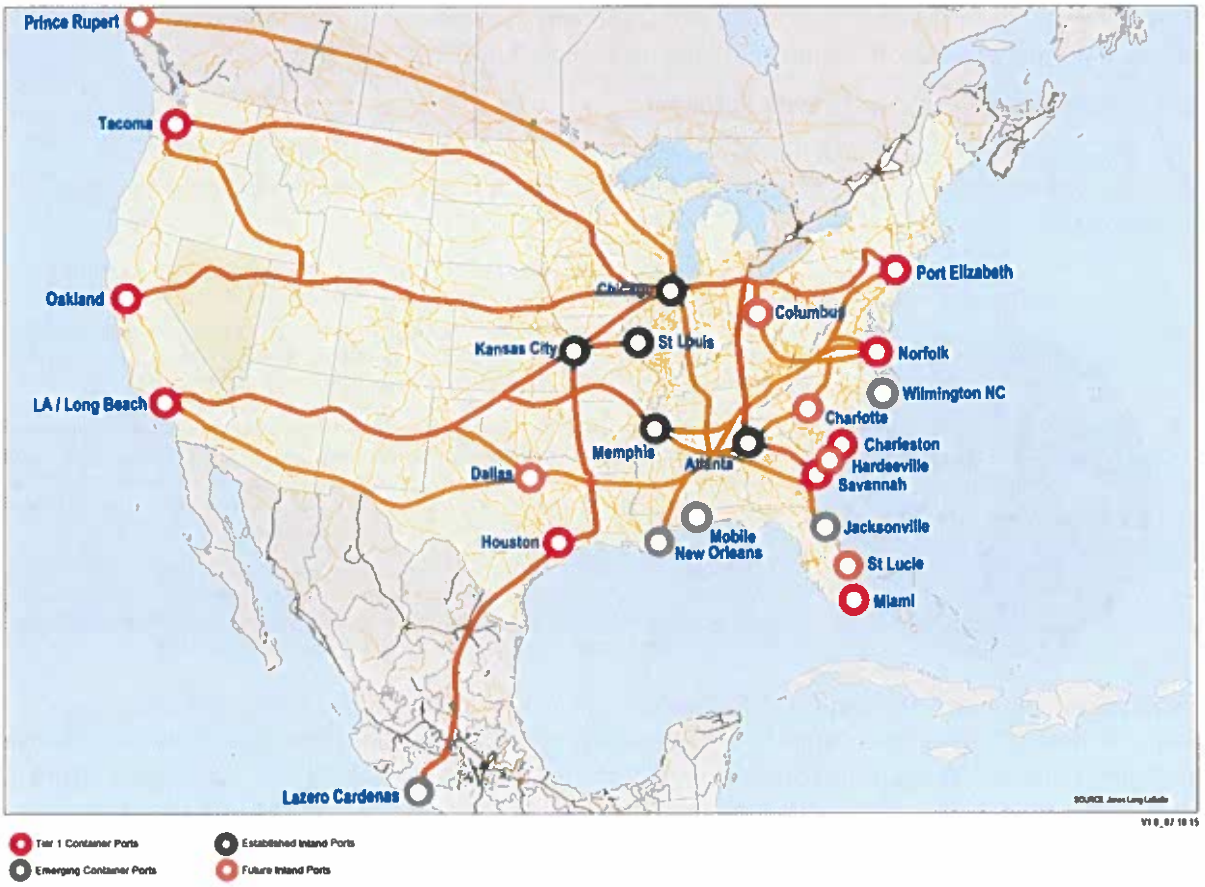

Figure 3-13. Inland Port Connections

This is a re-creation of national developer Jones Long LaSalle's 2011 Midwest and Eastern Centric view of inland port connections. It highlights the numerous container, emerging container, established, and future inland ports in the eastern United States, while in the western United states, there are only the West Coast tier 1 ports and corridors for movement eastward. Salt Lake City is shown as an intersection, but not a hub (Source: MG&A, 2015 recreated from Jones Long LaSalle, 2011).

Nearshoring and Reshoring

The return of production to the United states or to those countries near our borders is growing. The concept of moving operations back to its country of origin is referred to as "reshoring," while relocating manufacturing to a nearby country rather than far overseas is known as "nearshoring" (see Figure 3-14). A 2013 Boston Consulting Group survey found that 54 percent of executives at U.S. companies with sales in excess of $1 billion are planning to return production to the United States, a sharp increase from

Perishable products are typically carried in refrigerated containers, often referred to as "reefers." cost and access to reefers are also essential considerations for this sector.

2.3.2 Advanced Manufacturing

Overview

The advanced manufacturing industry is a growing segment of key employment in Nevada with the highest concentrations located in the Las Vegas region (Nevada GOED, 2015). This is due to a "business friendly" climate with low taxes and affordable land and development costs. This sector provides high-paying jobs and is dependent on a skilled workforce. A majority of inputs to production of high-tech products, such as ores and minerals, precision instruments, and machinery, are available within Nevada or within a day's drive from Nevada, which make costs of production competitive. The state's proximity to gateway ports and airports also enables global sourcing and access to the global market. Nevada has an expanding list of advanced manufacturing firms such as Pololu, IGT, and Tesla.

Employment Distribution and Growth Potential

Similar to food and allied manufacturing, employment in the advanced manufacturing sector is concentrated in the metro areas of Las Vegas and Reno, and is relatively even between the two (see Figure 2-13).

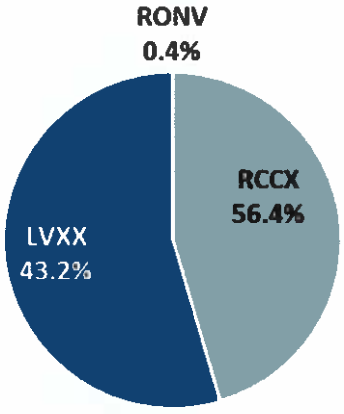

Figure 2-13. Employment Distribution in the Advanced Manufacturing Sector, 2013

This figure shows the locational breakout of Nevada's 22,111 employees in the advanced manufacturing sector which includes the following NAICS codes: 325 - chemical manufacturing, 332 - fabricated metal product manufacturing, 333 - machinery manufacturing, 334 - computer and electronic product manufacturing, 335 - electrical equipment, appliance, and component manufacturing, 336 - transportation equipment manufacturing, 339 - miscellaneous manufacturing. Almost all employees in this sector work in the major metros, with 56.4% working in the Reno-Sparks-Carson City CSA (RCCX), and 43.2% in the Las Vegas MSA (LVXX). A mere 0.4% work in the Rest of Nevada (RONV) *(Source: U.S. Census Bureau, 2013 County Business Patterns).*

Disclaimer: Due to disclosure limitation and confidentiality, data from County Business Patterns is missing values for some NAICS industries and counties in Nevada, particularly those counties with a limited number of establishments in the identified NAICS industries. The employment may in fact be higher than reported in the above figure.

Recent developments in the Reno area include notable investments such as Tesla's Gigafactory and its efforts to relocate some of its suppliers to the Tahoe Reno Industrial Center (Damon, 2016). This trend in particular could shift the current advanced manufacturing industry stronghold from Las Vegas to Reno. There is potential for Nevada to attract employers and a skilled workforce in high-tech computer components manufacturing and assembling from other parts of the country, especially California.

Production Inputs, Outputs, and Location Decisions

Advanced manufacturing constitutes the manufacture of specialized metallic products and non-metallic products such as composite materials and optical fibers, advanced vehicle technologies such as automated guided vehicles, electronic components such as circuit boards, and advanced machinery such as robotics. It is typical to see suppliers cluster around advanced manufacturing centers, which reduces the cost of production.

2.3.3 Mining

Employment Distribution and Growth Potential

Mining industries (excluding oil and gas), unlike the other key industries in Nevada, occur away from the urban centers of Reno and Las Vegas, with the heaviest concentrations in the central and northern parts of the state (see Figure 2-14).

Carrier Industry Consolidation and Collaboration

A major ongoing trend affecting carriers across the modes and freight forwarders or 3PL is the pursuit of growth and market dominance. This trend manifests itself in the form of alliances among former competitors (e.g., ocean carriers) and mergers and acquisitions (M&A) among motor carriers and freight forwarders. The hope is that shared use of common assets such as oceangoing vessels in trucking equipment by motor carriers will increase productivity and efficiency. For motor carriers, M&A are a means to gain entry into new markets and have access to equipment and drivers that would otherwise be in short supply. Non-asset service providers look for synergistic service match-ups, for example, between companies efficient at filling empty backhauls with firms that have large customer bases. Ports including Los Angeles and Long Beach, and Seattle and Tacoma sought and received Federal Maritime Commission permission to work cooperatively to increase operational productivity at their contiguous terminals.

Freight carriers and forwarders are increasingly consolidating their operations to apply assets more efficiently and increase their bottom line and their transparency in relation to shippers. The public sector, as represented by the ports, is looking to establish more cooperative rather than competitive relationships. State and local governments can also foster initiatives for closer cooperation in planning and financing through their MPOs and public-private partnerships (P3's) as showcased in the Tesla deal. Nevada's leadership in building a Western States Freight Coalition (WSFC) among the Freight Program Leads at respective DOTs is a positive step in this direction. Nevertheless, states have to be alert to the negative possibilities of mergers among large freight companies that may harm small shippers, increasing the prospects that the state may lose essential services.

Regulatory Change

Transportation systems and modes are among the nation's most heavily regulated industries. This is due to their important role in the economy and major impact on safety and the environment. There is an ongoing debate regarding the cost-effectiveness of regulations in achieving their intended goals. During the 1980s, there was a major shift in national transportation policy away from expensive economic regulation of aviation, railroading, and motor carriage, a shift that has had profound effects on the structure and economic health of these industries. Most economists agree that the major relaxation of economic regulation has produced positive consumer benefits and was an important factor in the railroads' return to general economic health.

Safety is always a paramount goal of carriers and the public sector responsible for much of the nation's transportation infrastructure and vehicular regulations. Likewise, rules mandating improvements in vehicle miles per gallon and emission reductions are generally credited with positive energy use and environmental results. Nevertheless, controversy continues over the cost of the technological improvements required to advance environmental and safety goals and their economic impacts on the modes. These controversies constitute a major part of the political dialogue between the railroads (e.g., Positive Train Control implementation, competitive trackage access) and the motor carrier industry (e.g., driver hours of service, permissible truck sizes and weight) with federal agencies and Congress. Conflicts occasionally develop among governmental agencies over whether state and local regulations targeted to local conditions are constitutionally permissible given Commerce Clause restrictions prohibiting restraints on interstate trade.

Like all other states, Nevada is challenged to use its regulatory authority prudently and effectively where matters of safety, security, and the environment are involved. Greater economic freedom tends to support the growth of free enterprise. Nevertheless, the state must use its public interest powers to

ensure that M&A subject to regulatory review serve the state's best interest. Environmental, safety, security, and economic regulations are important to the general welfare of Nevada's citizenry. State policies in these areas are colored with a heavy federal interest and do not stop at state borders, as evidenced by the impacts of California's clean air rules on the types of trucking and rail equipment used nationwide. As a state where the development of both drones and driverless trucks is underway, Nevada has an opportunity to work with the federal government to provide effective rules for safe operation. Moreover, key regulations are often best advanced when done in concert with neighboring states and localities. Projects such as site selection for truck stops and the regulation of heavy and oversized tractor-trailers are well advanced through interstate compacts and cooperative multistate initiatives.

Systems Capacity Constraints and Underinvestment

Systems capacity constraints have been well documented on a national and regional basis, indicating that critical elements of freight infrastructure are getting worse. In its 2013 report card for America's infrastructure, the American Society of Civil Engineers (ASCE) graded America's overall physical assets a "D+," with roads and aviation facilities receiving a "D" (ASCE, 2013). USDOT reports also indicate a worsening pattern of congestion along vital highway links, particularly between the country's largest metropolitan areas, with projections based on growths in population and related economic activity that suggest an even more constrained future. Deficiencies in America's surface transportation system currently costs households and businesses nearly $130 billion, including approximately $97 billion in vehicle operating costs, $32 billion in travel time delays, $1.2 billion in safety costs, and $590 million in environmental costs (ASCE, 2013). If present trends continue, the annual costs imposed on the U.S. economy by deteriorating infrastructure will increase by 82 percent to $210 billion by 2020, and by 2040 the costs will have increased by 351 percent to $520 billion (ASCE, 2013). Cumulative costs could amount to $912 billion by 2020 and $2.9 trillion by 2040 (Ibid).

3.5.3 Demographic Change

Steady population and economic growth is taking place both within and beyond U.S. borders. The U.S. economy is expected to double in size over the next 30 years. By 2045, the nation's population is projected to increase to 389 million, compared to 321 million in 2015. Americans will increasingly live in congested urban and suburban areas, with fewer than 10 percent living in rural areas by 2040 (USDOT, 2015).

A 2010 FRA report estimated that that on average, Americans require the freight system to move 40 tons of freight per person annually; a figure that includes bulk commodities such as coal for power, grains for food, and high-value consumer goods (FRA, 2010). These demographic realities mean 2.8 billion more tons of freight in the next 25 years for 70 million more people, and 4 billion more tons of freight in the next 40 years to sustain an additional 100 million Americans (FRA, 2010). Worldwide population growth is even more dramatic, as demographers predicted that just nine overseas countries (India, China, Ethiopia, Nigeria, Pakistan, Congo, Indonesia, Bangladesh, and Brazil) would add over 390 million people between 2012 and 2020 (Vickerman, 2013).

Nevada's population is expected to grow by about 17.9 percent, or 0.8 percent annually, between 2013 and 2033. The growth rate in population of Nevada's major urban areas is expected to be higher than other counties. Additionally, the growth in population between 2013 and 2033 in Reno-Sparks-Carson City combined statistical area is about 25.6 percent, or 1.15 percent annually, without the Tesla plant and about 31.3 percent, or 1.37 percent, annually with it. Moreover, neighboring states are expected to grow much faster than Nevada, particularly Arizona and Utah (USDOT, 2015). This will create new market opportunities for the freight industry in Nevada, such as becoming a manufacturing or value-added activity center for consumer goods or a Western hub for distribution of all types of goods.

Part of Nevada's long-term freight planning challenges will be to meet the demands of a growing, local, statewide, and regional population. Moreover, Nevada's economic growth will be increasingly dependent on its regional freight corridor connections and on reaching overseas markets. Improved connectivity to national and international multimodal, highway, and rail corridors, and aviation and port networks as well as increased local output is essential to accelerate Nevada's long-term economic growth.

3.5.4 Environmental Issues and Trends

Climate Change

Between 2013 and 2015, parts of America experienced their two worst winters in 30 years. Additionally, drought and severe weather in the West slowed goods movement and hindered the nation's economic recovery. Rail operators, intermodal drayage and trucking companies, airlines, and marine operators all faced service failures and bottlenecks due to highway washouts and extreme weather conditions. Climatologists are predicting the return of El Niño winds and torrential rains to the West Coast. In addition, predictions for the rise in sea level along the East Coast are challenging storm preparedness of major cities such as New York. Thus, climate change or major weather volatility has entered the consciousness of freight planners and can have significant impacts on supply chain planning. Nevada's response requires systems resiliency and emergency preparedness elements, including plans that outline transportation alternatives for the supply of critical goods when normal supply chains are disrupted as a result of extreme weather condition.

Source: NDOT, 2015.

New Efficient and Green Truck and Train Technology

Growing concern for climate change has affected public policy at the national and especially the state level, with California instituting some of the most restrictive emissions regulations in the United States. This has led to the need for cleaner and more efficient means of moving freight. The trucking and railroad industries have introduced new equipment to make their operations more energy efficient and environmentally sustainable. Trucking technologies in development aim to increase large truck gas mileage per gallon from six and less to nearly 10 miles per gallon with cleaner engines (DOE, 2014). The railroad industry has added energy efficient hybrid locomotives to their yards and fleets to reduce harmful pollutants.

The West Coast states, strongly led by California, are likely to be among the nations' first adapters for the use of low-to-zero-emissions technology to power motor vehicles, yard tractors, and locomotives. Since the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, the state has established critical path plans to reduce greenhouse gas (GHG) emissions to 80 percent below 1990 levels by 2050 (Brown et.al., 2014). Moreover, in July 2015, Gov. Edmund G. Brown called on state leaders to develop a plan to transition to zero-emission technologies in the entire freight industry by July 2016 (Phillips, 2015). To achieve the vision of cutting GHG emissions, state plans call for a 50 percent reduction in petroleum use in vehicles by 2030, including heavy-duty commercial trucks (CARB, 2016). As a result, zero-emission EVs, including those used to haul containers from the ports are being tested by trucking firms at the Ports of Los Angeles and Long Beach with support from the South Coast Air Quality Management District (Lopez, 2016). Ultimately, these vehicles will serve customers throughout the Pacific Coast and their neighboring states.

Figure 3-15. Nevada's Electric Highway
NV Energy is working with GOED and NDOT to implement electric charging stations on US 95 between Reno and Las Vegas.

A necessary requirement for eventual use of these vehicles for both domestic and import-related drayage will be the establishment of strategically placed charging stations along major passenger and freight Highway corridors. This task is being advanced by an I-5 focused "West Coast Green Highway" partnership that includes the states of Washington, Oregon, and California, among others (West Coast Green Highway, 2014). Expanding this concept, the Nevada Electric Highway is an effort jointly initiated by NV Energy and the state of Nevada to electrify Nevada's highways between Las Vegas and Reno along US 95 (NV Energy, 2016) (Figure 3-15). It was first announced in June 2015, with NV Energy and the Governor's Office of Energy soliciting interest from business and government entities to host stations and support this infrastructure development in communities such as Fallon, Hawthorne, Tonopah, Beatty, and Indian Springs (NGOE, 2015). This initiative adds five EV charging stations to the 150 already installed around the state, but they are crucial because of their locations in connecting northern and southern Nevada (Hidalgo, 2015). Not only does this contribute to environmental sustainability, but it also furthers diversification of the economy in advancing the energy sector (Ibid).

Changes in Energy Supply and Demand: Fuel Cost, Availability, and Consumption

In the first decade of the new millennium, the price of oil and natural gas fluctuated sharply and the high cost of fuel had a negative effect on the bottom line of all modes. Fuel prices have stabilized over the last few years and long-term forecasts suggest that comparatively low energy costs will become the norm. This developing trend is mainly because of large U.S. petroleum and natural gas reserves made available through the application of fracking. The United States is making a transition from being a large importer of energy to a major exporter, even as the internal and international demand for coal is falling.

The cost and availability of fuel is very important in the transport sector. Heavy-duty trucks use one-fifth of the fuel consumed in the United States, and fuel is a major operating cost for both trucks (37 percent) and railroads (25 percent) (Goodwill, 2013; AAR, 2008; AAR, 2009). Coal has historically been the single most profitable bulk commodity for railroads, but it is being supplanted by natural gas in the creation of electricity for environmental and cost reasons. The fact that coal volumes are likely in permanent decline is troublesome for the railroads.

Governmental policies aimed at reducing fuel use and mitigating environmentally harmful elements of fossil fuels by technological and operational refinements will continue. Nevada is a national leader in terms of the amount of energy it derives from zero-emission solar and wind power. Nevertheless, the world's freight transportation requirements are expected to consume 70 percent more energy in 2040 than they did in 2010 (Goodwill, 2013).

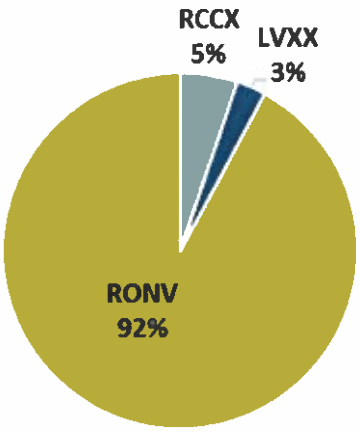

Figure 2-14. Employment Distribution in the Mining Sector, 2013
This figure shows the locational breakout of Nevada's 18,051 employees in the mining sector (NAICS codes 212 - Mining (except oil and gas), 213 - Support activities for mining). The vast majority of employees (92%) work outside of the metropolitan areas (RONV), while 5% work in the Reno-Sparks-Carson City CSA (RCCX) and 3% work in the Las Vegas MSA (LVXX) *(Source: U.S. Census Bureau, 2013 County Business Patterns).*

Disclaimer: Due to disclosure limitation and confidentiality, data from County Business Patterns is missing values for some NAICS industries and counties in Nevada, particularly those counties with a limited number of establishments in the identified NAICS industries. The employment may in fact be higher than reported in the above figure.

Jobs in this sector are typically high paying due to specialized skill requirements and a challenging work environment. The industry continues to grow in locations not only where minerals exist, but also where permitting is feasible.

Production Inputs, Outputs, and Location Decisions

Market fluctuations such as the price of mined product in the world market, extraction costs including the access to inputs to production, such as cement, fuel, heavy machinery, and chemicals (sulfuric acid, ammonium nitrate, cyanide, soda ash, etc.) used in extraction, strongly affect mining production in Nevada. Although cement and fuel are available within the state, most of the chemicals used in mining arrive from outside Nevada. Clusters of secondary industries such as logistics, construction, equipment repair, hospitality, and environmental consulting have developed in the vicinity of the mines.

Mining industry outputs include gold and minerals important to the development of high-tech products. Some of these elements used for high-tech products include lithium, molybdenum, and vanadium. Other uses include non-metallic mineral products manufacturing. The recent decision for Tesla to build its plant in Nevada may have been correlated to its close proximity to lithium mining production.

2.3.4 Analysis of Transportation System Usage for Key Sectors and Suggested Improvements

National-Level Analysis – All Modes and Implications to Nevada

National input-output accounts (BEA, 2015b) were analyzed to understand the 2012 expenditures on transportation modes for the movement of input and output commodities for the key sectors (see Table 2-5). This information is a national average and not based on the particular industry mix for the key sectors in Nevada. However, this helps identify opportunities for increasing non-highway mode use for freight movement in Nevada.

Relative expenditure on transportation modes is similar for input and output commodities for all key sectors, with two exceptions. For the advanced manufacturing and mining sectors, the expenditure on rail is higher for input commodities than for output commodities. In other words, investments in rail in Nevada would likely have greater returns on the movement of input commodities than output commodities for these two sectors.

Among the key sectors, highway expenditure is higher for manufacturing-related key sectors than the mining sector. Rail expenditure is higher for the mining sector than the food and allied manufacturing sector, which, in turn, is higher than the advanced manufacturing sector. Air expenditure is higher for the advanced manufacturing sector than the food and allied manufacturing sector, which, in turn, is higher than the mining sector. Thus, investment in highways would equally benefit all key sectors, while investment in the non-highway modes of rail and air would have varying benefits to the key sectors: investments in rail would benefit the mining sector more, while investments in air would benefit the advanced manufacturing sector more.

and other injuries and inconveniences as a result of avoided vehicle crashes. Intelligently coordinating the movements of driverless vehicles should mitigate or eliminate traffic congestion, air pollution, and human frustrations linked to everyday driving (Glacy et al., 2015).

There are several reasons specific to commercial trucking that make the eventual introduction of driverless vehicles a likely outcome. It provides a solution to industry driver shortage concerns. Even as the technology is phased in, it will make the driver more productive. With semi-autonomous operations, drivers can become the equivalent of "captains of their ship," monitoring operations and communicating across the supply chain to ensure seamless connectivity as well as perform additional tasks in route. Importantly, these vehicles would relieve much of the driver fatigue involved in truck operations and likely allow for the extension of driver hours of service to increase the range and efficiency of truck services. Truck platooning, where one driver is controlling the operations of two or more trucks in convoy, would create additional efficiencies (Roberts, 2015).

However, there are major practical limitations to the rapid introduction of such vehicles, including high additional capital costs and major changes in truck O&M that will slow down their introduction. Perhaps, the greatest challenges will come from the necessity to establish new federal, state, and local safety standards, as well as a new commercial law framework to govern the operation of these vehicles in a mixed driver and driverless environment. As of 2015, only Nevada, California, Florida, Michigan, and the District of Columbia have enacted legislation authorizing the testing of driverless vehicles. The federal government remains in a research mode (Glacy et al., 2015).

Nevada is a leader in the industry and became the first state to grant a license for an autonomous commercial truck to operate on an open public highway (Daimler, 2015). The Nevada Legislature and Department of Motor Vehicles enacted legislation in 2011 and 2013 regulating the testing and operation of autonomous vehicles in the state: 2011 Legislature Assembly Bill 511, 2013 Legislature Senate Bill 313, Nevada Revised Statutes Chapter 482A – Autonomous Vehicles, and Nevada Administrative Code Chapter 482A – Autonomous Vehicles (DMV, 2016).

Taking a leadership role in implementing favorable policies regarding this innovative technology puts Nevada ahead of the curve and gives the state a competitive edge, while helping to facilitate the trajectory of these technologies on a national scale. Daimler's experimentation in Nevada is the "beginning of a new era of automation" (Dorrier, 2015). Gov. Sandoval has further announced that by the beginning of February 2016, a center for autonomous vehicles will be created within GOED (Velotta, 2016).

Aviation Drones

Drones or unmanned aerial vehicles (UAVs) have been the subjects of much discussion over the last several years as either instruments of war or as a tool for professional and hobbyist video photography. However, companies like Amazon, Sony, and Matternet are busy at work with prototype models that would use drones to facilitate e-commerce delivery (Woods, 2015). Like autonomous ground surface vehicles, drone manufacturers have demonstrated that the technology is well on its way to practicable development. Both real and potential air cargo uses include the delivery of medicine and other key supplies to rural areas, providing parts and supplies to oil rigs, and moving inventory across large warehouse complexes (Ball, 2015). Matternet, which recently established development agreements with Swiss Post and Swiss World Cargo, has a bold vision in mind to establish a service network to serve the 1 billion people that have no access to all-season roads and to provide air deliveries that would relieve congestion on urban highway networks (Air Cargo World, 2014).

Nevertheless, there are significant challenges to realizing U.S. drone cargo systems in the near term, including reliability, safety, and airspace management concerns (Ibid).

The FAA, which regulates air safety, is in the early stages of developing rules for the use of both commercial non-commercial UAVs. The agency is proceeding cautiously in light of rapidly proliferating incidents where unmanned vehicles fly too close to traditional aircrafts. For example, there were 780 such incidents reported in 2015 through the first week of August, as compared to 238 for all of 2014 (FAA, 2015).

In December 2015, the FAA issued rules asserting the primacy of a federal framework, and governing matters such as permissible hours of flight, line-of-sight observation, altitude, operator certification, optional use of visual observers, aircraft registration and marking, and operational limits (FAA, 2015) The FAA has established a specific set of rules for the use of UAVs for business purposes that include:

- Special airworthiness certificates for research and development;
- An airworthiness certificate in a restricted category and for special purposes; and
- A petition for exemption that allows the performance of commercial operations in low-risk controlled environments (FAA, 2015).

These user rules, and the development of regulatory coordination with states and localities, can be expected to slow the development of commercial cargo uses (e.g., Amazon Prime drones). Moreover, the commercial motivation for the development of these systems is not as great as it is for autonomous surface vehicles. Meanwhile, research and development on UAVs concerning their safe integration into the nation's airspace is taking place at six research centers, including one within Nevada (FAA, 2013).

High-Tech Ultra-Large Ships

Perhaps the best example of "economies of scale" advances in freight transportation technology is the widespread construction and continued addition of post Panamax or Chinamax megaships to the world's fleet inventory. The size of ocean-going container ships accessing world ports has expanded more than three times from approximately 5,300 TEUs to over 18,600 TEUs in the last 10 years (Mongelluzzo, 2015). When the Panama Canal expansion was planned, it was designed to handle up to 13,000-TEU megaships (up from its current 5,000-TEU limits). Ships are now being introduced that are beyond this size and design limit at over 21,000 TEUs. These huge vessels will operate primarily in the Asia-to-Europe trade as well as between East Asia and the U.S. West, and to the East Coast via the Suez Canal. There is also a cascading effect, as the formerly largest vessels begin to replace smaller ships for other trade. When operating at full or near full capacity, these mega-vessels have dramatically lower per slot operating costs than their smaller predecessors, in part because they utilize much less fuel per unit. For example, Maersk's largest "Triple E" ships need only 0.902 tons of bunker fuel to move a 40-foot container today while its 2007 fleet used 1.791 tons of fuel (Dupin, 2015b).

These large vessels have major impacts on the depths of channels needed to receive them as well as on landside terminals and supply networks. Ultra-large vessels require larger cranes that can extend over 22 rows of containers. These new high-volume cargo drops and pickups resulting from even a single ship visit stress current terminal operations, even at ports with the large-scale facilities, such as the San Pedro Bay Ports and the Port of New York and New Jersey. This new massive transfer delivery pattern is out of sync with current more constant but lower volume loading and unloading practices. As a result, port terminal capacity is challenged. Surges from 4,000 to 5,000 containers discharged over the 2 to 3 days the ships are in port can choke a terminal's yard, gate operations, and rail transfers, as well as generate long lines of truckers waiting and idling at the gates. Industry experts state that a high degree

of terminal automation will be required to provide efficient loading and discharge. The cost of cascading technology demands to accommodate mega-vessels are estimated in the range of $200 million to $500 million and require massive amounts of terminal space (Mongelluzzo, 2015).

Currently, only the large West Coast ports, the Virginia ports, and the Port of New York and New Jersey have the channel depths needed for megaship access, although several East Coast ports may complete access projects within the next decade. One major consequence of the increased accessibility of these ships to the East Coast via the Suez Canal or within the newly expanded Panama Canal limits is that more trade from Asia, particularly Southeast Asia, will move from the West Coast to East Coast gateways which are closer to large inland consumer markets in the East and Midwest.

Ultra large vessel use and the consolidation of business among a few large ocean carriers is a worldwide trend to achieve economies of scale efficiencies in ocean trade. The changes taking place within the port industry will cascade through the international and domestic supply chains and have an impact on the modal services and networks serving Nevada and other inland points. Inland logistics chains, such as those in Nevada, will need to be readjusted to bring new supply and demand patterns into equilibrium as cargo arrives and departs ports in larger and less frequent bunches. The major adjustments and economic costs to the system largely will be felt at the ports and on the first and last miles of access.

New Manufacturing Processes

Several new computer-based manufacturing processes are revolutionizing the manufacturing industry. Through their machine-based efficiencies, these processes are helping to reduce the costs of production and distribution, and in doing so, are spurring a return of manufacturing to the United States. An especially revolutionary representative of such processes is additive manufacturing or three-dimensional (3D) printing: where a printer reads a digital blueprint and methodically drops building material according to a set of instructions, creating a final product that is built up tiny layer by tiny layer. This direct transfer from blueprint to finished products may revolutionize manufacturing and its supply chain. In effect, it allows individuals, small businesses, and corporate departments to make parts, appliances, tools, and a wide variety of materials right from the workplace or home (Intrieri, 2014). Farewell to traditional tooling, assembly lines, or supply chains (Figure 3-17).

Three-dimensional printing and other computer-based inundations have a way to go before they can revolutionize major manufacturing techniques, but they are on their way. A recent survey of high-tech executives conducted by UPS found 4 percent reported their companies actively use the technology and 12 percent are experimenting with 3D printing (Dupin, 2015a). Early adopters of the technology include aerospace, automotive, medical, and consumer products (Dupin, 2015a). The 3D printing development firm *Underwriting Laboratories* estimates that the overall growth of $5 billion additive printing industry will be between 30 and 40 percent over the next few years, reaching $80 billion by 2023 (Dupin, 2015a).

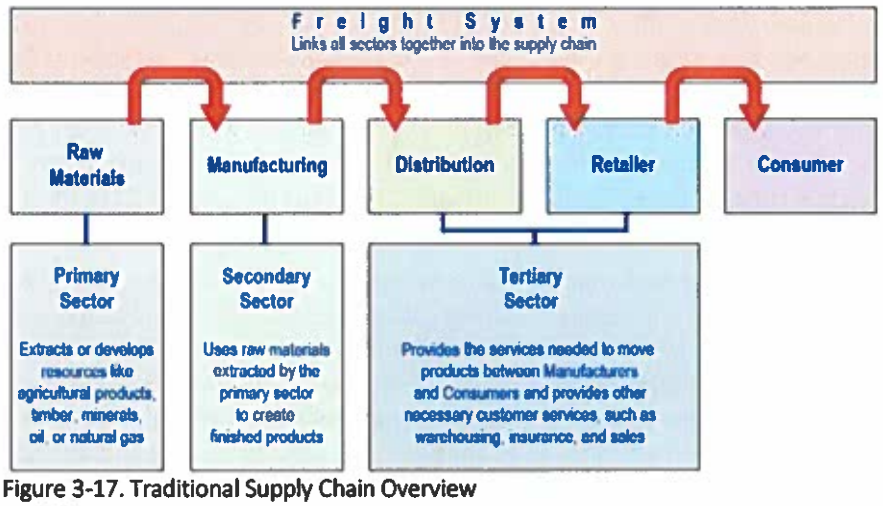

Figure 3-17. Traditional Supply Chain Overview

All finished goods follow a similar path from raw material collection to consumer ownership as illustrated by this supply chain diagram (Source: MG&A, 2015 recreated from Business Case Studies, Lafarge Case Study).

Additive manufacturing is illustrative of the types of changes that can truly revolutionize the production and distribution supply chain worldwide. Current networks for subassembly processes, such as those that support automobile manufacturing, would require much less worker labor and goods transfer. Additionally, ingredients for manufacture would be transmitted for product completion rather than sub-parts themselves. Manufacturing by online transmissions of templates as opposed to the transfer of parts through the freight system could reduce motor carrier and rail trips as well as the related congestion and wear and tear on highway and rail infrastructure. In doing so, template transmission could reduce much of the need for new systems capacity. The changes above may constitute a major future advantage for Nevada as a production hub, because manufacturing in Nevada will often enjoy lower land, facility construction, and operations costs than in California and elsewhere. As a potentially rich source of rare minerals that often constitute key ingredients for 3D printing material, Nevada could enjoy an advantage in becoming a major additive manufacturing materials provider (Table 3-1).

Table 3-1. The Long-Term Impact of 3D Printing on Supply Chains

The Current State or Traditional Supply Chain Before Mass 3D Printing Adoption	What 3D Printing and the Supply Chain Will Look Like Once Mass Adopted and Applied
Products are mass produced (e.g., in China)	Customized production
Manufactured goods are "pushed out" and distributed through warehouse network to customers	"Pulled" by end customer demand; Locally printed and distributed
Long lead time	Short lead time
High transport costs	Low transport costs
Large carbon footprint	Low carbon footprint

This table describes the projected impact on supply chains as a result of 3D printing (Source: Directly reproduced from *Robinson, A. 2014. INFOGRAPHIC: 3D Printing and the Supply Chain to Drastically Alter Manufacturing. Cerasis).*

3.5.6 Rise of Computer-Based, Internet, and Wireless Technologies

A revolution is occurring in how goods are assembled, tracked, and delivered to consumers. Retailers can now flexibly tailor their warehousing and distribution systems to speed their products to customers through sophisticated new goods inventory and tracking technologies as well as smartphone apps that simplify purchase and delivery. Entire production and delivery networks are being reconfigured to shorten delivery time.

> "Prior to the rise of the Internet, consumers had no option for obtaining products beyond retail stores and catalogs. Supply chain entities were focused on providing the right product at the right place and time. Today, supply chain entities need to have any product available at any place at any time. This may seem impossible, yet more supply chain entities have learned to leverage consumer demand against supply chain efficiency" (Robinson, 2015).

In doing so, they are changing the language of supply chain management to "clicks-and-bricks" retailing and the use of omni-channel distribution platforms that can serve warehouses, stores, and e-commerce customers directly.

Prototypes and Other Concepts

New concepts that may have major impacts on the movement of both passengers and freight are under development in the state of Nevada. They extend beyond autonomous truck and drone testing to include Elon Musk's proposed Hyperloop system that would offer travel speeds that challenge current aviation and ground transportation technologies, as well as a proposed congestion-busting multimodal Land Ferry system being developed with strong NDOT interest at UNLV.

The Hyperloop involves an enclosed surface vacuum to right-of-way (ROW) that would enable the pods inside it to move at ground speeds up to 745 miles an hour in a way that would minimize energy use and drastically reduce travel time between city pairs within its system. The project developer, Hyperloop

Advent of Urban Mega-Regions

The Regional Plan Association (RPA) and Brookings Institute note that U.S. demographic growth and shifts are resulting in mega-regional economic relationships where urbanized areas increasingly converge into larger networks. These metro-centric networks result in inter-urban trade flows as the foundation of the domestic economy and international trade. It is forecast that by 2050, 75 percent of the nation's inhabitants will live in 10 mega-regions (or megapolitan clusters) and 80 percent of the nation's population growth will occur there (FRA, 2010). Many goods consumed by these densely populated areas will be supplied by surrounding rural regions and ports. Traffic congestion, lost productivity, and their effects will diminish quality of life in and around the mega-regions.

Two mega-regions are especially germane to Nevada's freight plan: Northern California and Southern California. (Figure 3-12) The Sierra Pacific mega-region's principal cities include Oakland, Reno, Sacramento, San Jose, and San Francisco (RPA, 2005). The megapolitan areas in the greater southwestern United States—Southern California, Las Vegas, and the Sun Corridor—have expanded and are interlinked, forming the Southwest Triangle. The Sierra Pacific mega-region accounted for 5 percent of the U.S. 2005 Gross Domestic Product, and the Southern California and Las Vegas mega-regions accounted for 7 percent (America 2050, 2015).

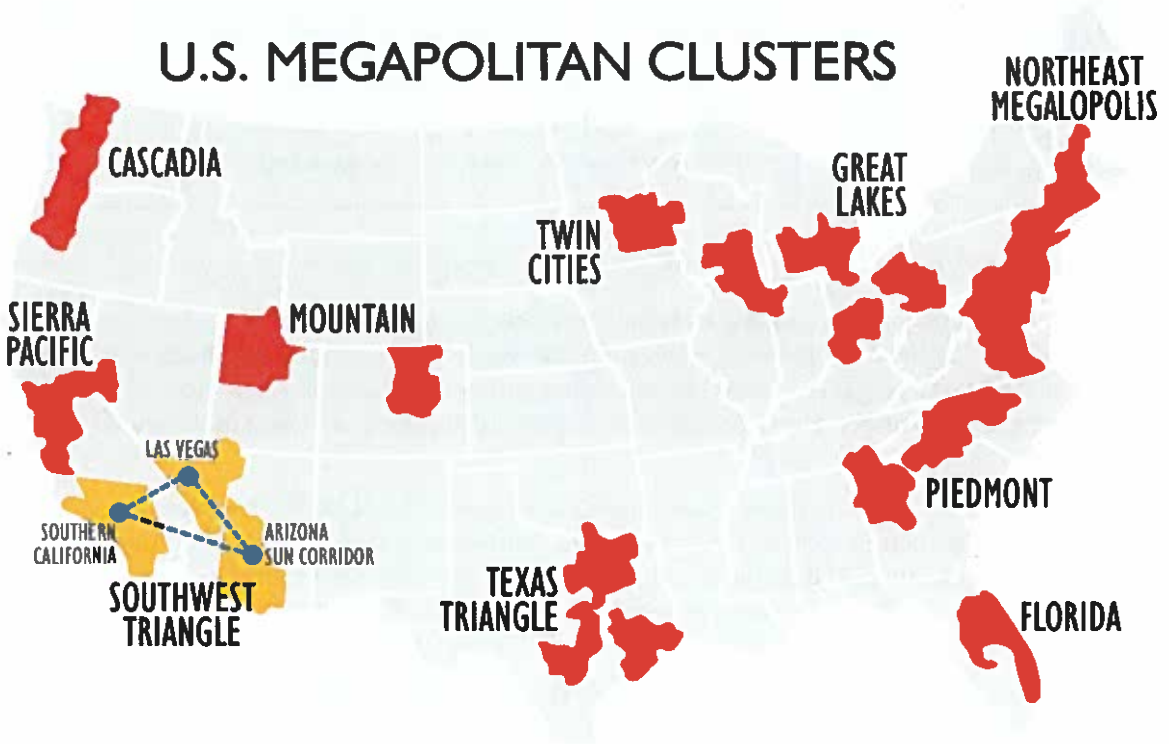

Figure 3-12. U.S. Megapolitan Clusters
Image Source: Metropolitan Research Center, University of Utah, Brookings Mountain West, 2010.

Economic Implications for Nevada

The macro scale economic trends noted above are setting the framework for Nevada's participation in commerce on a global, national, regional, and local scale. This structure is geared toward increasing trade among nations and regions and requires strong multimodal links at key urban hubs for full state participation. The breadth and quality of Nevada's multimodal and intermodal freight network is and will continue to be a major determinant in the state's ability to trade and receive goods.

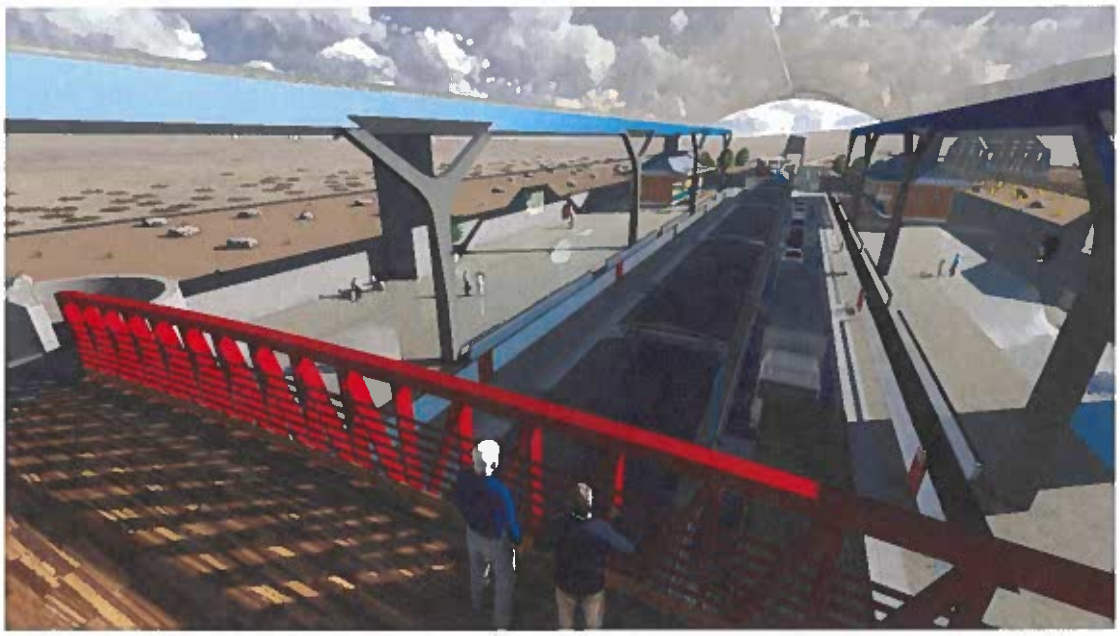

Figure 3-19. Land Ferry Station
This graphic illustration depicts what a station would look like if the Land Ferry was in operation. Trucks, containers, automobiles, and passengers could be transported (Source: NDOT, 2015).

Nevada has made it a matter of state policy to favor development and testing leading-edge technology, such autonomous motor vehicles, commercial drones, and the Hyperloop. This cooperation between the public and private sector places the state in a position to become an early beneficiary of these systems. For example, drone deliveries could be especially useful in both emergency and mundane freight needs of rural areas. It may be possible to create even greater synergy between these efforts through a Governor's Cabinet Coordinating Group advancing a concerted effort to link supportive initiatives: transportation, economic development, and education. University research and development of new transportation alternatives such as the Land Ferry may lead to applied results that will attract a skilled technical workforce to Nevada; one that is attuned to its future transportation needs and also provides new in-state resources to support public and private sector project development.

New Terminal Management Technologies

Port and rail terminal operators are in the process of introducing sophisticated new data-driven terminal management systems (e.g., NAVIS) to better coordinate and manage ship clearance, yard, and gate operations. Following European and Asian examples, these systems are seen as a prelude to greater seaport automation and are an ongoing source of labor management contention, as recently evidenced at the West Coast ports. The implementation of automated systems has not been smooth at ports such as San Pedro Bay, New York and New Jersey, and elsewhere, but it is critical to the long-term management of the handling and transfer of goods from post-Panamax megaships at U.S. ports.

3.5.7 Mode-Specific Trends and Drivers

Trucking's Essential Role

The motor carrier industry is the most essential mode in U.S. freight transportation (Figure 3-20). In 2014, the trucking industry hauled 9.96 billion tons of freight, or 68.8 percent of total U.S. freight tonnage, garnering $700.4 billion in revenue, which represents 80.3 percent of the nation's freight bill (ATA, 2015). The flexible nature of trucking services makes it ideal for both long and short hauls, as well as a key intermodal partner with seaports and rails for moving freight from their terminals to the final consignee. Motor carrier profitability is closely tied to the success of the economy and is viewed by

economists as a leading indicator of economic conditions. There is a certain fragility to the industry as a large number of small operators heavily populate the industry; 97.3 percent of the nearly 500,000 for-hire carriers and over 700,000 private carriers in the United States have fewer than 20 trucks and 90.6 percent are operating six trucks or less (ATA, 2015).

From an industry-wide perspective, trucking is not without its problems. The industry faces a chronic and growing driver shortage problem as it seeks to maintain a labor force that currently includes 3.4 million truck drivers and 7.1 million total industry employees; one out of every 16 people working in the United States (ATA, 2015). Moreover, the average age of truck drivers is currently 49, compared to an average age of 42 for the labor force as a whole (Morris, 2015). An essential driver availability question is whether the driver shortage is driven by demographics or a market shortage created by comparatively low pay in unsatisfactory working conditions (Cassidy, 2015). Factors contributing to the capacity shortage are many. They include regulatory changes such as: the Federal Motor Carrier Safety Administration's (FMCSA) Compliance, Safety, Accountability Program (CSA), which strengthens the reporting standards and tools available for safety rule enforcement; hours of service (HOS) rule changes which reduce driver service times to include greater overnight rest; a mandate for electronic driver log devices; and new health requirements for drivers, drug and alcohol testing databases and new driver training and minimum insurance requirements (Larkin & Beach, 2015).

There are policy and technological factors that may mitigate the capacity crunch: immigration reform; allowing longer combination vehicles; expanding U.S. operations for Mexican trucks; and driverless truck innovations. Efficient packaging can allow as much as 30 percent more freight units per trailer, while network optimization technologies and increasing allowable gross vehicle weights are also available to bolster service capacity (Beach, 2015).

Figure 3-20. Western U.S. Highway Freight Flows, 2010

This map depicts the volume of freight flows on interstate and non-interstate highways. The highway freight flows in California are much larger than those across the rest of the western United States, while flows along I-40 and I-10, as well as I-15 from Salt Lake City, are also significant. Flows in Nevada are relatively much smaller in tonnage along I-80 and I-15 (Source: MG&A, 2015 based on USDOT, FHWA data).

The driver shortage and related capacity pressures are not entirely negative for the industry. Many shippers are working more closely with the truckers to ensure more efficient pick-up and deliveries within their facilities. As supply of trucking exceeds shipper demand, truckers are able to consistently command higher rates for their services; However, to do so requires truckers to deal with labor shortages and pressures from increased environmental and safety regulations, and generally rising costs. These factors will drive many small carriers out of business and encourage large carriers to consolidate and merge.

The two major drivers of trucking costs are the price of fuel and labor. Currently, trucking is enjoying the recent reduction in fuel costs. These costs, which are historically volatile, are expected to remain on the low side for some time. Truckers enjoy generally good operating conditions on Nevada's major highways; bottlenecks are limited to a few urban locations. However, trucking services to key markets in major California metropolitan areas are constrained by heavy congestion.

At the moment, the effectiveness of trucking as an essential contributor to Nevada's economic growth is less a matter of the current level of service Nevada's highways and more an issue of the quality and abundance of motor carrier services available to Nevada businesses and their partners in other markets. Issues involving driver shortage and the imbalance in the flows of goods moving in and out of the state, and the ability to address congestion issues on a regional basis, take on a high degree of importance alongside the state's ability to maintain and improve its highway infrastructure.

Railroad Policy & Service Level Challenges

There is an inextricable link between the railroad sector and the broader economy (Figure 3-21). Railroads account for approximately 40 percent of U.S. ton-mile freight volume, more than any other mode of transportation, and they earn approximately 20 percent of freight revenues (AAR, 2015). Railroads excel at handling bulk and other heavy commodities, including coal, chemicals, agricultural and food products, paper and lumber, petroleum, metallic ores, and non-metallic minerals, among others. They also play an important role moving general consumer goods in intermodal containers in partnership with seaports, domestic distribution transfer centers, and trucking firms.

Railroads have a competitive and cooperative relationship with trucking in major intermodal traffic lanes. Rail has the upper hand in longer-distance moves, at about 1,000 miles or longer. With few exceptions, railroads are not competitive with trucking at distances under 500 miles, the point over which trucking requires a stop and more than one driver to deliver goods (AAR, 2015). Given the large mix of raw materials in the railroads' commodity portfolio, railroad revenues are subject to volatility based on factors beyond their control, including weather and global price and currency fluctuations.

Three of the most distinguishing features of North American railroading are:

1. It is a private sector endeavor and thus is responsible for funding its infrastructure and operations.
2. It is dominated by a small number of large North American railroads i.e., BNSF Railway, CSX Transportation, Kansas City Southern Railway, Norfolk Southern, and UPRR.
3. It is subject to greatly diminished, but substantial economic regulation, as well as numerous safety and environmental rules.

These factors give shape to the critical issues facing the railroads. Class I carriers generate nearly a half billion dollars in annual operating revenue, yet their need for constant cash flow is considerable given the large sums that need to be set aside for capital investment.

In light of their constant need to make large infrastructure investments, the railroads are concerned over policies that limit their ability to control pricing and set operational improvement priorities. Likewise, rail shippers are concerned about the availability and quality of their services in an industry historically prone to monopolistic practices.

Figure 3-21. Western U.S. Railroad Freight Flows, 2010

This map depicts the volume of freight flows on railroads in the western United States. It is significant that much of the railroad freight flow from Southern California travels along I-40 just south of Nevada (Source: MG&A, 2015 based on Surface Transportation Board data).

Among the industry's ongoing policy concerns is the mandated implementation Positive Train Control (PTC), a technology that will automatically stop or slow a train before certain accidents occur (AAR, 2015). The federal mandate for railroads to install this train crash-prevention safety system on rail lines that include passenger and toxic inhalation hazardous materials has been a focus of the industry since Congress passed the PTC requirement in 2008 (AAR, 2015). Railroads were faced with a deadline to complete PTC implementation by December 31, 2015, a deadline that, despite diligent efforts, the railroads were not ready to meet nationwide (AAR, 2015). The FRA acknowledged this and so Congress granted a 3-year extension to 2018.

BNSF Train in Nevada
Source: NDOT, 2015.

At present, Nevada's railroad service is a secondary matter to both the state and the railroads that serve it. BNSF Railway has limited trackage rights within the state providing service to a small base of long-standing customers. UPRR is the state's primary carrier, but its focus is primarily in providing through service. However, for Nevada railroad customers who generate and receive energy bulk commodities, including mining and agricultural products, the scope and quality of railroad service are of primary importance.

Railroading may be a sleeping giant with respect to Nevada's long-term multimodal-based business development plans. The prospective development of intermodal shuttle services is an important means to increase access for Nevada's shippers to gateway ports in California and elsewhere. Nevada-based intermodal services may prove to be an efficient means to serve future distribution and manufacturing firms. If sufficient volumes warrant, the railroads could be excellent partners in public-private sector development projects.

The amount of railroad trackage in Nevada is among the lowest among all the states. Future railroad volume expansion either along current east-west routes, or involving the potential creation of north-south services will require the acquisition of ROW. Historical records indicate the mid-20th century presence of railroad ROWs that have since been abandoned, but may be a good path for future use. An inventory of such properties would be useful to future freight planning.

Air Cargo

There are several technology trends in the air cargo industry, including but not limited to:

- New wide-body aircraft types (B787, A350) that can serve "thinner" long-haul international passenger routes but have substantial belly cargo capacity. These planes can serve medium-sized markets rather than just the very large hubs and allow them to ship directly rather than through the large hub.
- Global positioning system (GPS), radio frequency identification (RFID) technology ensuring higher visibility/transparency of shipments: location/time tracking, temperature control, vibration recordings etc. This trend also increases reliability and is a value-add.
- High-tech air freight containers with built-in temperature controls etc. which expands the market for air freight.
- New Security/Screening technologies, as mentioned in the above section.
- Electronic air waybills: paperless initiative to increase air cargo processing efficiency.
- Future trend: drone delivery systems and other automated cargo handling technologies could vastly expand the air cargo market.

The globalization of trade has led to more goods flowing between world regions and over long distances. Air carries 0.5 percent of global trade in terms of weight, but 35 percent in terms of value, as determined by the types of commodities suited for air cargo and time/cost factors (Air Transport Action Group). Modal shifts in intercontinental air cargo are increasingly impacted by competition from ocean container shipping while domestic and regional air cargo is impacted by a modal shift to trucking. Both ocean container shipping and trucking are lower-cost alternatives and albeit slower, their production schedules can be controlled to ensure reliability on certain set delivery dates. The high cost of jet fuel has also made these modes more attractive than air.

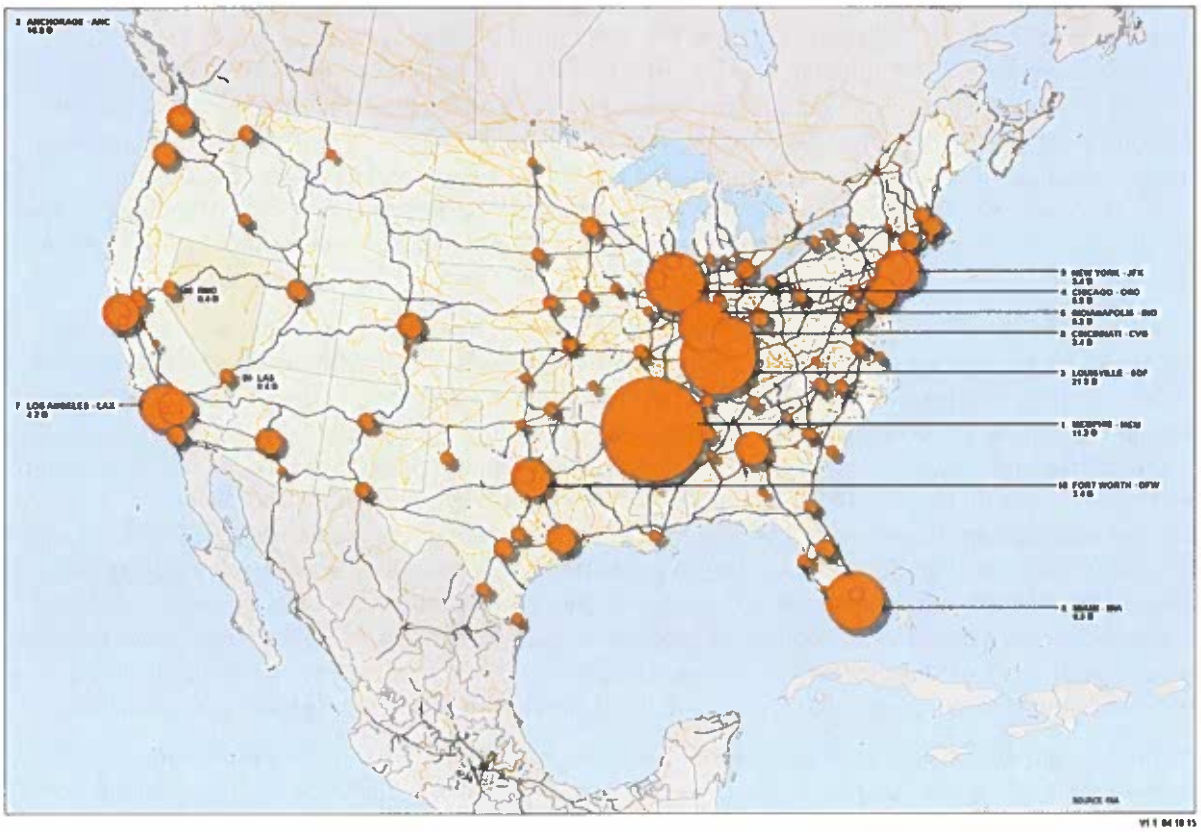

Figure 3-22. Airports by Total Landed Weight of All-Cargo Aircrafts, 2013
This figure depicts the relative size of cargo functions at U.S. airports, ranking the airports by total landed weight of all-cargo aircrafts. The size of the dot is relative to the number of pounds (Source: MG&A, 2015 based on FAA data).

Near shoring, or a shift in the location of production and manufacturing, also leads to a modal shift and facilitates reliable delivery often at a lower cost. For example, mode choices are different if production occurs in Asia than if it occurs in Mexico. Belly capacity from wide-body, long-haul passenger aircraft is offsetting the demand for all-cargo freighter capacity. These aircraft have been configured to maximize belly space, allowing medium-sized markets to ship directly rather than through very large hubs, and more people travelling by air has led to an induced increase in capacity for airlines to carry freight. Thus, there is a trend toward medium-sized hubs putting larger emphasis on more efficient cargo operations to capture the increased opportunities in air freight.

Since 9/11, security and screening requirements have increased significantly. Thus, to be part of the air cargo industry, airports need to have the new technology, equipment, and certified personnel required

for tight security and screening, which involves an expensive fixed-cost investment. In an effort to control investments in these security-related resources, freight forwarders are motivated to consolidate and ship freight at large-hub airports, thereby limiting air cargo activity at the medium-sized hubs.

The U.S. air cargo industry is mature and growing slowly, at approximately 3.0 percent per year (Boeing). FedEx and UPS dominate the U.S. domestic market, with market shares of 47 and 27 percent, respectively (Figure 3-22). The mature and slow growth market is attributed to consolidation over the past 15 years as well as more sophisticated and dependable trucking services. Growth in international air cargo to/from the United States exceeds U.S. domestic air cargo growth, at 5.1 percent year-over-year (YOY) and 3.1 percent YOY, respectively, with Asia being the primary market driving volume and growth rates (U.S. Census Bureau, Foreign Trade Statistics, and A4A).

Moreover, as aircraft technology advances and more wide-body aircraft fly direct to more U.S. airports, the trend may see more cargo diversifying to non-traditional U.S. gateways as large hub functions become less important. Additionally, routing structures have changed, with more international flights from non-traditional hubs. For example, the British Airways B787 flight added from Austin, Texas, to London's Heathrow Airport provides nonstop inter-continental service to a mid-sized U.S. passenger market. This flight is only viable due to having the right-sized aircraft and its ability to carry large amounts of air cargo. High traffic congestion in and around global gateway airports is affecting reliability and driving producers to seek alternate departure points. This may become important for Las Vegas and Reno located in close proximity to the highly congested San Francisco and Los Angeles.

Airports on the West Coast are particularly strong with air cargo related to trade between the United States and Asia, as well as serving the western United States, where distances between major markets are greater than in the eastern United States. The infrastructure and scale of operations at Los Angeles International Airport (LAX) encourages the utilization of LAX for import/export shipments facilitated by extensive trucking networks. With respect to Nevada, FedEx and UPS together account for 74 percent of the total air cargo in the state (USDOT; U.S. Census Bureau Foreign Trade Statistics). Nevada's international air exports are largely handled by LAX, at 28 percent of the state total (USDOT; U.S. Census Bureau, Foreign Trade Statistics). According to 2013 statistics, McCarran International Airport (LAS) ranked 38th in North American air-cargo tonnage, likely a result of the fact that it is a service-oriented economy that does not drive the density of air cargo as manufacturing economies do (ACI-NA). Outside of integrated carriers, Reno-Tahoe International Airport (RNO) is dominated by narrow-body air services that have limited carrying capabilities and ranks 60th among North American airports (ACI-NA, 2013).

Nevada's major airports at Las Vegas and Reno have the capacity to increase their intermodal air freight business. This will depend on increasing connections to major foreign markets and higher volumes of Nevada generated products. However, Nevada's economy does not produce a lot of commodities that use air cargo. The state is more of an import economy and is within trucking distance of the LAX and San Francisco International Airport (SFO) facilities. Low-back haul truck rates could support increased air exports for Nevada air cargo commodities through these facilities. The attitude of the airports toward air freight is also important, and both Las Vegas and Reno airports place a high priority in attracting increased passenger service from international markets. A joint marketing effort to attract belly freight to these routes may accelerate the attractiveness of expanding international service at these airports.

Seaports

These are uncertain times for marine supply chain stakeholders; the economic conditions that determine national economic growth levels of international commerce are highly volatile. Major technological changes are taking place within the industry and centers of production and consumption are shifting among nations. Nevertheless, the volumes of goods produced and traded between the United States and the rest of the world is certain to grow. At this time, it is not clear which markets will lead growth and/or whether there will be major shifts in cargo volumes among the major U.S. gateway ports (Figure 3-23).

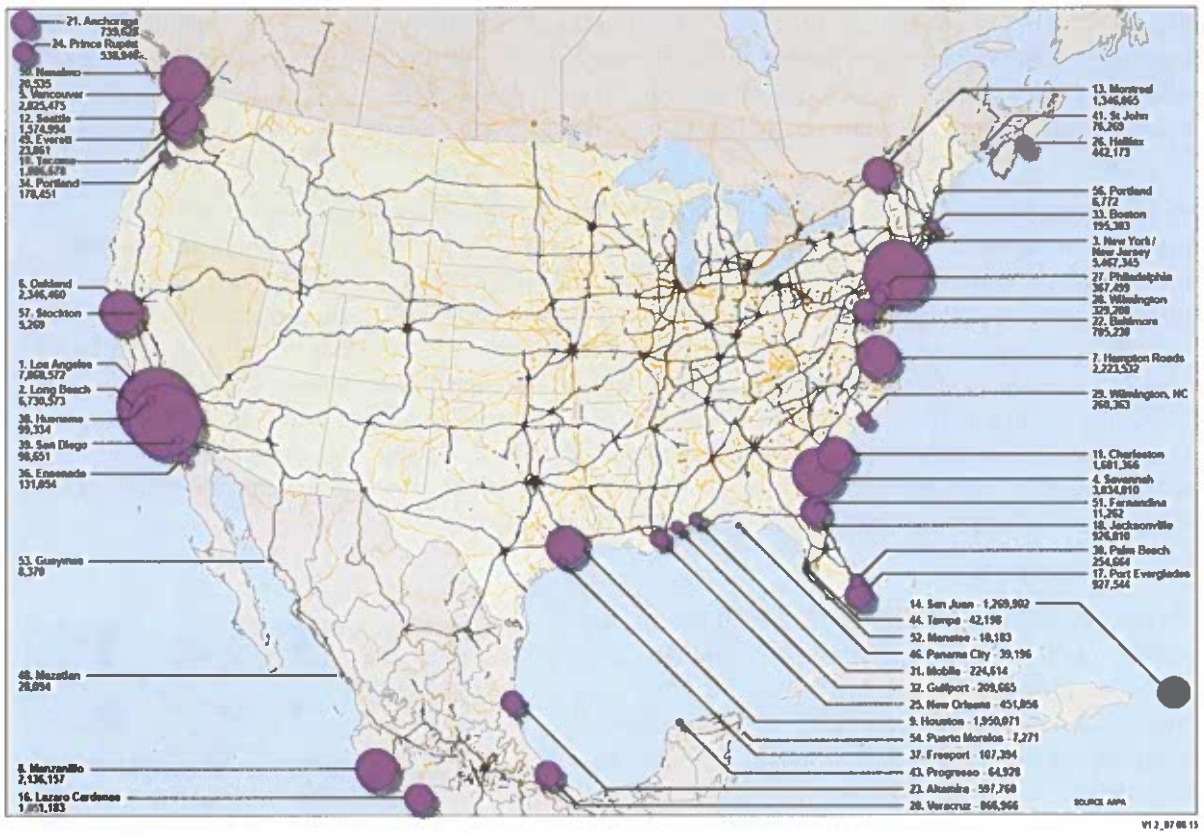

Figure 3-23. North American Ports by Container Traffic, 2013 (TEU)

This figure ranks and depicts the relative size of North American ports by their 2013 container traffic in TEUs (Source: MG&A, 2015 based on AAPA data).

Two recent studies raise questions as to whether the West Coast ports will continue their dominance as the leading gateway for Asian import cargo. An *American Shipper* survey conducted in early 2015 (when acrimonious labor negotiations were taking place and not yet concluded) revealed that there is serious concern that congestion wrought by labor and operational difficulties that began in 2014 will be an ongoing problem (Johnson and Kasper, 2015). Both large and medium/small shipper respondents indicate active plans to migrate on average 20 percent of their volume from west to east (Johnson and Kasper, 2015).

Another report concluded that up to 10 percent of the container traffic to the United States from East Asia could shift from the West Coast ports to the East Coast ports by 2020 (BCG and Robinson, 2015). This shift is anticipated as a result of the expanded Panama Canal and current growth trends favoring East Coast ports. In 2014, about 35 percent of container traffic from East Asia to the United States arrived at East Coast ports, but based on import shifts, that share would rise to about 40 percent by 2020 without the canals expansion (BCG and Robinson, 2015). With expansion, the East Coast share could rise to 50 percent and a 10 percent net increase in market share (BCG and Robinson, 2015). As the size of ships able to get through the Panama Canal increases by two or three times, the East Coast will gain cost advantages that bring cargo closer to their large local and hinterland markets (Ibid).

The West Coast ports will retain their transit time advantage in delivering northern Asia and Chinese exports to the battleground Midwest/Mississippi Valley markets, which produce 15 percent of the nation's GDP (Ibid). The long-standing trade-off between time and cost may tilt in favor of East Coast destinations if operating conditions and reliability prove superior to West Coast services. Nevertheless, the potential losses to the market share of the West Coast ports are likely marginal as they have the

infrastructure in place to handle ultra large ships and the Western railroads have the capability to align their intermodal rates to retain market share. The export of goods required by a growing East Asian middle class may sustain West Coast port growth. An ongoing challenge to all U.S. ports may come from improved port systems in Canadian and Mexican ports improving their intermodal connections into the U.S. Southwest and Midwest.

Any long-term plan for economic growth must consider Nevada's access to overseas and intercontinental markets as a priority, simply because the majority of future customers and trading partners will reside there. Therefore, issues of access to major gateway ports in California raise important matters in long-term freight planning. Related sub-issues will involve improving intermodal rail access to the ports and the potential creation of an I-11 corridor for Western states and NAFTA trade as well as a means to create freight hubs at Reno and Las Vegas, which are now merely stopping points. Potential shifts in freight flows may increase the level of commercial activity between Nevada and eastward regions, particularly the growing Southeast. Therefore, Nevada's freight and industrial development planning must be sensitive to potential shifts and the changes they may bring to Nevada's logistics role in the broader network (e.g., as a backdoor supplier to California).

Intermodal Systems

The rapid emergence of intermodal freight transportation systems has been one of the most significant developments in logistics over the past half-century (Figure 3-24). Intermodalism involves an exchange of freight between two or more transportation modes including air, road, sea, rail, and pipelines. The modes use a common unit of transport, such as a container or a truck trailer, which means that the cargo does not need to be handled, rather only the unit of transfer is involved. Intermodal freight logistics include first-mile collection and last-mile delivery at transfer terminals and connecting line haul movements in between. Intermodalism enhances the economic performance of supply chains by using each mode in the most productive manner. For example, the use of rail, air, and water modes provide operational economies over long and intermediate distances, while trucking offers efficient and flexible pickups and deliveries. The pricing and movement of goods occur under a single bill of lading, and goods must be tracked through each modal segment and transfer.

Container-based intermodal systems provided the foundation for the rapid growth of overseas trade. International movement of containers began in the early 1960s, and the ocean and rail freight terminals essential to efficient transfer developed in the 1970s and 1980s. Refinements such as the standardization of containers into 20-, 40-, and 53-foot boxes, and the use of the TEUs for effective volume comparison soon followed. The U.S. domestic intermodal rail systems did not blossom until the 1980s with the advent of double-stacked rail technology. Technological advances also include economies of scale based development of efficient large ships, well railcar technology that allows containers to be double stacked in single railcar wells, electronic data information systems (EDI) to advance billing and tracking, and computer-based terminal management systems.

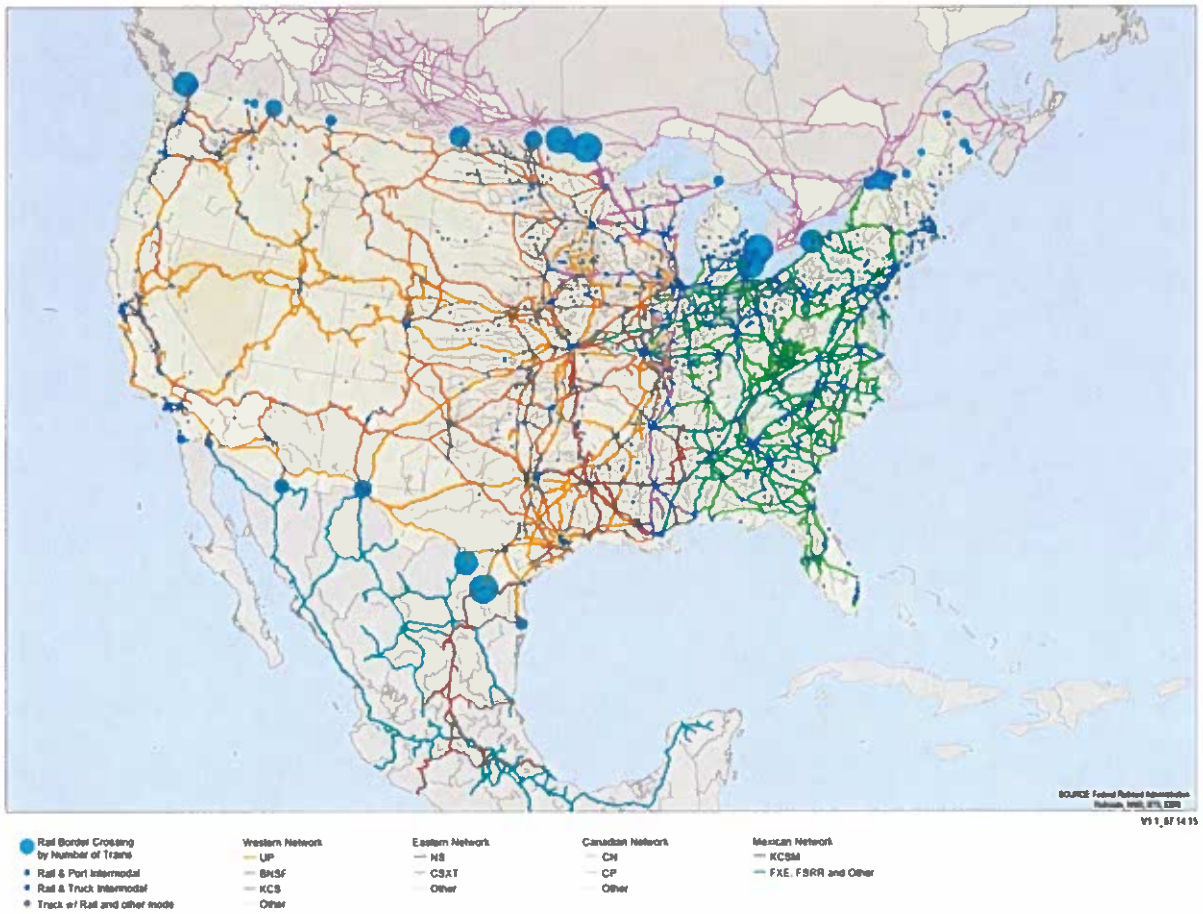

Figure 3-24. The North American Intermodal Rail System

The map below highlights the conductivity between the North American intermodal rail system and major seaports and border crossings. It also depicts the ownership of rail lines across the continent, with the Canadian National Railroad purchasing lines in the United States to Chicago and New Orleans, giving it port access to the Caribbean, and Kansas City Southern purchasing lines in Mexico to Mexico City and to Pacific and Caribbean ports. The U.S. intermodal pattern below emphasizes the large gap between the northern and southern Nevada logistics hubs (Source: MG&A, 2015, based on FRA, NAIS, BTS, ESRI data).

Without the development of the container-based intermodal systems, railroads would be bereft of one of its high-volume profitable lines of service. According to Intermodal Association of North America Statistics (IANA), U.S. intermodal rail use has grown steadily and totaled 14 million loadings in 2014 (Hatch, 2014) (Figure 3-25). Moreover, industry experts estimate that over the next few years, annual intermodal growth will be in the 5-7 percent range based on positive GDP growth in international business and two to three times GDP growth in domestic intermodal transportation (Hatch, 2014).

The U.S. intermodal market has two components that allow for this steady growth. One is the transfer of intermodal containers from East Coast and West Coast ports to national distribution hubs at the center of the country. The other is domestic intermodal service, which uses lighter domestic containers to meet shipper needs (LaGore, 2013). The two lines of business intersect with transloading, which involves the transfer of largely imported goods into domestic containers for more efficient shipping. Transloading constitutes approximately one-third of cargo moving east from the Southern California ports.

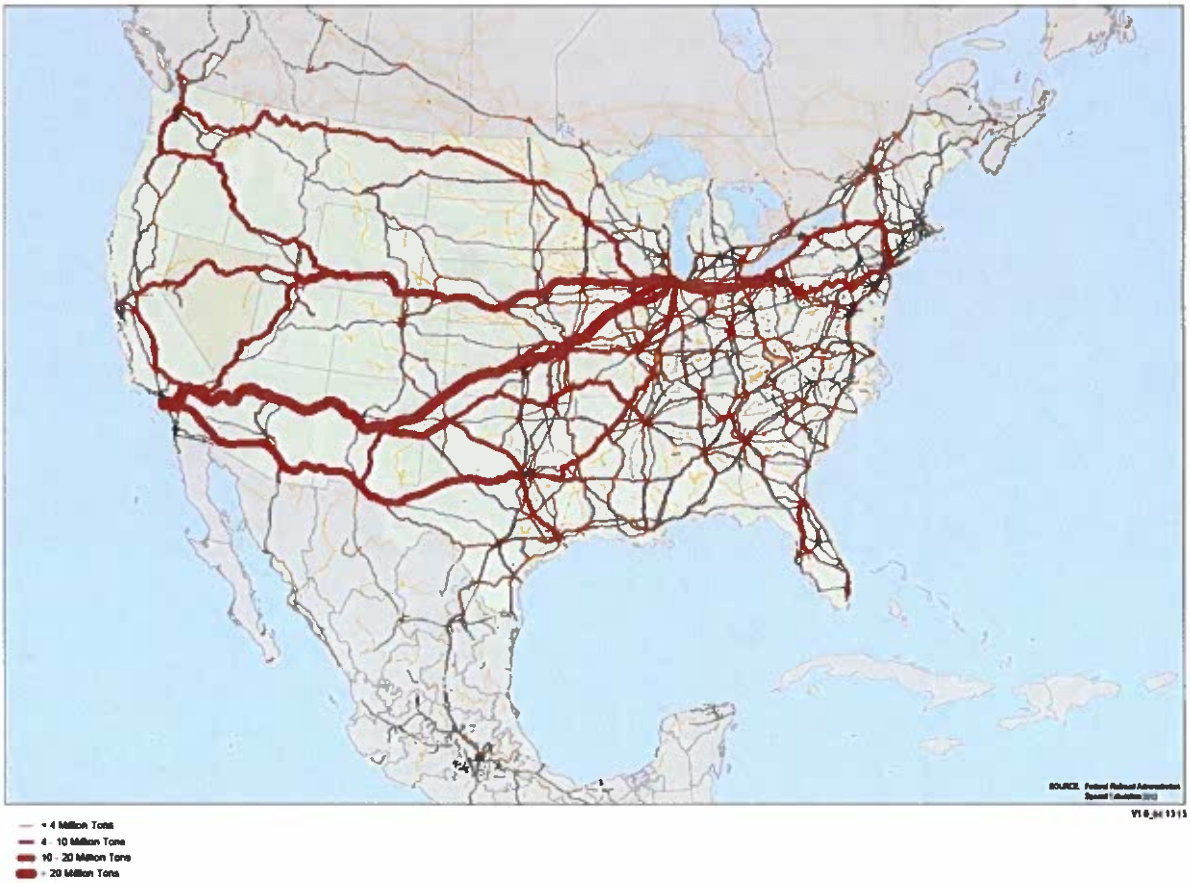

Figure 3-25. North American Rail Intermodal Freight Flows, 2011 (Tons)

This figure depicts 2011 trailer-on-flatcar and container-on-flatcar rail intermodal movements across North America by tons. It is evident that the largest flows come from the Southern California region to Chicago and the Northeast as well as a smaller but still significant flow to Dallas along I-10. Flows from Nevada and the Northwest merge in Salt Lake for distribution or to head east to Chicago (Source: MG&A, 2015 based on FRA Special Tabulation, 2013 data).

The next frontier for rail intermodal development is to penetrate the less-than-500-mile market. Both the federal government and the states are taking a more active interest in promoting intermodal transportation because the system helps take trucks off crowded highways and provides environmental and safety benefits, relieving overall systems congestion and cleaning the air. The ability to consolidate local truck pickups and deliveries at terminal for transfer to rail is an essential tool for transforming Nevada's hubs into attractive distribution and manufacturing hubs. Rail/truck intermodal systems require high volumes of freight at collection and distribution points along major traffic lanes, particularly when the distances are less than 500 miles.

There are major congestion, safety, and environmental issues in California together with continued economic growth that favor concerted efforts to develop intermodal service for Reno and Las Vegas shippers. However, there is a chicken-or-egg problem to overcome. On one hand, these Nevada hubs need to generate much higher volumes of outbound freight to attract railroad investment services and intermodal terminal operations. At the same time, the availability of intermodal services is needed to attract manufacturing and distribution center investments. Growing Nevada's intermodal freight activities may be developed in two different ways. The first is to grow incrementally with regional freight consolidation services organizing bundles of freight for railroad "hook-and-haul" services in major intermodal traffic lanes. Once initiated, these facilities can grow to support expanded point-to-point services. The second way is to change the configuration of the freight system to transform Reno and Las

Vegas into crossroads, thereby accessing a much larger market area and increasing the importance of these hubs in the distribution pattern of the western United States.

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the 37 percent who said they were considering reshoring just 1 year earlier (Purolator International, 2015). This movement is primarily away from Asian production towards returning at least some of their manufacturing to North America recognizes that Asia is no longer the low-cost option it once was and that keeping manufacturing closer to home makes good logistical and financial sense.

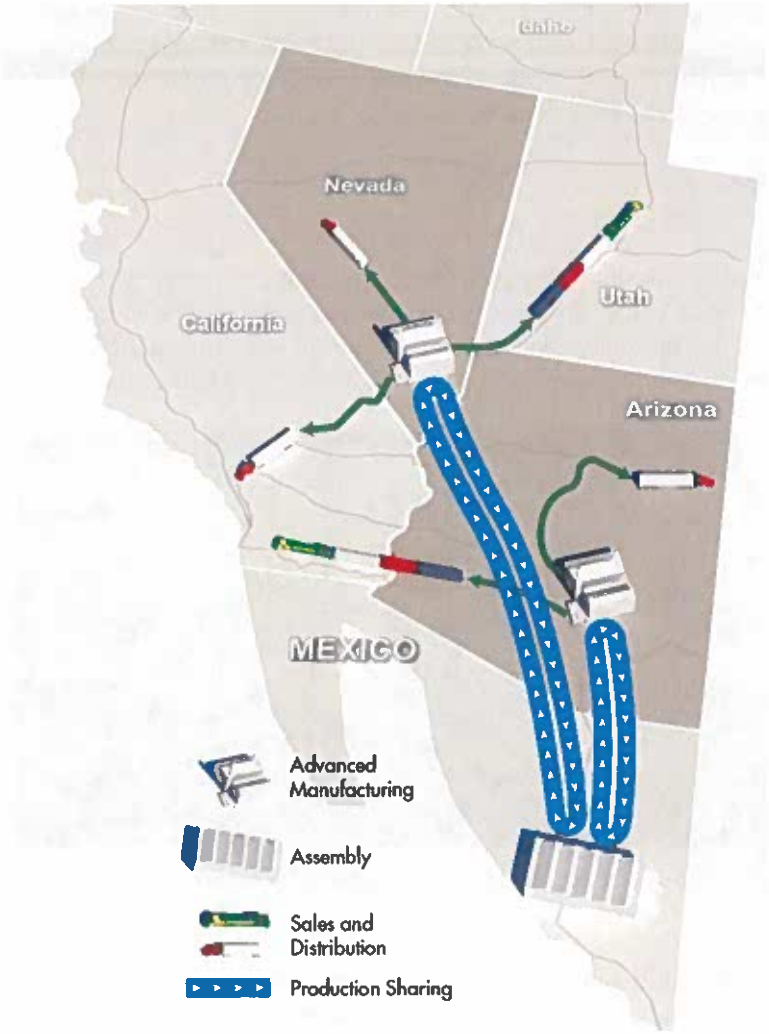


Figure 3-14. Nearshoring Conceptual Illustration
Image Source: NDOT, I-11 and Intermountain West Corridor Concept Report, 2014.

The partial reshoring of manufacturing may create opportunities to increase Nevada's industrial base as a cost-efficient business location offering lower-cost land, labor, and efficient permitting processes, especially within the Northern California market. For Nevada to maximize opportunities associated with nearshoring shifts to Mexico or Canada may require the development of a north-south intercontinental route through a proposed I-11 highway and rail corridor extending from Mexico to Canada.

The cost and availability of fuel is a major concern to both the freight community and the general public in Nevada and elsewhere. When fuel prices are low, as they are currently, the operating costs for carriers decline and the spending power of the general public increases. Lower energy costs lead to higher personal consumption rates, more goods being transported, and carrier operations becoming more profitable. Because Nevada is a truck-reliant state, a combination of plentiful supply and lower fossil fuel costs are positive developments. Over the long term, clean air and climate change concerns will require a greater commitment to alternative energy sources and the development of a service network the make their use possible for motorists as commercial carriers.

3.5.5 The Effects of Technology on Freight and Economic Systems

Autonomous Vehicles

In describing the major events impacting the trucking industry in 2015, the American Trucking Associations' news journal noted "history was made through the continued expansion in rapid maturity of technology" (Transport Topics, 2015). The summary highlighted the debut of Mercedes-Benz's Daimler autonomous driving Inspiration truck at the Hoover Dam in early May 2015 (Figure 3-16), as well as progress made by other companies. Techniques such as platooning and automatic braking seem closer to reality than to science fiction compared just 1 year prior (Ibid). In fact, Nevada is a demonstration state for truck platooning, helping to further efforts to reduce fuel consumption (TT, 2014).

Figure 3-16. Daimler's Driverless Truck Being Tested in Nevada
(Source: Daimler AG).

Transport Topics, other technology and trade publications, and the popular press are stating that the phased introduction of driverless vehicles for passengers and freight is now a question of when, rather than if (Roberts, 2015). The National Traffic Safety Administration (NHTSA) has developed a classification system which uses four levels to define automation in motor vehicles; these levels reflect the degree that technology will assist vehicle operations (NHTSA, 2013). Major tipping points towards autonomous operations will occur at Level 3 where significant self-driving is possible with in-cab driver assistance on to Level 4 where full self-driving automation is achieved (NHTSA, 2013).

As the May 2015 Mercedes-Benz Daimler test in Nevada and a subsequent on-the-road demonstration use in Germany indicates, commercial over-the-road vehicles, under test conditions, can meet NHTSA's Level 3 criteria where:

> "Automation enables the driver to cede full control of all safety-critical functions under certain traffic or environmental conditions and in those conditions to rely heavily on the vehicle to monitor for changes in those conditions requiring transition back to driver control. The driver is expected to be available for occasional control, but with sufficiently comfortable transition time" (NHTSA, 2013).

At Level 3 autonomy, automobiles or trucks are anticipated to provide numerous advantages in terms of safety, convenience, mobility, and environmental protection over vehicles requiring full engagement. By freeing up a driver for other in-route tasks, these vehicles will also increase productivity. The enhanced awareness and reaction capabilities of these vehicles eventually should result in thousands of saved lives

Technologies, Inc., proposes to have a commercially viable system in operation by 2020 despite the skepticism of many in the scientific community (Deutchmann, 2015). Hyperloop began testing in Nevada in early 2016 at a 50-acre site in North Las Vegas and successfully conducted its highly anticipated Propulsion Open Air Test on May 11, 2016 (Thompson, 2016).

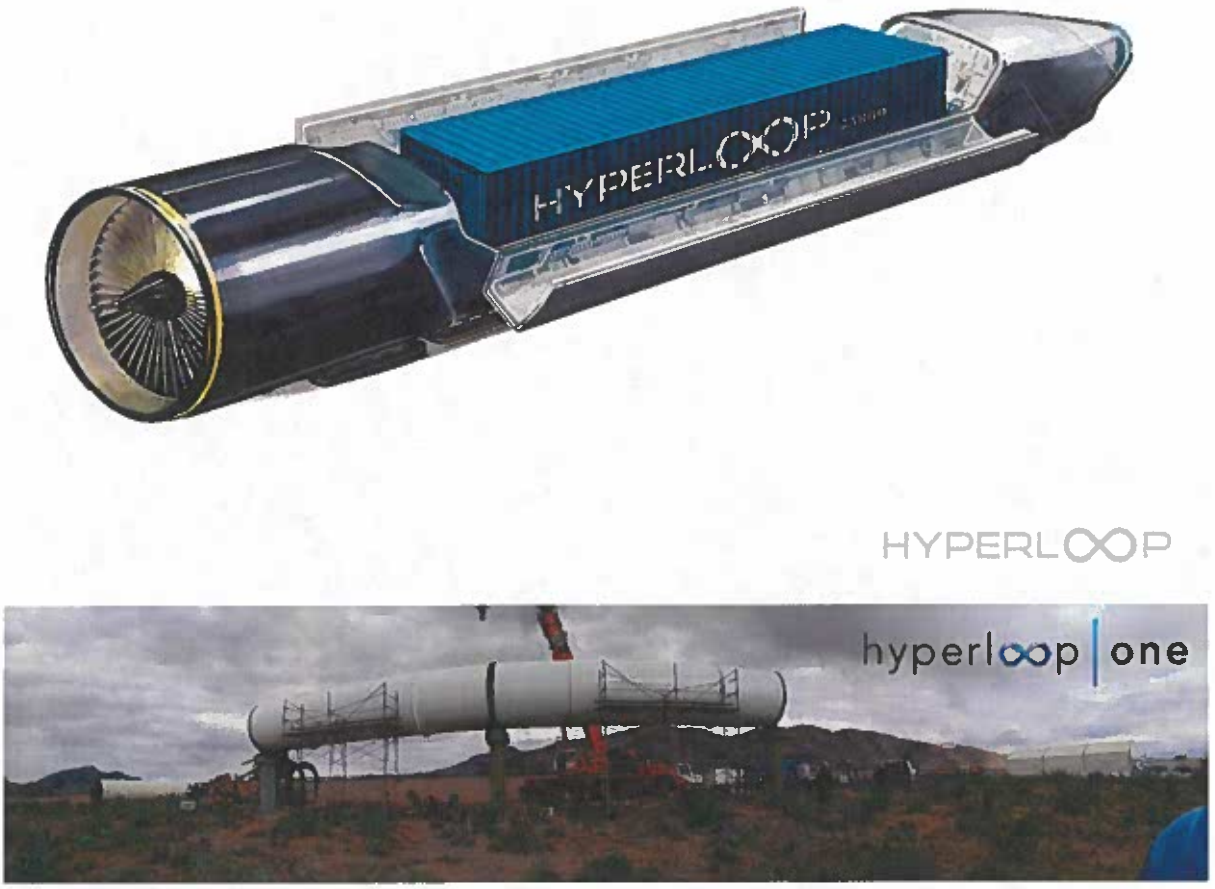
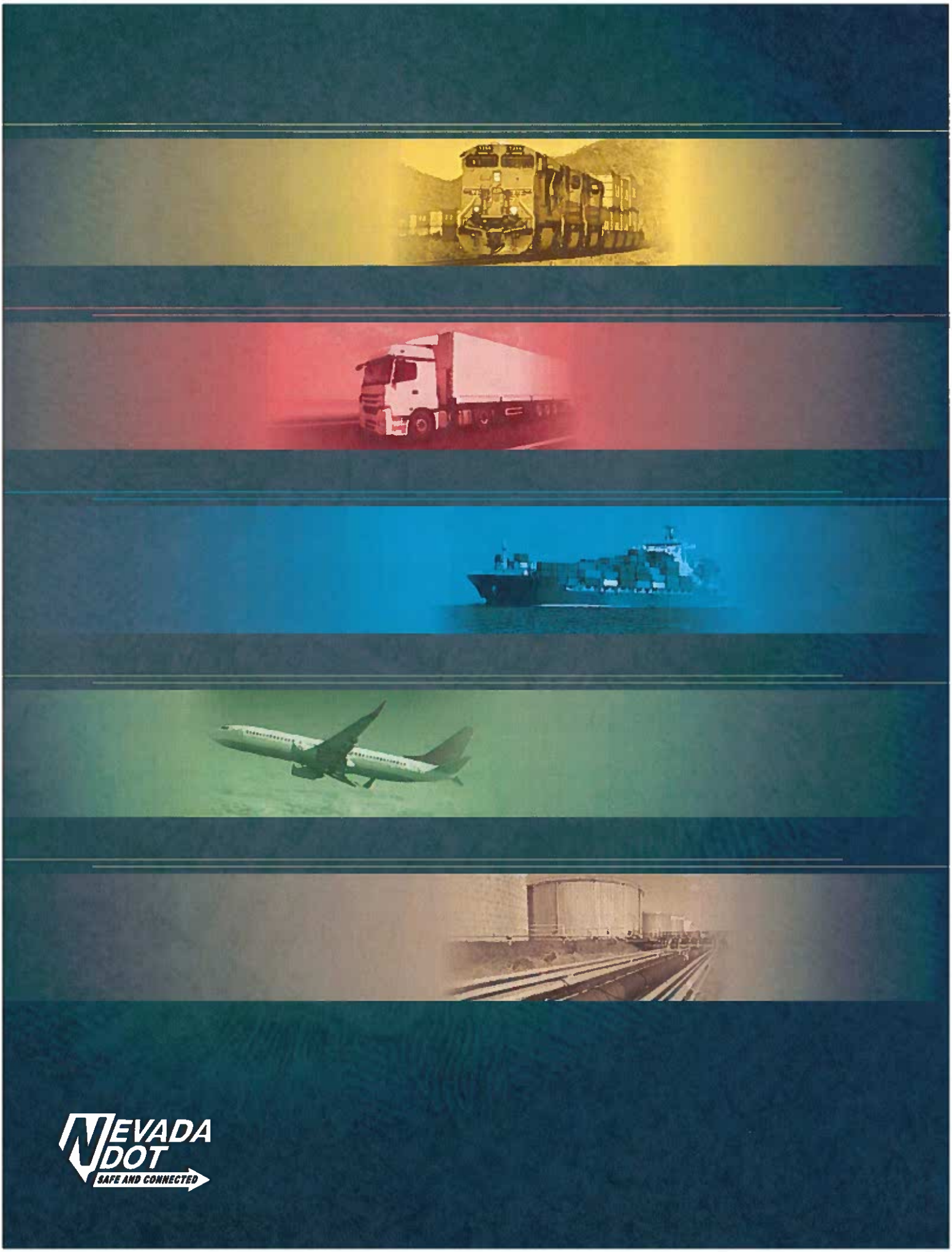


Figure 3-18. Hyperloop
Hyperloop, a technology that would enable cargo pods to move at ground speeds up to 745 miles an hour, began testing in Nevada in early 2016. (Photo source: https://hyperloop-one.com/image-library).

The Land Ferry is a locomotive-powered, multimodal platform that can be assembled at various lengths to simultaneously move a combination of trucks, automobiles, and passenger railcars in a single consist over intermediate distances along its own ROW, and includes efficient pickup and delivery terminals at each end (Figure 3-19). Proponents at UNLV and NDOT cite safety, congestion relief, travel improvements, environmental benefits, and jobs creation as elements favoring its development and operation (UNLV, 2015). Proponents believe that the Land Ferry would be especially effective at the distances between the inland Nevada points and the California ports.


NEVADA DOT
SAFE AND CONNECTED

Report Criteria:

Updating license expiration dates

Calculating license billings on 07/01/2024

License Types: BREEDER, CLASS I LIQUOR, CLASS II LIQUOR, CLASS III LIQUOR, CLASS IV LIQUOR, CLASS V LIQUOR, COMMERCIAL, GAMING, HOME, LIQ CA

Rates: COMMERCIAL BUSINESS, SHORT TERM RENTALS, MOBILE PARK SPECIAL, MOBILE VENDOR SURCHARGE, HOME OCCUPATION, NON-PROFIT, MEDIC

Business.Account number = 3415

Account Number	Business Name	License Type	Rate	Quantity	Amount	Email Sent	License Frequency	Expiration Date
3415	COZY CUP	COMMERCIAL	101	1250	117.09	-	ANNUALLY	06/30/2025

Count: 1 Total: 117.09

Report Criteria:

Updating license expiration dates

Calculating license billings on 07/01/2024

License Types: BREEDER, CLASS I LIQUOR, CLASS II LIQUOR, CLASS III LIQUOR, CLASS IV LIQUOR, CLASS V LIQUOR, COMMERCIAL, GAMING, HOME, LIQ CA

Rates: COMMERCIAL BUSINESS, SHORT TERM RENTALS, MOBILE PARK SPECIAL, MOBILE VENDOR SURCHARGE, HOME OCCUPATION, NON-PROFIT, MEDIC

Business.Account number = 3416

Account Number	Business Name	License Type	Rate	Quantity	Amount	Email Sent	License Frequency	Expiration Date
3416	JT'S STEAKHOUSE	COMMERCIAL	101	1950	182.66	-	ANNUALLY	06/30/2025
Count: 1				Total:	182.66			

APPENDIX E

LETTERS OF SUPPORT

CONTENTS

May 16, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The Nevada Small Business Development Center (SBDC) strongly supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

Economic Competitiveness and Opportunity: The grant to fund the rehabilitation of railroad track will help to lower transportation costs, particularly for major employers and small businesses. An improved transportation infrastructure will enhances economic viability and create opportunity for new business growth. Additionally, improved transportation infrastructure will attract new industries to the area, creating new economic prospects for the community and creating and supporting job growth and sustainability.

In supporting the grant application, the Nevada SBDC underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Karen Coe
Assistant State Director
Nevada SBDC

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

Nevada Small Business Development Center
University of Nevada, Reno
1664 N. Virginia St.
Reno, NV 89557
(800) 240-7094
www.NevadaSBDC.org

White Pine Main Street Association
150 Sixth Street
Ely, NV 89301

May 13, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

White Pine Main Street Association supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

White Pine Main Street Association is a member of the Nevada Main Street Program sponsored by the Governor's Office of Economic Development. Our organization is focused on community development, beautification, and economic vitality. It supports business creation and retention to create an economically vibrant community.

Lowering transportation costs, particularly for major employers like the mines, enhances economic viability. Additionally, improved transportation infrastructure will attract new industries to the area, creating new economic prospects for the community.

In supporting the grant application, White Pine Main Street Association underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Caroline McIntosh
Chairman

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

French Thompson
General Director
Public Infrastructure & Investments

BNSF Railway Company
P. O. Box 961502
Fort Worth, TX 76161-0052

2600 Lou Menk Drive
Fort Worth, Texas 76131-2830
(817) 352-1549

French.Thompson@BNSF.com

May 28, 2024

Amit Bose, Administrator
Federal Railroad Administration
1200 New Jersey Ave, SE
Washington, DC 20590

Subject: Letter of Support – Nevada Northern Railway Rehabilitation Project

Dear Administrator Bose,

BNSF Railway supports efforts by the Nevada Northern Railway Foundation to secure federal discretionary funding under the 2023/2024 Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant for the Nevada Northern Railway Rehabilitation Project. If awarded, the project will restore 110-miles of railroad to operational condition.

This project will restore a key freight connector in rural northeastern Nevada. The restoration of this service will help to ensure economic competitiveness and environmental sustainability in the region.

BNSF values our working relationship with the Nevada Northern Railway Foundation and is prepared to work with all involved public agencies on further development of this project, subject to satisfactory review of funding requirements, final engineering, and entering into definitive agreements as may be required by BNSF or other project stakeholders.

BNSF appreciates your thorough review of this application and looks forward to continuing its relationship with the Nevada Northern Railway Foundation through this important project.

Sincerely,

French Thompson
General Director – Public Infrastructure & Investments

US COPPER
LLC

May 17th, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

I am writing in support of City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to partially fund the Track Rehabilitation Project. We fully support this request for funding to facilitate the reconstruction of this railroad that will support commerce and assure cost-effective, reliable, and safe rail service to serve the shippers and rural communities of Elko, Eureka, and White Pine Counties in Northeastern Nevada.

As a private mining company, we are actively engaged in exploring for 'future-facing' energy metals, with a particular focus on copper, in Elko County. We are enthusiastic supporters of the Track Rehabilitation Project because it promises to lower the operating costs of mines by improving the efficiency of supply deliveries and outbound logistics for final products.

This initiative will not only facilitate the production of new mines but also has the potential to extend the lifespan of existing ones. Additionally, it will help maintain an experienced workforce in the Ely region, supporting mining operations and other developmental activities.

From both a safety and environmental perspective, the railway project is expected to significantly reduce highway traffic. This reduction will decrease the likelihood of traffic incidents and lower carbon emissions, contributing to a safer and more sustainable future.

By helping to fund the proposed project, the FRA will enable the growth of Northeastern Nevada's mining, agricultural, energy production, and other industries. As a result, existing jobs in industries that utilize rail service will be more secure, and the improved rail infrastructure will bolster economic development efforts in the area. This, in turn, will attract additional businesses and create more direct and indirect jobs for Northeastern Nevada.

We support FRA's careful review and approval of the City of Ely and Nevada Northern Railway Foundation's grant application.

Sincerely,

John Bremer
Manager
US Copper LLC

ENERGY METALS CORP
DEVELOPING METALS FOR THE FUTURE

May 13th[th], 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

I am writing in support of City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to partially fund the Track Rehabilitation Project. We fully support this request for funding to facilitate the reconstruction of this railroad that will support commerce and assure cost-effective, reliable, and safe rail service to serve the shippers and rural communities of Elko, Eureka, and White Pine Counties in Northeastern Nevada.

We are a private mining company actively exploring in the Elko and Lincoln Counties for 'future facing' energy metals, in particular Copper. We are supportive of the Track Rehabilitation Project as it will reduce the operating costs of mines through the more efficient delivery of supplies and outbound logistics for final products. This will support not only new mines coming into production, but also has the potential to extend the life of other existing mines. It will also help maintain an experienced workforce in the Ely region supporting mining and other development areas.

From a safety and environment perspective, the rail will see a significant reduction in highway traffic, reducing the potential for traffic incidents and reducing carbon emissions.

Therefore, we support FRA's careful review and approval of the City of Ely and Nevada Northern Railway Foundation's grant application.

Sincerely,

Chris Neilson
President
Energy Metal Resources US Inc
Subsidiary of Energy Metals Corp Pty Ltd

CC: Roger Bowers

LANDER COUNTY

COUNTY MANAGER

BARTOLO (Bert) RAMOS

50 State Route 305

Battle Mountain, NV 89820

(775) 635-2885

May 23, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The Lander County Board of Commissioners support the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

1. **Safety:** Removing heavy truck traffic from highways, especially near places like the White Pine County Middle School, enhances safety for the community.
2. **Environmental Sustainability:** Rail transport is noted as the most environmentally friendly means for ground freight transportation. Transitioning freight to rail would remove nearly 1,000 trucks per month from area roads, significantly reducing truck traffic, and reducing environmental impacts.
3. **Quality of Life:** Opening the railroad enables more cost-effective transportation of building materials, which could address the community's housing shortage by making construction more affordable.
4. **Improves Mobility and Community Connectivity:** Rehabilitating the railroad would connect White Pine County to the broader transportation network, reducing isolation and tying the community into the international freight network.
5. **Economic Competitiveness and Opportunity:** Lowering transportation costs, particularly for major employers like the mines, enhances economic viability. Additionally, improved transportation infrastructure will attract new industries to the area, creating new economic prospects for the community.
6. **State of Good Repair:** The current state of the railroad, much of which dates back to the early 20th century, requires significant investment to meet modern standards for freight transport.
7. **Partnership and Collaboration:** The City and the Foundation have a successful track record of public-private partnerships. Approving this grant would provide new opportunities for local mines, businesses and industries to locate in White Pine County.

In supporting the grant application, Lander County underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Bartolo Ramos
Lander County Manager

WPM

May 10, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") Program grant application of the City of Ely for the Nevada Northern Railway

Dear Administrator Bose:

I am writing today to express our sincere support of the City of Ely's (Nevada) grant application under the CRISI Program to partially fund the Nevada Northern Railway: Rehabilitating A Key Infrastructure Lifeline in Rural Nevada Project. As the Chief Operating Officer (COO) of White Pine Metals, I am proud to express our support of this important project.

Our mine project, when fully operational, estimated to be in production in 2032, is estimated to support the transport of an estimated 1,500 carloads of rail freight per year. The rehabilitated Nevada Northern Railway will enable us to transport those goods via rail, keeping more than 4,000 long haul semi-trucks off the road.

To aid the City of Ely with completing this project, White Pine Metals also pledges to provide materials to construct this project. The mine has an estimated 500,000+ tons of high quality construction rock which could be used for base, fill, rip-rap and potentially ballast material; working with construction partners we believe we would be able to supply more than 300,000 tons of ballast materials as an in-kind contribution to the CRISI Grant. This contribution, which has an estimated value of at least $6,000,000, will serve as a tangible example of our company's dedication to this important project.

On a personal note, we have worked closely with local leaders in Ely, and we have a good idea of what a great and positive impact the rehabilitated Nevada Northern Railway will have on all facets of the Ely community – including improved economic, quality of life, housing and infrastructure in this great community. We know how important this project will be for the long-term improvement and viability of the City of Ely and the region, and therefore, wholeheartedly support the project and will assist in any way we can to make it a reality.

We support FRA's careful review and approval of the City of Ely's application; please let me know if we can provide additional information.

Sincerely,

Steve Spitze
COO
White Pine Metals LLC

WPM

CC: PROJECT CONTACT

The First National Bank of Ely
Chartered February 23, 1907

May 14, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The First National Bank of Ely (Nevada's oldest Bank established February 23, 1907) supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter, Nevada to Ely, Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

- Enhancing the local economy by providing more cost-effective transportation of essential commodities to our community.
- Opening of the main line will also assist KGHM, a large local copper mine with the transport of copper concentrate to the main line at Shafter in a safer more economical manner. This would extend the mine's life and provide major employment opportunities to our community.
- Rail transportation is the most environmentally friendly means of ground freight transportation.
- Improving quality of life/lower transportation costs
- Providing connectivity to the international freight network

In supporting the grant application, The First National Bank of Ely underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI program.

Sincerely,

John C. Gianoli
President

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

595 Aultman St. Ely, NV 89301 • 775-289-4441 fax 775-289-8301

KGHM

23 May 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") Program grant application of the City of Ely for the Nevada Northern Railway

Dear Administrator Bose:

I am writing in support of the City of Ely (Nevada) grant application under the CRISI Program to partially fund the Nevada Northern Railway: Rehabilitating A Key Infrastructure Lifeline in Rural Nevada Project. On behalf of KGHM, I want to express our earnest support for this project. The rehabilitation of the Nevada Northern Railway ("NNRY") will reconnect our mine with the general railroad system, enabling us to safely transport ***approximately 3,000 carloads of freight per year***, removing trucks from the road and improving the economic viability of our operation.

To further show our support for this project, KGHM Robinson Mine is willing to provide approximately 336k tons of ballast materials as a contribution to the CRISI Grant, which would add significant value to the overall project effort.

KGHM has two operating mines in the United States as well as several more around the world. As noted above Robinson produces considerable quantities of bulk copper concentrate and has been in continuous operations for 20 years with 12 years of current mine life remaining. Economic improvements could extend mining even further and bolster the White Pine County economy.

By helping to fund the proposed project, the FRA will enable all of Northeast Nevada to grow. As a result, current jobs at industries utilizing rail service will be more secure, and improved rail infrastructure will assist the economic development efforts in this area to attract additional businesses, creating more direct and indirect jobs for our region.

We support FRA's careful review and approval of the City of Ely's application.

Sincerely,

Neil Jensen
VP & GM Robinson
CC: Mayor Nathan Robertson

Robinson Nevada Mining Company
Robinson Mine
4232 West White Pine County Rd 44
Ruth, NV 89319 USA

T +1 775 289 7000
www.kghm.com

College of Business
University of Nevada, Reno

Tuesday, May 14, 2024

To: The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Letter of Support, Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program Grant Application on Behalf of the Nevada Northern Railway Track Rehabilitation for Freight Traffic

Dear Administrator Bose,

On behalf of the University Center for Economic Development, Nevada's only U.S. Economic Development Administration funded University Center Program and part of the College of Business at the University of Nevada, Reno, and on behalf of the Nevada Lithium Battery and Other Electric Vehicle (EV) Materials Regional Technology and Innovation Hub (Nevada Tech Hub), one of only 32-nationally designated U.S. Economic Development Administration Regional Technology and Innovation Hubs, it is my sincere pleasure to submit this letter of support on behalf of the City of Ely's and the Nevada Northern Railway Foundation's CRISI program grant application. The City of Ely's effort, and that of White Pine County and the broader northeastern Nevada region, to rehabilitate 117 miles of railroad track from Shafter, Nevada to Ely, Nevada to freight service standards as part of this CRISI program grant application is one of several projects identified in the infrastructure component of the Northeastern Nevada Regional Development Authority's/Northeastern Nevada Economic Development District's current five-year Comprehensive Economic Development Strategy (CEDS) and is a critical priority infrastructure and community capacity project as outlined in the University Center for Economic Development's recently submitted Nevada Tech Hub Phase 2 application.

The northeastern Nevada region, which includes the City of Ely and White Pine County, along with Elko County, Eureka County, and Lander County, is a major hub for various mining and natural resource extraction efforts. Improvements in the region's infrastructure, especially rail infrastructure designed to support broad freight and industrial-level traffic, is a critical first step toward ensuring overall U.S. national security through the continued growth of the state of Nevada's mining and natural resource extraction industry sector. The Nevada Tech hub is primarily focused on enhancement of Nevada's lithium batteries, other critical elements, and other EV materials industry sector and related sub-sectors to further strengthen U.S. national security, implement critical elements of the federal Administration's climate mitigation strategy through further electrification, and ensure U.S. global economic competitiveness in the EV and EV-related industry sector. The City of Ely is an essential part of the Nevada Tech Hub's overall strategy to ensure that various critical elements, including copper in addition to lithium and other rare earth metals and various critical elements including gold, can be extracted, processed, and transported efficiently and

University Center for Economic Development
University of Nevada, Reno/0024
Reno, Nevada 89557
(775) 784-1655 Office
https://www.unr.edu/business/centers/uced

effectively to various EV battery and other EV related material advanced manufacturers, including Telsa and Panasonic North America among many others, located throughout the state of Nevada and throughout other parts of the United States. This project, which specifically focuses on rehabilitating up to 117 miles of railroad track to freight service standards, is essential to the Nevada Tech Hub's overall strategy of pursuing and completing major infrastructure and community capacity enhancement projects that will further support the continued growth of Nevada's lithium battery, other critical elements, and other EV materials industry sector and other related sub-sectors.

In supporting this specific CRISI program grant application being pursued by the City of Ely and by the Nevada Northern Railway Foundation, the University Center for Economic Development and the Nevada Tech Hub underscores the potential economic growth and job creation opportunities for the state of Nevada and for communities located throughout northeastern Nevada, in addition to the obvious national security and climate change mitigation potential benefits as previously outlined in this letter of support, emphasizing the importance of the project for the Nevada Tech Hub's long-term objectives and strategic goals. The University Center for Economic Development and the Nevada Tech Hub strongly supports this CRISI program grant application and is confident in the Federal Railroad Administration's careful consideration and possible approval of this grant application.

If you or anyone from the Federal Railroad Administration have any questions about this letter or support, or about the University Center for Economic Development and/or the Nevada Tech Hub, please feel free to contact me by phone (775.784.1655) or by email (fred@unr.edu).

Sincerely,

Dr. Frederick Steinmann
Director, University Center for Economic Development
Principal Investigator, Nevada Regional Technology and Innovation Hub

TECH HUBS
U.S. Economic Development Administration
OFFICIAL DESIGNEE
TECHHUBS.GOV

Cc: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation
Michael Flores, Vice President, Government and Community Engagement, University of Nevada, Reno
Richard Bartholet, Regional Innovation Officer, Nevada Regional Technology and Innovation Hub, University of Nevada, Reno

University Center for Economic Development
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Reno, Nevada 89557
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https://www.unr.edu/business/centers/uced

White Pine Chamber of Commerce

636 Aultman St. Ely, NV. 89301
775-289-8877
WPCC@WhitePineChamber.com

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The White Pine Chamber of Commerce supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter, Nevada to Ely, Nevada for freight service standards.

We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues: Economic diversification and expanded prospects of sustainability to major industrial and green energy development; Alleviation of heightened costs of goods and services specifically concerning infrastructure and housing; Rail transport is noted as the most environmentally friendly means for ground freight transportation; And transitioning freight to rail would remove nearly 1,000 trucks per month from area roads, significantly reducing truck traffic, and reducing environmental impacts.

In supporting the grant application, I, along with the executive Board of Directors of The White Pine Chamber of Commerce, underscore the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in your careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Shadrah Robertson
CEO- White Pine Chamber of Commerce
775-289-8877
wpcc@whitepinechamber.com

WHITE PINE COUNTY TOURISM AND RECREATION BOARD

Bristlecone Convention Center & Visitors Bureau

May 20, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The White Pine County Tourism and Recreation Board supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. While there are many community and economic benefits as part of this proposal, we would like to highlight what we feel is most important to tourism and diversifying our economy. This project would remove heavy truck traffic from our historic downtown and community event spaces, enhancing safety for locals and visitors. This project would improve mobility and community connectivity by linking White Pine County to the broader transportation network, reducing isolation and tying the community into the international freight network. Expanding the tracks to freight standards and connecting into the national lines would also create economic competitiveness and opportunity by lowering transportation costs and making the area more viable for new industries to relocate and diversify the county's economy.

In supporting the grant application, White Pine County Tourism and Recreation underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

J. Kyle Horvath
Director of Tourism

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

150 6th Street • Ely, Nevada 89301
775 289-3720 • 800 496-9350 • Fax 775 289-6757

NORTHEASTERN NEVADA ECONOMIC DEVELOPMENT DISTRICT

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

The Northeastern Nevada Economic Development Distrist (NNEDD) supports the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

The NNRY previously provided freight and passenger service throughout Northeastern Nevada. Unfortunately, over the last several decades, the line has become outdated and obsolete. As a result, NNRY was forced to limit their activities to educational and recreational rail services. This lack of modernized rail has kept potential businesses out of northeastern and central Nevada, thereby suppressing the economy of the entire region.

However, NNRY can still have a future as a freight and passenger line. A rail connection between the City of Ely and Elko County would allow agricultural facilities and mining companies to ship much more freight than is currently possible by truck, and it would reduce the carbon footprint of these activities at the same time.

In supporting the grant application, the Northeastern Nevada Economic Development District underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. We express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Jamie Beasley

Jamie Beasley
Director

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

NNEDD
NORTHEASTERN NEVADA
Economic Development District

McMullen Hall, #103
Elko, NV 89801

(775) 738-2100
Jamie@nnedd.org
www.nnedd.org

Elko County Board of Commissioners

540 Court Street, Suite 101 • Elko, Nevada 89801
775-738-5398 Phone • 775-753-8535 Fax

www.elkocountynv.net

Commissioners
Delmo Andreozzi
Wilde Brough
Travis Gerber
Jon Karr
Rex Steninger

Elko County Manager
Amanda Osborne

Executive Assistant
Michele Petty

Receptionist/Clerical
Ashley Dent

May 21, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose,

On behalf of the Elko County, we are pleased to offer this letter of support for the City of Ely, Nevada in conjunction with the Nevada Northern Railway (NNRY) Foundation and their application requesting CRISI Grant funding for the replacement and enhancement of the NNRY rail line between the City of Ely and the Shafter connection in Elko County.

Elko County borders White Pine County to the north and as such, our two jurisdictions have many things in common. Both counties rely heavily on two industries for their economic well-being; agriculture, which has been prominent since the first settlers arrived to Nevada and mining which came shortly thereafter. Further, both counties are quite remote, sparsely populated, and contain a tremendous amount of federally owned (BLM & USFS) and managed land. As such, we find ourselves facing many of the same challenges, pursuing the same goals, and fighting the same battles.

The proposed rehabilitation of the NNRY line between the city of Ely and the Shafter connection in Elko County would create a highly efficient rail transport option connecting the two counties and creating a tremendous amount of economic potential. Not only would various agriculture producers and mining operators from White Pine County be able to access the Union Pacific Mainline in Elko County, but Elko County supply chain entities could provide goods and equipment at a cheaper cost to White Pine County businesses.

Aside from the industrial benefits that we foresee with this initiative, a tremendous amount of tourism potential exists as well. NNRY is already known for its recreational passenger services; however, this project could open up an entirely new recreational rail experience that rivals that of the Durango-Silverton and the Great Smokey Mountain historic rail adventures. Passengers from all over the world could catch the NNRY in Carlin, Nevada where they can learn of nineteenth century Chinese rail workers who originally laid the track across the continental United States; then, ride the rails stopping in several rural Nevada communities adding to their tourism revenue and ending in Ely where they can visit the NNRY Railway Museum and stay in the historic Nevada Hotel, once one of the tallest buildings in the state. The possibilities are only limited by our imagination.

Due to the enormous amount of economic and tourist potential along with the mutual benefits that could be realized by both counties, we, the Elko County Board of Commissioners, enthusiastically support the City of Ely in conjunction with the NNRY Foundations' application for CRISI grant funding and would ask that your administration seriously consider awarding funds to this worthy applicant.

Respectfully,

Amanda Osborne
County Manager

BERT K. GURR
ASSEMBLYMAN
District No. 33

Nevada Assembly
Eighty-Second Session

COMMITTEES:
Member
Government Affairs
Growth and Infrastructure
Natural Resources

May 20, 2024

LEGISLATIVE BUILDING:
401 South Carson Street
Carson City, Nevada 89701-4747
Office: (775) 684-8831
Fax: (775) 684-8533
Email: Bert.Gurr@asm.state.nv.us
www.leg.state.nv.us

The Honorable Amit Bose, Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

As the Nevada Assemblyman for District 33, I'm writing in wholehearted support of the grant application being made by the City of Ely and the Nevada Northern Railway Foundation under the CRISI Program. Funding the rehabilitation to freight service standards of 117 miles of railroad track from Shafter, Nevada to Ely, Nevada is vital; awarding this grant will address the following issues:

- The current state of the railroad—much of which dates back to the early 20th century—requires significant investment to meet modern standards for freight transport.
- Both the City and the Foundation have a successful track record of public partnerships, and approving this grant will provide new opportunities for local mines and for businesses and industries to locate in White Pine County.
- Also, removing heavy truck traffic from our highways, especially near White Pine County Middle School, enhances safety for the community.

In supporting the grant application, I want to reinforce its value in supporting the potential economic growth and job creation opportunities, and emphasize the importance of the project for future development. I am confident that your careful consideration will result in approval of this grant application under the CRISI Program.

Sincerely,

Bert K. Gurr

Bert K. Gurr
Nevada Assemblyman, District 33

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

OFFICE OF THE LIEUTENANT GOVERNOR

STAVROS S. ANTHONY
LIEUTENANT GOVERNOR

May 14, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose,

As Lieutenant Governor of Nevada, I am in support the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. Awarding this grant will address the following issues:

- **Safety**: Removing heavy truck traffic from highways, especially near places like the White Pine County Middle School, enhances safety for the community.
- **Environmental Sustainability**: Rail transport is noted as the most environmentally friendly means for ground freight transportation. Transitioning freight to rail would remove nearly 1,000 trucks per month from area roads, significantly reducing truck traffic, and reducing environmental impacts.
- **Improves Mobility and Community Connectivity**: Rehabilitating the railroad would connect White Pine County to the broader transportation network, reducing isolation and tying the community into the international freight network.
- **State of Good Repair**: The current state of the railroad, much of which dates back to the early 20th century, requires significant investment to meet modern standards for freight transport.
- **Partnership and Collaboration**: The City and the Foundation have a successful track record of public-private partnerships. Approving this grant would provide new opportunities for local mines, businesses, and industries to locate in White Pine County.

I wholeheartedly support this grant request to facilitate the restoration of the railroad. In supporting the application there is a potential for economic growth, job creation opportunities, and future development in the state of Nevada. I have confidence in the FRA's careful consideration and approval of this grant application.

Sincerely,

Stavros S. Anthony
Nevada Lieutenant Governor

CC: Nathan Robertson, Mayor, City of Ely Mark Bassett, President, Nevada Northern Railway Foundation

808 W Nye Lane, Carson City, NV 89703
1 State of Nevada Way, 4th Floor, Las Vegas, NV, 89119
775.687.9900
GOED.NV.GOV

May 22, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose,

The Nevada Governor's Office of Economic Development (GOED) supports the City of Ely and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We support this grant request for funding to facilitate the restoration of the railroad.

The rehabilitation is listed in the Nevada State Rail Plan and supports GOED's State Plan efforts to identify growth opportunities for freight rail that attract private-sector business and investment community funding.

In supporting the grant application, GOED underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for future development. I express confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Thomas J. Burns
Executive Director

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

Governor Joe Lombardo
Executive Director Thomas J. Burns

Laurie L. Carson, Chairman
Janet VanCamp, Vice Chairman
Commissioner Richard Howe
Commissioner Shane Bybee
Commissioner Hank Vogler

Nichole Stephey, Ex-officio Clerk of the Board

White Pine County
Board of County Commissioners

1786 Great Basin Blvd., Suite 3
Ely, Nevada 89301
(775) 293-6509
Fax (775) 289-2544

WPClerk@WhitePineCountyNV.Gov

May 8, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

WHITE PINE COUNTY

Dear Administrator Bose:

The White Pine County Commissioners support the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We wholeheartedly support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

1. **Safety:** Removing heavy truck traffic from highways, especially near places like the White Pine County Middle School, enhances safety for the community.
2. **Environmental Sustainability:** Rail transport is noted as the most environmentally friendly means for ground freight transportation. Transitioning freight to rail would remove nearly 1,000 trucks per month from area roads, significantly reducing truck traffic, and reducing environmental impacts.
3. **Quality of Life:** Opening the railroad enables more cost-effective transportation of building materials, which could address the community's housing shortage by making construction more affordable.
4. **Improves Mobility and Community Connectivity:** Rehabilitating the railroad would connect White Pine County to the broader transportation network, reducing isolation and tying the community into the international freight network.
5. **Economic Competitiveness and Opportunity:** Lowering transportation costs, particularly for major employers like the mines, enhances economic viability. Additionally, improved transportation infrastructure will attract new industries to the area, creating new economic prospects for the community.
6. **State of Good Repair:** The current state of the railroad, much of which dates back to the early 20th century, requires significant investment to meet modern standards for freight transport.
7. **Partnership and Collaboration:** The City and the Foundation have a successful track record of public-private partnerships. Approving this grant would provide new opportunities for local mines, businesses and industries to locate in White Pine County.

In supporting the grant application, White Pine County underscores the potential economic growth and job creation opportunities, emphasizing the importance of the project for the county's future development. The Commissioners express their confidence in the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Laurie L. Carson
Commission Chairman

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

3PL OPERATING INC.

20 May 2024

Via Email

The Honorable Amitabha Bose, Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program Grant Application
City of Ely for the Nevada Northern Railway

Dear Administrator Bose,

3PL Operating Inc. (3PL) wishes to express strong endorsement in favor of the CRISI Program Grant for the City of Ely and commits to providing expertise toward the Program success as needed. 3PL is developing the Railroad Valley Project (Project) located about 90 miles southwest of Ely, in Nye County, Nevada. Eight years of advanced scientific assessment, well drilling, pump testing, and more than $20M invested have delineated a greater than 10,000-acre resource of trona (sodium carbonate), boron, and lithium among other minerals under the Railroad Valley playa. Measured, indicated, and inferred resources are in excess of 4.2B tons trona, 205M tons boron, 136M tons lithium carbonate, and 0.15M tons molybdenum. Lithium is a critical mineral as determined by the United States Department of Interior. Total risk-discounted value of the combined minerals in the southern one-third of the orebody (where resources are best defined) exceeds $300B.

The vast scale of the resource will necessitate rail development. Commercial production will start in 2029 and ramp towards 10,000 tons per day as infrastructure allows. Direct-employed workforce would exceed 50 employees. Without access to rail, economic viability of the Project diminishes and risk to U.S. energy and mineral security increases. Purity of Project minerals are sufficient to displace overseas production provided markets are made accessible.

3PL is advancing a significant, expanded exploration drilling and testing campaign for 2024 and 2025. 3PL has engaged the Bureau of Land Management and is proceeding through National Environmental Policy Act requirements to permit expanded operations. 3PL's understanding of rail development timeframes and specifics will be important in the ongoing NEPA action.

3PL is committed in its support to responsible railroad expansion and development in Nevada. The CRISI Program Grant for Nevada Northern represents a significant opportunity to ensure availability of critical minerals and improve quality of life and security for Americans.

Please do not hesitate to reach out to Matt Dusenbury at 775-379-9148 or mattd@3ploperating.com with any questions or concerns. We look forward to working with you.

Best regards,

Matt Dusenbury, MDES, Inc.
On Behalf Of:
3PL Operating Inc.

May 17, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

This letter serves as Silver Lion Farms' support of the City of Ely's and the Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the rehabilitation of 117 miles of railroad track from Shafter Nevada to Ely Nevada to freight service standards. We support this grant request for funding to facilitate the restoration of the railroad. Awarding this grant will address the following issues:

The City of Ely is a very rural community located in White Pine County, Nevada. Ely is located 243 miles from Las Vegas, 242 miles from Salt Lake City, Utah, and 252 miles from Twin Falls, Idaho and 321 miles from Reno, Nevada. The largest industries are mining, agriculture and tourism. The extreme high increase of costs for transporting products into and out of Ely has greatly burdened our citizens and local businesses.

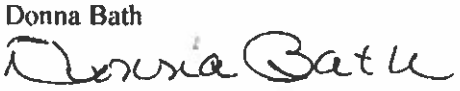
The Northern Nevada Rail was built in the early 1900's to support one of the largest open pit copper mines, which is still in operation today. The mine utilized the rail road to transport their ore to the mill, citizens between communities and schools and was additionally utilized to transport goods and materials in and out of our very remote community. Unfortunately, due to the age and decline in condition of the rail, the mine has had to utilize trucks 24 hours a day to move the ore from the mine to Wendover, Nevada, to on load to the Union Pacific rail line. Many local businesses installed rail spurs many years ago and utilized the rail road to bring in goods for their businesses and as a way to get local products into other markets. Unfortunately, the rail spurs sit idle and local businesses have also been forced to utilize trucking companies and absorb the high cost of transportation for their businesses.

Silver Lion Farms purchased 6,000 acres of agricultural land 60 miles north of Ely in 2018 and currently grow organic alfalfa and hemp. We recently completed a 300,000 sq. foot "state of the art" greenhouse and would like to continue to expand our business in White Pine County. The existing Nevada Northern Rail line runs right by our farm, having the ability to add a rail spur and utilize rail rather than trucks to ship our products to market would greatly benefit our business and many other local businesses. We currently employ 40-50 full time employees and provide shuttle transportation to and from the farm and Ely daily. We have discussed the possibility of adding a passenger car on the rail if updated, to accommodate the daily transportation of our employees.

In supporting the grant application, Silver Lion Farms emphasizes the potential for our community's economic growth and job creation opportunities. We would like to express our appreciation of the FRA's careful consideration and approval of this grant application under the CRISI Program.

Sincerely,

Donna Bath



Director of Community Relations and Special Projects
Silver Lion Farms
30955 US-93
Ely, Nevada 89301

CC: Nathan Robertson, Mayor, City of Ely
Mark Bassett, President, Nevada Northern Railway Foundation

CURRIE CROSSING

U.S. Highway 93 T Nevada Northern Railway
Currie, Nevada
HC 33, Box 33875
Ely, Nevada 89301

May 20, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

I own the small town of Currie, Nevada that includes the old store, cafe, gas station, cabins, and several other buildings. My property fronts U.S. Highway 93 and adjoins the Nevada Northern Railway track and the historic railroad depot. U.S. Highway 93 is a major north-south route through Idaho, Nevada, and Arizona from Canada to Mexico. For nearly one hundred years, Currie was the midway stopping point for the Railroad between Cobre and Ely. Crews and passengers used to stay at Currie, and the old Currie Depot and Currie Hotel are still standing, although both are in bad shape.

There are no services for 126 miles on U.S. Highway 93 between the towns McGill and Wells, Nevada. Currie is midway between the towns and used to offer travel services including gas, food, and lodging. Traffic on Highway 93 has increased significantly over the past few years, and I am now assessing whether to reopen the town. The age and nature of Currie may make it a candidate for restoration grants and historic designation. Reopening the Nevada Northern Railway is a necessary key to reopening Currie and reopening both the Railroad and Currie would provide many economic benefits to both Elko and White Pine counties.

I fully support the City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to partially fund the Track Rehabilitation Project. By helping to fund the proposed project, the FRA will enable Northeastern Nevada's travel, mining, agricultural, petroleum, and other industries to grow.

I urge FRA's careful review and approval of the City of Ely and Nevada Northern Railway Foundation's grant application.

Sincerely,

Glenn Taylor
Owner

TAYLOR WESTERN RESOURCES, LLC
P.O. Box 151732
Ely, Nevada 89315-1732

May 23, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

I am writing in support of City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to partially fund the Track Rehabilitation Project. We fully support this request for funding to facilitate the reconstruction of this railroad that will support commerce and assure cost-effective, reliable, and safe rail service to serve the shippers and rural communities of Elko, Eureka, and White Pine Counties in Northeastern Nevada.

Taylor Western Resources owns a large parcel of private land in Elko County that has extensive water rights and is being considered for development by several companies. Possible developments include solar power, sustainable agriculture, and mineral processing facilities. The lack of economic rail transportation has been the major hurdle to development.

By helping to fund the proposed project, the FRA will enable Northeastern Nevada's mining, agricultural, petroleum, and other industries to grow. As a result, current jobs at industries utilizing rail service will be more secure, and improved rail infrastructure will assist the economic development efforts in this area to attract additional businesses, creating more direct and indirect jobs for Northeastern Nevada.

Taylor Western supports the City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the Track Rehabilitation Project. By helping to fund the proposed project, the FRA will enable Northeastern Nevada's industries to grow and prosper in a region that badly needs economic development.

We fully support the FRA's careful review and approval of the City of Ely and Nevada Northern Railway Foundation's grant application.

Sincerely,

Glenn Taylor
Manager

Cardigan-West Resources
PO Box 151723 Ely, Nevada 89315-1723

May 22, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") program grant application for the Nevada Northern Railway Track Rehabilitation for Freight Traffic.

Dear Administrator Bose:

Cardigan-West Resources is a Nevada limited-liability company that owns numerous mining claims in Elko and White Pine counties. The mining claims in Elko County are associated with the Victoria Copper Mine near the Nevada Northern; mines in the area used to ship ore and concentrate on the Railroad. The area is currently being explored by a large mining company and reopening the Railroad would be a tremendous incentive to put the mines back into production.

Cardigan-West also owns two large parcels of private land in Elko County: one at Currie and the other near Shafter at the Union Pacific/Nevada Northern rail interchange. Both properties have been considered for industrial development, but lack of rail transportation has been the major problem.

Cardigan-West fully supports the City of Ely and Nevada Northern Railway Foundation's grant application under the CRISI Program to fund the Track Rehabilitation Project. By helping to fund the proposed project, the FRA will enable Northeastern Nevada's industries to grow and prosper in a region that badly needs economic development.

We wholeheartedly support the FRA's careful review and approval of the City of Ely and Nevada Northern Railway Foundation's grant application.

Sincerely,

Roger Bowers
Manager

Sky Quarry Inc.
707 W 700 S, Suite 101
Wood Cross, UT 84087
www.skyquarry.com

MAY 15, 2024

The Honorable Amit Bose
Administrator
Federal Railroad Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Consolidated Rail Infrastructure and Safety Improvements ("CRISI") Program grant application of the City of Ely for the Nevada Northern Railway

Dear Administrator Bose:

The rehabilitation of the Nevada Northern Railway, as proposed in the City of Ely's application for partial funding under the FRA's CRISI Program, is a transformational project that will have material impacts to the region and our sustainable roofing shingle recycling company. As the CEO of Sky Quarry, I want to express my sincere support of this project.

Our unique company is positioned to convert used roofing shingles, which contain up-to 25% bitumen, into recycled oil, avoiding placing those waste-stream materials into landfills. To support this unique business, we acquired Foreland Refining Corporation in October 2022, which operated the Eagle Springs Refinery just outside of Ely, Nevada. This relatively new refinery, opened in 1992, is a key asset in our ability to grow this key renewable energy product.

Our refinery currently processes roughly 500,000 to 600,000 barrels of oil per year, which is limited in part due to the transportation logistics of having to truck those commodities nearly 300 miles to market. The rehabilitation of the Nevada Northern Railway will enable our firm to develop an oil transload site in the vicinity of Ely and increase our production of sustainable transportation fuels, including the refinement of renewable diesel, for domestic uses.

Our estimates indicate that the rail connectivity will enable our company to approach our permitted capacity of 5,000 barrels per calendar day, which would enable us to process both inbound synthetic roofing shingle oil as well as domestic oil products on the order of 2,880 carloads of freight per year on the Nevada Northern Railway.

We support FRA's careful review and approval of the City of Ely's application.

Sincerely,

David Sealock
Chairman & CEO
Sky Quarry, Foreland Refining

APPENDIX F

PRELIMINARY ENGINEERING

CONTENTS

NEVADA NORTHERN RAILWAY
REHABILITATION AND RESTORATION STUDY

JANUARY 22, 2024

Created by: the National Rail Consulting Group

2026 E. 1st St. Duluth, Minn. 55812

TABLE OF CONTENTS

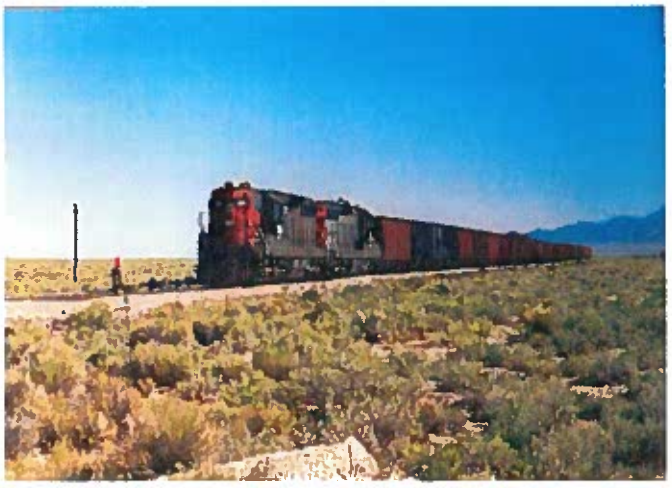
APPENDICES:

INTRODUCTION

FMW SOLUTIONS LLC d/b/a the NATIONAL RAIL CONSULTING GROUP ("NRCG") was retained by the CITY OF ELY (Nevada) and the NEVADA NORTHERN RAILWAY FOUNDATION to assist those clients in determining the economic viability of returning the NEVADA NORTHERN RAILWAY ("NNRY") to operational condition.

The NNRY was originally constructed between September 1905 and September 1906, and its primary purpose was to serve as a freight conduit to support the copper mining operations in the region. The line extends between Cobre, Nevada and the mine at Ruth, Nevada, which, including historical branch lines, totaled 165.86 miles in total length. A map of the rail line today, showing total milage and track in service, is shown on the following page.

The rail line operated actively between 1906 and 1978, at which point the Robinson mine was temporarily closed. The smelter at McGill was closed in June 1983, effectively suspending all freight rail operations on the line. The LOS ANGELES DEPARTMENT OF WATER AND POWER purchased the entire rail line in 1987 with the intention of developing a coal-fired power plant in the vicinity. Meanwhile, mining resumed at Ruth in the 1990s by BROKEN HILL PROPRIETARY COMPANY ("BHP"), and rail line operations resumed by the BHP NEVADA RAILROAD in 1996. These operations continued until 1999, when the mine and railroad both again shut down [shown at right].



The CITY OF ELY acquired the entirety of the NNRY in 2005 to preserve it for future use and to enable the preservation of the historic NEVADA NORTHERN RAILWAY MUSEUM. The NNRY is best known today as a heritage railway, with the southern end of the rail line in the vicinity of Ely serving as a preserved tourist railroad. While the leaders of that heritage operation are advocates for this rail line restoration, the findings and proposals outlined in this document are divorced from the operations and preservation of the historic portions of this rail line.

This document outlines a serious, short line freight rail approach to restoring a key economic lifeline to rural Northeastern Nevada. The following sections of this document outline a systematic study of rail line restoration that was taken by key leadership of NRCG. The goal of this study is to bring up-to-date a series of rail line rehabilitation and cost estimates produced over the past three decades, as well as to lay out a logical roadmap to rail line restoration in the 2020s.

1. PREVIOUS STUDIES OF THE NEVADA NORTHERN RAILWAY

The restoration of the NNRY main line has been studied exhaustively since the late 1990s. Much of these studies had to do with the desire of the rail line's former owner, the LOS ANGELES DEPARTMENT OF POWER & WATER (owner from 1987-2006), and its affiliates that sought to install two coal-fired power generating stations along the NNRY mainline, one in the vicinity of Raiff (MP 103) and another in the vicinity of Glenn, Nevada (MP 118.5). To support the proposed development of these two power plants, a series of detailed engineering, economic, and environmental studies were commissioned and completed.

In advance of completing an on-site assessment of the rail corridor, NRCG completed a detailed review of five (5) key studies associated with the rail line. A brief description of each review is provided herein, in chronological order.

"NEVADA NORTHERN RAILROAD PROJECT FEASIBILITY STUDY / BUSINESS PLAN" Completed by: R.L. Banks & Associates, Inc., November 2, 2001

This 28-page long study was completed by the railroad economics and engineering firm R.L. BANKS & ASSOCIATES, INC. ("RLBA"), a long-standing consulting company then headquartered in Washington, D.C. The firm was well regarded for its railroad economics and cost-to-cure estimates, and this report provides a business plan associated with the operation of unit coal trains over the rail line in support of at least one new power plant that was to be in the vicinity of MP 84.5 near Cherry Creek.

The RLBA report does provide the most succinct and detailed, history of the rail line, copied below for review:

> *NNR was incorporated on May 29, 1905 and construction of the rail line was undertaken between 1905 and 1906. On June 12, 1933, Kennecott Copper Corporation (Kennecott) acquired all the capital stock of NNR and operated NNR until its last shipment over the railroad in 1983. Over the next several years, Kennecott negotiated with the Los Angeles Department of Water and Power (LADWP) as to the potential lease or purchase of NNR's right-of-way. LADWP anticipated utilizing the NNR to provide rail transportation access for coal shipments to a site near its right-of-way where LADWP planned to build an electrical generating plant. In 1987, these negotiations resulted in 1) the purchase by LADWP of the portion of NNR's line between McGill Junction, Nevada and Cobre, Nevada and 2) the transfer to the White Pine Historical Railroad Foundation (WPHRF) of the portion of NNR's right-of-way between McGill Junction, Nevada and Copper Flat, Nevada. The assets transferred to WPHRF included NNR's spur lines to McGill, Nevada and East Ely, Nevada and railroad structures at Cherry Creek, Nevada, Currie, Nevada and Cobre, Nevada.*

This study takes an interesting approach to the rail line restoration and cost estimation, envisioning multiple levels of track condition as it relates to forecasted demand – those levels of restoration are: 1) restoring as-is to FRA Class 1 track standards (10 MPH); 2) restoring to FRA Class 2 track standards (25 MPH), and 3) restoring to FRA Class 3 track standards (40 MPH). While the study does consider the potential of oil transload at Cherry Creek, it does not consider moving common carrier freight from Ely or mine operations – the mine was dormant at that time.

The following Tables One and Two are taken from the RLBA study which has been augmented to include 2023 pricing. However, it outlines the capital cost approach taken by RLBA at the time. The pricing for 2023 dollars has been computed utilizing the BUREAU OF LABOR STATISTICS CONSUMER PRICE INDEX calculator, and it does not necessarily reflect the cost to complete this work in 2023.

TABLE ONE - RLBA STUDY TABLE 4 (2001 DOLLARS)

Year	Activity	Rehab Cost	Capital Expenditures	Routine Maintenance
1	Rehab Shafter (18.4) - McGill Jct (128.4), Class 1	$2,677,000	-	$790,000
2	Rehab Cherry Creek (91.3) - MP 84.5, Class 2	3,050,000	-	717,000
3	Rehab MP 84.5 - Mizpah (53.0), Class 3	7,998,000	$39,000	426,000
4	Rehab Mizpah (MP 53) to Shafter (18.4) , Class 3	8,760,000	251,000	305,000
5+	Ongoing Capital and Routine Maintenance		483,000	583,000
	Ely Service - Years 1-15 (Annual)		577,000	403,000
	Ely Service - Years 16+ (Annual)		214,000	277,000
	SUBTOTALS	$22,485,000	$1,564,000	$3,501,000

TABLE TWO - RLBA STUDY TABLE 4 (2023 DOLLARS)

Year	Activity	Rehab Cost	Capital Expenditures	Routine Maintenance
1	Rehab Shafter (18.4) - McGill Jct (128.4), Class 1	$4,613,000	-	$1,361,000
2	Rehab Cherry Creek (91.3) - MP 84.5, Class 2	5,256,000	-	1,235,000
3	Rehab MP 84.5 - Mizpah (53.0), Class 3	13,782,000	$67,000	734,000
4	Rehab Mizpah (MP 53) to Shafter (18.4) , Class 3	15,095,000	436,000	526,000
5+	Ongoing Capital and Routine Maintenance		832,000	1,005,000
	Ely Service - Years 1-15 (Annual)		994,000	694,000
	Ely Service - Years 16+ (Annual)		369,000	477,000
	SUBTOTALS	$38,746,000	$2,698,000	$6,032,000

In addition to a rehab cost estimate of $38,746,000 (2023 USD), the business plan outlined by RLBA indicated that the railroad would have a net positive income beginning year six and that the railroad would realize $5,877,000 in net income in year fifteen. That said, an addendum to the business plan indicates that 15,270 railcars are required per year to break even on cash expenses, and a total of 16,847 railcar loads per year would be required to break even and service debt. That said, this business plan is wholly predicated on the entirety of the rehabilitation cost being financed at a rate of 5.42%, not through the application of grant funding to cover the majority of those capital costs.

A copy of this study is included as Appendix A to this report.

"FINAL DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED REINSTATEMENT OF RAIL FREIGHT OPERATIONS ON THE NEVADA NORTHERN RAILROAD" Completed by: David Evans and Associates, Inc., June 2002

This 83-page long Environmental Assessment was completed by the railroad environmental and engineering firm DAVID EVANS AND ASSOCIATES, INC. ("DEA"), a West coast-based consulting engineering firm that offers substantial expertise in railroad design matters and is headquartered in Portland. The firm remains a well-respected company in the rail industry to this date. The Environmental Assessment ("EA") was prepared to analyze the potential environmental consequences of reinstatement of commercial rail freight service on the entirety of the NNRY mainline, between Shafter at MP 18.5 and McGill Junction at MP 128.4.

NRCG would note that the reinstatement of the rail service should fall under the definition of 23 CFR Part 771 "Categorical Exclusion," specifically 23 CFR 771.116(C)22:

> *Track and track structure maintenance and improvements when carried out predominantly within the existing right-of-way that do not cause a substantial increase in rail traffic beyond existing or historic levels, such as stabilizing embankments, installing or reinstalling track, re-grading, replacing rail, ties, slabs and ballast, installing, maintaining, or restoring drainage ditches, cleaning ballast, constructing minor curve realignments, improving or replacing interlockings, and the installation or maintenance of ancillary equipment.*

That said, the completion of this EA, which was developed in accordance with the National Environmental Policy Act ("NEPA"), provides an additional robust layer of study to the revitalized NNRY. The following summarizes the net positive impact of reinstated freight rail service:

> *As determined in the assessment process, significant long-term beneficial socioeconomic impacts are anticipated under the proposed reinstatement of rail freight service on the NNR line. The project would create employment opportunities for local residents and generate revenue for Elko County. White Pine County, and the City of Ely.*
>
> *Environmental effects associated with the proposed development are associated with soils (erosion during restoration activities), drainage and hydrology (runoff and water quality, including requirements regarding pesticide use), air quality (fugitive dust), cultural resources, and impacts to biological resources resulting from placement of fill into wetlands. rail-caused fires. or hazardous materials release. These impacts will be fully mitigated through measures presented in Section 5.0 of this EA.*

The build alternatives studies as part of the EA appear to have been decided in concert with the aforementioned RLBA study, and they indicate that a stepwise restoration of the rail corridor would be a net benefit to the region. A copy of this study is included as Appendix B to this report.

"NEVADA NORTHERN RAILROAD PROJECT ENGINEERING STUDY AND COST ESTIMATE" Completed by: R.L. Banks and Associates, Inc., July 2002

This 62-page long study was completed by R.L. BANKS & ASSOCIATES, INC. ("RLBA") as a follow-up to the business plan study it completed in 2001 (refer to Appendix A). The engineering study and cost estimate was completed for the City of Ely and outlines a detailed approach to restoring rail service along the line. This work

was completed in concert with the aforementioned DEA study (refer to Appendix B) and it provides a detailed assessment of the condition of the track and structure at the time of the inspection (March 2002).

The following summary of the condition of existing track outlines general findings at the time of inspection:

> *The above discussion shows that trackbed stability is better on the northern portion of this railroad, where there is less moisture. On the southern portion, surface water was evident in numerous locations at the time of the inspection, vegetation is more or less thick on the trackbed, and more crossties are defective (in comparison with the northern portion). In particular, it is clear that between MP 82.8 and MP 128.4 fouled ballast and other indications show that a complete new lift of ballast and restoration of the track structure and drainage cross-section are required. To the north of MP 82.8, the railroad requires a lesser degree of rehabilitation.*

The NRCG review of this study, along with the conditions outlined in the CRS study, were key items referenced as part of the NRCG on-site inspection of the rail corridor. As outlined in the DEA study (which was completed in concert with this RLBA study):

> *White Pine County is located near the southern rim of the Great Basin of the western United States. Climate in the project area is semi-arid mid-latitude, with the mountains and valleys influencing the regional climate. Local climate is influenced by the interior location, regional weather systems, and the north-south topographic orientation of the Mountains and Valleys which dominate the area. Valleys are typically 50 to 100 miles in length and 10 to 15 miles in width....*
>
> *Average annual precipitation in Ely is 8.7 inches, which falls at a relatively constant rate throughout the year. Annual precipitation in Ely generally ranges from five inches to 15 inches. The maximum amount of precipitation to fall in a single month was 3.67 inches. Snowfall averages 46 inches per year and is greatest from January to March. The maximum snowfall to occur in a single month was 24.8 inches.*

The semi-arid nature of the climate in Northeastern Nevada has resulted in a rail line that exhibits surprisingly good tie condition, even to this day (refer to NRCG On-Site Inspection). The RLBA report notes a difference in condition between the railroad North of MP 82.8 and that South of MP 82.8. Namely:

> *Crossties on the drier northern portion, between MP 18.5 and MP 74, are in good to fair condition, averaging 14.6 percent defective ties per mile. The majority are 6"x8"x8'6" size and creosote-coal tar treated. Average tie spacing is 19 inches center-to-center, which equates to approximately 3335 ties per mile. This is more ties than are required to support anticipated loadings. The inspection showed an average of 487 defective ties per mile, which requires only a modest number of crosstie replacements for compliance with FRA Class 1, 2, and 3 track standards.*
>
> *Crossties in the segment between MP74 and MP128.4 are also 6"x8"x8'6" treated ties. Most have been incised and at a number of locations show that the ties were treated in 1970, indicating a crosstie renewal at that time. Defective ties average 22.2 percent, a greater percentage than in the northern section, but still not bad considering the age and lack of maintenance performed on the right of way. This defect rate equates to an average of 740 defective tires per mile. A modest number of tie replacements are required to meet FRA Track Class standards.*

NRCG's inspection of the rail line indicates that tie conditions on-site remain consistent with the findings outlined above, which will be one key cost driver in the restoration of rail service.

This RLBA Engineering Study and Cost Estimate provides two costs to return the railroad to operation: 1) return the entire rail line to Class 1 track condition (10 MPH) for the entire length between Shafter and McGill Junction, and 2) return the railroad to Class 2 (25 MPH) or Class 3 (40 MPH) condition. As it pertains to the distinction between Class 2 and Class 3 service, the RLBA study succinctly explains that:

> *The principal differences in the FRA track safety standards, between Class 2 and Class 3, lie in track surface limits, which have to do with the degree to which the track surface changes direction, horizontally or vertically. To put it simply, a slow-moving train can tolerate greater track surface changes than can a faster-moving train, given equal weights. FRA track safety standards with regard to gage (distance between rails), number of nondefective crossties per unit distance, and minimum number of spikes per rail per tie, are the same for Classes 2 and 3. The track surface limits are in part a function of stability of the overall track structure, where ballast plays an important role. Inasmuch as the minimum depth of new ballast deemed feasible to install in the ballast replacement operation recommended for the 45.6 miles of track structure between MP82.8 and 128.4 is a nominal one foot, this will provide the essential track stability required for Class 3.*

Put another way, returning the track to a capitalized state of good repair in compliance with Class 2 track will have the same mechanical limits as Class 3 track, and presuming the railroad is returned to a like-new ballast condition, then the railroad should be in sufficiently good condition to merit Class 3 operations. That said, the decision to consider the track as Class 2 or Class 3 will depend upon the operating plan, as the ongoing maintenance burden to hold that higher speed will be greater in the long run.

Table Three provides a synthesis of RLBA Tables 4 and 5, in both July 2002 and July 2023 dollars. The pricing for 2023 dollars has been computed utilizing the BUREAU OF LABOR STATISTICS CONSUMER PRICE INDEX calculator, and it does not necessarily reflect the cost to complete this work in 2023. NRCG has omitted the costs associated with restoring the interchange switch with the UNION PACIFIC RAILROAD ("UPRR") at Shafter, as that has subsequently been completed.

TABLE THREE - REHABILITATION COST ESTIMATES

Activity	FRA Class 1 (2002)	FRA Class 1 (2023)	FRA Class 2/3 (2002)	FRA Class 2/3 (2023)
Replace Defective Ties	$372,832	$632,822	$670,432	$1,137,951
Line and Surface (MP18.5 - MP 82.8)	514,990	874,113	456,270	774,445
Track Plow, Install New Ballast (MP 82.8-128.4)	774,102	1,313,915	774,102	1,313,915
Restore Road Crossings	25,576	43,411	23,576	40,017
Rehabilitate Culverts	3,962	6,725	3,962	6,725
Lay 115# CWR on Mainline (MP 18.5 - 128.4)	-	-	17,376,885	30,105,553
Subtotal	1,691,462	2,870,986	19,305,227	33,378,606
Contingency (10%)	169,146	287,099	1,930,523	3,337,861
Salvage Value of 60# rail, switches, OTM	-	-	(1,184,536)	(2,010,560)
Total Estimated Rehab Cost	$1,860,608	$3,158,085	$20,051,214	$34,705,907

The approach taken by RLBA to the restoration of rail service on the line is more in line with the approach NRCG proposes (refer to Section 4 of this document). A copy of this study is included as Appendix C to this report.

"NEVADA NORTHERN RAIL DESIGN STUDY REPORT" Completed by: Caldwell Richards Sorensen, August 22, 2007

This 129-page long engineering design study was completed by the firm CALDWELL RICHARDS SORENSEN ("CRS"), a Salt Lake City-based consulting and engineering firm that offers expertise in railroad design and construction matters. This study was commissioned in 2006 by WHITE PINE ENERGY ASSOCIATES and NEVADA POWER COMPANY to assess the conditions of the rail corridor and provide a recommended design approach to rehabbing the rail line between MP 18.5 and MP 120.0. The report also includes substantial geotechnical information that was documented by two additional subcontractors to CRS: FRONTIER CORPORATION USA and GEOCON CONSULTANTS.

In contrast to the RLBA and DEA studies, the proposed power plants on the line at the time were estimated to require an average of three daily round trips of 150-car coal unit trains (estimated carloads per year of 164,250). NRCG estimates this is equivalent to more than 28 million gross tons annually. A 2008 study noted by the Railway Tie Association that this level of tonnage would be greater than 50% of all Class I railroad mainlines in North America.

To support this level of train operations, the CRS study proposed rebuilding the entire line to FRA Class 4 standard, enabling speeds up to 59 MPH without train control signals, as well as the installation of multiple, large passing sidings. The proposal outlined here was to be built to the UPRR track standards for mainline use.

The intended use as a high-density mainline informed many of the design choices made by CRS in this report, and it resulted in a study that is geared towards a purpose that no longer exists – the proposed plans for the coal-fired power utilities is no longer economically or ecologically viable.

With the perspective of evaluating the railroad for mainline use in mind, NRCG would like to highlight a few of the key findings of the CRS report, as follows.

Tie Condition - The tie conditions observed by CRS in 2006 largely align somewhat with the conditions identified by RLBA in 2002. RLBA determined that approximately between 15% (North) and 22% (South) of all crossties on the line were defective. Comparatively, CRS determined that approximately 30% (North) and 40% (South) of the crossties on the line were scrap. NRCG's observations (Refer to Section 1.2) align with an understanding that every third tie on the rail line should be replaced as part of a reinstitution of service.

Ballast Condition – Both RLBA and CRS took exception to the quality, composition, and cleanliness of ballast along the NNRY. There is no doubt that the rail line was built inexpensively and with the use primarily of native soils / rocks. The findings of the CRS report are the most detailed conducted by a consulting engineering firm, and it outlines the minimal depth and quality of the ballast condition. The drainage along the rail line was called into question by CRS between MP 93 and 108, and where evidence of water flowage up to the rail head was observed by CRS. NRCG observed evidence of these issues as well along the rail line.

Culverts – CRS undertook a detailed inventory of the culverts along the rail line, which worked to verify the conditions of culverts identified by RLBA during its site assessments. The CRS crews identified approximately 30% more culverts than had been previously identified (included in CRS Report 'Appendix

D'). The findings noted by CRS regarding the condition of culverts were verified by NRCG in the field, and the rail line restoration includes provision for renewal / replacement of many of those culverts.

Grade Crossings – Both RLBA and CRS identified and catalogued grade crossings along the rail line. NRCG was able to verify these during its inspection in June 2023. This information will underpin cost estimates in Section 3 of this report.

A complete copy of the CRS report is included as Appendix D of this report.

2. NRCG ON-SITE INSPECTION

NRCG dispatched its Managing Partner Davidson Ward and its Director of Short Line Development, Bruce Crawford, to Nevada in June 2023 to undertake a multi-day inspection of the subject rail line. This inspection was taken after a careful review of the aforementioned studies, and its purpose was to: 1) verify the findings of the previous studies, 2) assess the level of additional decay in the intervening time since those studies were completed, and 3) conduct preliminary interviews with key stakeholders and potential shippers on the line to begin to quantify demand for rail freight service.

Figure 1 – Siding at Dolly Varden. June 2023

Given the extreme remoteness of the rail line and the overgrown condition of, particularly, the Southern half of the railroad beginning south of Goshute Lake, at approximately MP 82.5, the route had to be inspected by four-wheel drive vehicle and through the use of adjoining roads. The lack of track maintenance over the past few decades and the density of brush prevented the effective use of a hi-rail vehicle (represented by the image at the right of the Dolly Varden siding).

Over the course of a five-day visit, The NRCG Team was able to inspect representative portions of the rail line across its entire length, including the entirety of the in-service portion of the line and a majority of the out-of-service rail line between MP 18.5 and 135.4. NRCG cross-checked conditions noted in the previous engineering studies (refer to Section 1 of this report), and the findings were consistent with the observations made in the early 2000s. This is largely thanks to the semi-arid, high-desert nature of the Great Basin region.

The following sub-sections note NRCG's general findings as they relate to the rail line between MP 18.5 and 128.4, which will be referred to as simply "the NNRY" for convenience in this section. The portion of track between MP 128.4 and 135.4 (HiLine Junction) is slated to receive new ties, but capital costs for rails and surface have been included in the final capital cost estimation at the end, and in Appendix E.

MAINLINE RAIL, CROSSTIES, AND SURFACE

RAIL: By the time the NNRY was built in the early 1900s, the standard mainline weight per rail of the adjoining railroad (Southern Pacific Route) was 90 lbs. per yard. Most likely with the intention of keeping costs to a minimum, the railroad's chief engineer, Mark Requa, acquired and installed rail of 60 lb. per yard weight for the entirety of the railroad. In the intervening century of operation, a few portions of the mainline were

upgraded to heavier rail weights, including 85 and 90 lb. per yard sections, but these areas are limited and below the limited rail weight required to economically haul 286K GRL railcars (112 lb. minimum recommended section). Table Four provides a summary of rail assets in place along the rail line.

TABLE FOUR - RAIL SUMMARY

North Milepost	South Milepost	Type	Length (Miles)
18.5	19.5	85 lb. ARA	1.0
19.5	63.6	60 lb. ARA	44.1
63.6	66.3	90 lb. ARA	2.7
66.3	128.4	60 lb. ARA	62.1
		Total Length	109.9

There is a small resale market for 60 lb. rail in the mining industry, but the head wear exhibited by the NNRY rail may warrant that the entirety of the 60 lb. rail should be deemed as scrap material. The 85 lb. and 90 lb. rail should be saved for re-use in the rebuilt sidings along the rail line. This is referred to as "cascading" rail, whereby former mainline rail is reused in yard and side tracks.

CROSSTIES: The timber crossties along the NNRY are a mix of 6x8" ties of either 8' length or 8.5' length, the latter being those that appear to have been replaced in more recent times. As is documented in detail in both the RLBA and CRS reports, the tie conditions vary between sound, marginal, and scrap.

NRCG verified the general soundness of crossties in the field with that reported in the RLBA and CRS reports. The arid, high desert results in a slower degradation of crossties compared to the Midwest and Eastern U.S. For purposes of a rail line restoration project, NRCG reports the following quantity of ties that must be replaced as part of this rehabilitation project Table Five provides a summary of ties requiring replacement.

TABLE FIVE - TIE SUMMARY

North Milepost	South Milepost	Length (Miles)	Defective %	Ties/Mile	Total Defective Ties
18.5	74.0	55.5	22.50%	3,335	41,646
74.0	128.4	54.4	31.00%	3,335	56,241
				Total Ties Requiring Replacement	97,887

A proposed track classification of FRA Class 2 (25 MPH Freight) requires eight (tangent) and nine (curved) non-defective crossties per 39' section of rail. With a tie spacing of 3,335 per mile, each 39' section of rail will have 25 crossties, meaning approximately every third crosstie will need to be in non-defective condition. The proposed replacement percentage outlined above, combined with the balance of marginal and sound ties on the rail line observed in the field, will result in a minimum of at least every fourth tie being a new relay, and the balance of ties being of marginal or sound condition.

SURFACE: Given the quick construction timeline and inexpensive method of construction, the NNRY does not exhibit good surface or condition throughout the majority of its alignment. In fact, detailed studies

completed by CRS and its subcontractors (refer to Appendix D) indicate a ballast depth ranging between no greater than twelve inches and, in many cases, zero inches. Furthermore, the ballast material used along much of the line is a washed, rounded stone, which does not meet current standards, given its lack of angularity and inefficiency of holding surface. The poor ballast condition was further documented by RLBA in its report, which recommends the removal and replacement of all existing ballast between MP 82.5 and 128.4.

NRCG agrees with the findings of CRS and RLBA as it relates to surface and condition. Table Six synthesizes findings of the ballast conditions by CRS, RLBA, and NRCG, and posits recommended replacements.

TABLE SIX - BALLAST SUMMARY

North Milepost	South Milepost	BALLAST SIZE	BALLAST SHAPE	DEPTH	NOTES
18.5	45.0	1" Minus	Rounded	2" - 3"	-
45.0	71.0	1" Minus	Rounded	0"	Sparse gravel between ties
71.0	72.0	4" Minus	Rounded	4" - 8"	Road base / pit run material
72.0	73.0	1" Minus	Rounded + Angular	0" - 1"	-
73.0	74.0	3" Minus	Rounded	7"	Road base / pit run material
74.0	75.0	2" - 3" Minus	Rounded + Angular	0"	Sparse gravel between ties
75.0	76.0	2" Minus	Rounded + Angular	12"	-
76.0	79.0	2" - 4" Minus	Rounded + Angular	2" - 3"	Potentially-caustic ballast material
79.0	82.5	1" - 2" Minus	Rounded Gravel	0"	Sparse gravel between ties
82.5	97.0	2" - 4" Minus	Rounded Gravel	1" - 6"	Fouled, Replace Entirely
97.0	128.4	<1" Minus	Cinders/Soil	N/A	Replace Entirely

SIDINGS

The NNRY was built at a time when train lengths were short, and sidings were used for operational considerations, loading commodities, or serving as places for track maintenance crews to store tools and materials. As such, the railroad has a number of sidings at various "stations," which vary in length from 760 feet in length to 3087 feet in length. The largest concentration of sidings are those adjacent to the interchange at Shafter, with sidings of various lengths distributed roughly every 10 miles along the NNRY. Table Seven provides a summary of sidings

TABLE SEVEN - SIDING SUMMARY

North Milepost	NAME	Length (FT)	Capy. (60' Cars)	SIDE	NOTES
18.5	Shafter	3,087	51	East	90 lb. rail
18.5	Shafter	2,500	41	East	90 lb. rail
18.5	Shafter	772	12	East	90 lb. rail
31	Decoy	1,513	25	West	Removed
40.5	Dolly Varden	983	16	East	
52.9	Mizpah	909	15	West	
63	Currie	1,968	32	East	
63.2	Currie	1,568	26	East	Wye Track, Stub
71	Goshute	2,005	33	West	
80.4	Greens	720	12	West	
91.35	Cherry Creek	2,141	35	East	
91.35	Cherry Creek	673	11	West	
100	Raiff	2,499	41	East	
107.8	Warm Springs	760	12	West	
120.2	Glenn	1,500	25	West	
127.4	McGill Jct	1,584	26	East	50% of Material Missing
	Totals:	25,182	413		-

CULVERTS AND DRAINAGE

When NNRY Engineer Mark Requa surveyed the rail line in the early 1900s, he opted to lay it at the bottom of Steptoe and Goshute Valleys. While this may have resulted in a relatively flat railroad across much of its route, it had the unintended consequence of laying the railroad adjacent to wetlands and, in the case of Goshute Lake, resulted in the rail line being laid across the middle of a lakebed. A picture of the rail line across the lake is shown below – note the impounded water on the right-hand (West) side of the image.

Figure 2 – Goshute Lake, MP 75. June 2023

Given the location at or near the middle of the valley, the NNRY has no fewer than 75 culverts along its line between MP 18.5 and 128.4. These culverts range in condition from fair to condemned. Fortunately, the rail

line is not home to any major bridge structures. Of the 75 culverts identified on the line, fourteen have been identified as being in marginal or poor condition and should therefore be replaced. Those culverts requiring replacement are listed in Table Eight below – a comprehensive summary can be found in the NRCG Culvert Inventory in Appendix E.

TABLE EIGHT – CULVERT SUMMARY

Milepost	Type	Dia. Or Dims.	Length (FT)	Remarks
50.1	Corrugated Metal Pipe	30	24	Double Barrel
54.15	Triangular Concrete	21x17.5	24	Triangular
58.6	Wooden Box Culvert	24x18	24	Potentially Triangular
58.6	Triangular Concrete	21x17.5	24	
58.95	Triangular Concrete	24x28	24	
64.1	Concrete Box Culvert	36x96	20	
64.8	Corrugated Metal Pipe	30	32	Deteriorating
80.7	Corrugated Metal Pipe	36	18	
80.9	Triangular Steel	21x17.5	24	
83.0	Concrete Box Culvert	36x96	18	Sidewalls Deteriorating
83.3	Concrete Box Culvert	40x96	24	Inside Deteriorating
98.3	Cast Iron Pipe	5	24	
98.7	Corrugated Metal Pipe	6	30	
114.4	Concrete Box Culvert	36x144	24	16" Wide Center Post - Duck Creek

The largest structure on the railroad is the culvert across Duck Creek. It was cast in place and is exhibiting substantial spalling. It should be replaced by a pre-cast concrete box culvert during the rehabilitation of the railroad. A photograph of that culvert at MP 114.4 is shown below.

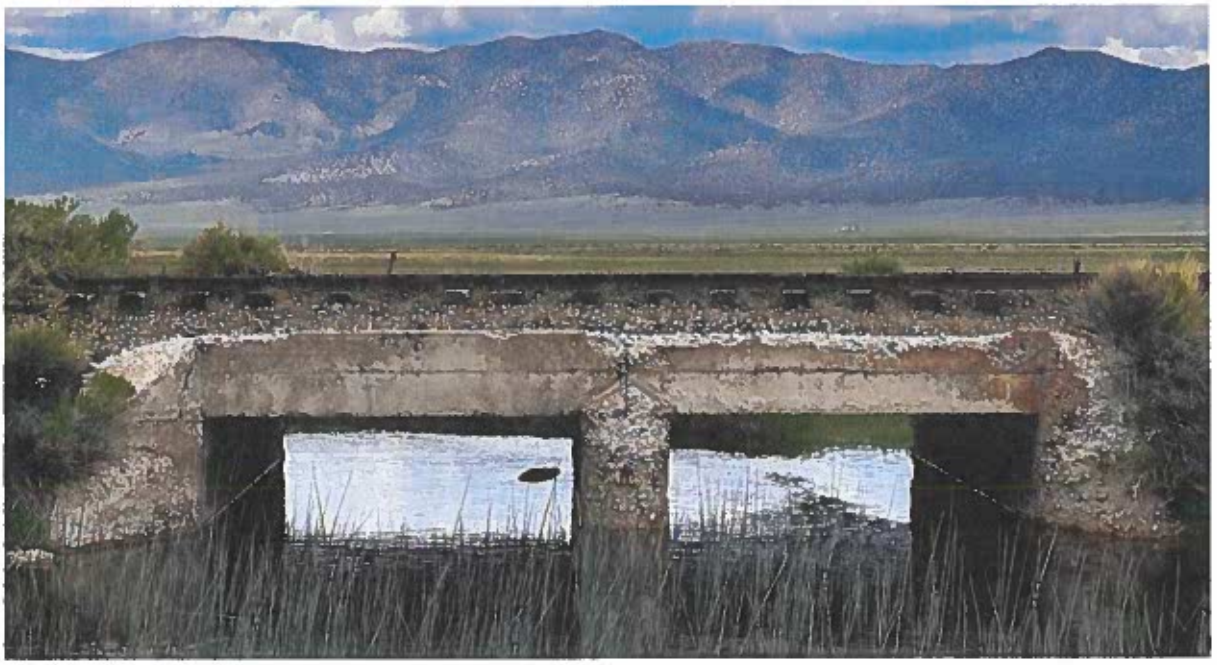


Figure 3 – Double box culvert over Duck Creek, MP 114.4. June 2023

GRADE CROSSINGS

Given its remote location, the NNRY features only a handful of public, paved grade crossings. It does feature, however, dozens of unofficial, non-paved, and private road crossings. Many of these are crossings that have been made on land that is otherwise controlled by the BUREAU OF LAND MANAGEMENT and which consist primarily of ranch access roads. Table Nine includes a summary of all grade crossings identified on the rail line.

TABLE NINE - GRADE CROSSING SUMMARY

Milepost	Type	Access	Length (FT)	Place Name	DOT #
18.5	Dirt	Public	12		855858G
18.7	Dirt	Private	12		855859N
19.5	Dirt	Private	12		
25.8	Dirt	Private	12		
30.85	Dirt	Private	12		855860H
34.3	Dirt	Private	12		
39.8	Dirt	Private	12		
40.4	Dirt	Private	12		
40.74	Dirt	Private	12		855861P
48.96	Dirt	Private	12		
52.5	Dirt	Private	12		
58.4	Dirt	Private	12		855863D
60.85	Dirt	Private	12		855864K
62.2	Dirt	Private	12		855865S
63.02	Dirt	Private	12		855867F
63.07	Asphalt	Public	30	Currie	855866Y
64.07	Dirt	Private	20		
65.74	Dirt	Private	12	Cordano Ranch Rd.	855868M
67.3	Dirt	Private	12		
71.02	Dirt	Private	12		
80.9	Dirt	Private	12		
81.07	Dirt	Private	12		855869U
81.96	Dirt	Private	16		855870N
87.1	Dirt	Private	12		
91.2	Asphalt	Public	24	Cherry Creek	855871V
94.4	Dirt	Private	12		
96.3	Asphalt	Public	24	Shellbourne	855872C
106.7	Dirt	Private	12		
108.0	Asphalt	Public	20	Warm Springs	855873J
110.7	Dirt	Private	12		855874R
113.5	Dirt	Private	12		
114.2	Dirt	Private	12		
117.1	Dirt	Private	12		
118.6	Dirt	Private	12		855875X
120.5	Dirt	Private	12		
121.1	Dirt	Private	12		
123.0	Dirt	Public	16	Bassett Road	
127.6	Dirt	Private	12		
128	Dirt	Public	16	McGill Jct	

As part of the rail line restoration, every rail crossing on the railroad will need to be rebuilt. Careful consideration will need to be given to which of the private, non-DOT inventoried railroad crossings need to be rebuilt, and each of these crossings will need to be updated in the FRA CROSSING INVENTORY DATABASE.

That said, according to the CRS Study, the NEVADA DEPARTMENT OF TRANSPORTATION ("NDOT") held public meetings between September 20-22, 2005, to determine public crossing standards for the rehabilitated NNRY. A summary of the recommendations for each of those five major road crossings, highlighted in blue in Table Nine, is included below.

USDOT 93 at Curry: Flashing lights, double-faced retroreflective crossbucks, multiple track signs, W10-1 advance warning signs, railroad pavement markings with a No Passing Zone and an emergency notification sign on the signal cabinet, standard concrete crossing surface

Cordano Ranch Road: Double-faced retroreflective crossbucks with retroreflective post tape, Yield signs, emergency notification signs, W10-1 advance warning signs, W10-5 humpback signs, and detour signs to direct low clearance vehicles to the Cherry Creek Crossing.

Cherry Creek Highway: RxR pavement markings at the existing advance warning signs, a stop bar and a no passing zone, retroreflective tape and emergency notification signs for the crossbuck posts, Yield signs if there is sporadic rail traffic, and STOP signs if there are more than two trains daily.

Shellbourne Road: Install YIELD signs, W10-1humpback signs, and emergency signs, detour signage to direct low clearance vehicles to the Cherry Creek Highway or Warm Springs Road, and replace existing Signage.

Warm Springs Road: Install Yield signs, W10-1 advance warning signs, and emergency signs, remove the humpback sign.

NRCG recommends NNRY coordinate with NDOT to determine if state grant monies are available to address, at the very least, the replacement of the signalized grade crossing at USDOT 93 in Curry. Given the speed of the highway traffic, car counts, and alignment with the crossing in the middle of a large S-Curve, this crossing will require substantial advanced warning installation and risk mitigation.

3. RESTORATION APPROACH AND COST ESTIMATE

GENERAL APPROACH

Preliminary economic estimates place freight rail demand at between 7,2500 and 12,000 carloads per year, originating and/or terminating primarily near the city of Ely, with potential rail line utilization in the vicinity of Curry to support the growth and development of Silver Lions Farm. To support this freight rail activity, the NNRY mainline between MP 18.5 and 128.4 and between 128.5 and 135.4 will need to be returned to FRA Class II condition, which will support freight rail operations up to 25 MPH. Furthermore, the track condition will need to be restored to a condition such that it will support a minimum of 286K GRL, which has been the industry standard freight car weight since the late 1990s.

This section outlines NRCG's proposed approach to rail line rehabilitation, including estimated costs. This approach references and builds from the substantial number of studies completed to date, and it takes an incremental, pragmatic approach to the reinstitution of freight rail service along the corridor.

RAIL LINE CLEARING, DETAILED ENGINEERING AND CATEGORICAL EXCLUSION

Before any work can commence on the rehabilitation of the rail line, the entirety of the NNRY between MP 18.5 and 135.4 should be cleared of vegetation. This would be best accomplished by mechanical brush cutter or "bush hogger," followed up by subsequent applications of weed spraying / growth inhibitor. Once the line has been cleared of vegetation, a final detailed inventory and assessment should be completed to verify, in particular, the quantity and condition of all culverts along the rail line and to confirm the findings outlined in this report and the referenced preceding reports.

Upon completion of that final analysis, detailed engineering and completion of a NEPA Categorical Exclusion can commence. The detailed engineering is envisioned to include: 1) final quantities of key rail materials needed; 2) detailed engineering designs of any new track infrastructure; 3) final bid packages / documents for vendors; and 4) related support work. This work is envisioned to be funded through an FRA CRISI Grant or similar vehicle.

Concurrent with engineering, the NNRY should complete a Categorical Exclusion worksheet. While an Environmental Assessment of an expanded, coal-hauling mainline railroad has been completed by DAVID EVANS & ASSOCIATES, INC. for a past iteration of the project, a Categorical Exclusion ("CE") should be acceptable to the FRA but will need to be approved by FRA prior-to construction.

Guidance provided by FRA states that this project should fall under subpart 22, as copied below:

> *23 CFR § 771.116 (c) Actions that FRA determines fall within the following categories of FRa CEs and that meet the criteria for CEs in the CEQ regulation (40 CFR 1508.4) and paragraph (a) of this section may be designated as CEs only after FRA approval....*
>
> *(22) Track and track structure maintenance and improvements when carried out predominantly within the existing right-of-way that do not cause a substantial increase in rail traffic beyond existing or historic levels, such as stabilizing embankments, installing or reinstalling track, re-grading, replacing rail, ties, slabs and ballast, installing, maintaining, or restoring drainage ditches, cleaning ballast, constructing*

minor curve realignments, improving or replacing interlockings, and the installation or maintenance of ancillary equipment.

Key to pursuing the CE as stipulated by 23 CFR § 771.116 (C)(22) will be two determinations: 1) historical freight volumes, and 2) cultural impacts.

NRCG has determined that the volume of freight projected on the line is just shy of 900,000 net tons per year once the project is fully operational. By comparison, the NNRY transported an average of 3,983,993 net tons per year between 1912 and 1917 according to historical files on hand, which is ***457%*** greater tonnage than is projected to move as part of this revival.

Addressing the importance of cultural resources is a more nuanced issue, especially given the National Historic Landmark Status given to the rail yards at East Ely and potentially other National Register of Historic Places impacts. The National Register of Historic Places application includes a description of the "Main Track," copied as follows:

> *The second track north of the depot buildings was the Main Track of the railroad extending roughly 150 miles all the way from Cobre at the north end to Ruth, Kimberley and as far as Veteran on the southwest, passing through East Ely and Ely en route. West of the railroad yard it curved south through the city streets of Ely, crossing the principal thoroughfare (Aultman Street) and then moving a block south to Clark Street before passing out west of town through Robinson Canyon to the open pit copper mines near Ruth, Veteran, and Kimberley. East of the depot and office building, it curved southeast, forming the base of the wye track at Fourteenth Street, and eventually passed beyond the parallel ore yard immediately to the north. It then curved back north to head to the smelter and concentrator at the company town of McGill, reached by branches. From there it led up the valley to Shafter where it met and crossed the Western Pacific Railroad and to Cobre where it met the Southern Pacific Railroad (both the Southern Pacific and the Western Pacific have in the last three decades been swallowed up by and become part of the Union Pacific Railroad). This track is included from the throat of the ore yard on the east where it passes out to Cobre and Shafter, to the boundary east of the Machine Shop on the west where it passes out toward Aultman Street.* ***Roughly 4,425 feet of this track is within the NHL boundary.***

The NNRY will need to carefully work with FRA to verify whether the project will need to comply with Section 106 of the National Historic Preservation Act. That will require the following steps, per the U.S. General Services Administration[1]:

1. *Initiate consultation by notifying the appropriate consulting parties. Consultation is between the federal agency, the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), and other consulting parties including but not limited to the ACHP, certified local governments, and members of the general public with an economic, social or cultural interest in the project.*
2. *Identify properties that may be affected by the project and determine if the property or properties are historic as determined by eligibility or listing in the National Register of Historic Places.*

[1] *https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools/legislation-policy-and-reports/section-106-of-the-national-historic-preservation-act#:~:text=Section%20106%20of%20the%20NHPA,when%20making%20final%20project%20decisions.*

3. *Assess the effects of the undertaking on the resources in consultation with interested parties and establish if they are adverse. Determining adverse effects on historic resources is based on criteria established by the regulations, 36 CFR Part 800 of the ACHP regulations.*
4. *Resolve adverse effects by developing and evaluating alternatives that could avoid, minimize, or mitigate these impacts on historic resources. The result of consultation may be a Memorandum of Agreement (MOA) or a Programmatic Agreement (PA). The MOA or PA is a legally binding document, which evidences the agency's compliance with Section 106 and records the outcome of consultation and the effects of an agency's project, projects or program on historic resources.*

Per the FRA guidance on completing the categorical exclusion:

> *The most commonly appliable [sic] alternative is the "Advisory Council on Historic Preservation's (ACHP) Program Comment to Exempt Consideration of Effects to Rail Properties within Rail Rights-of-Way" (Section 106 Program Comment). The Project sponsor should prepare a memorandum (memo) to FRA environmental staff identifying elements of the scope of work that may qualify as exempt from further Section 106 review according to Section 106 Program Comment. The Exempted Activities List is found in Appendix A of the Section 106 Program Comment. The memo to FRA environmental staff should describe the relevant project scope items, identify the corresponding Exempted Activities List categories, and include any associated supporting documentation to exempt the scope of work from further Section 106 review. If the Exempted Activity requires the work be performed or supervised by a Secretary of the Interior qualified professional, the Project Sponsor must discuss in the memo how those requirements will be met. FRA environmental staff will verify if the project activities are exempted under the Section 106 Program Comment or if further consultation with a State Historic Preservation Office (SHPO) is necessary. If another type of program alternative applies to the project, it should be noted as such in the worksheet, explained why, with a copy of the relevant program alternative included.* ***If the entire project can be covered under the Section 106 Program Comment*** *or another program alternative, no further analysis should be necessary; proceed to Section D. Note: for a project to be completely covered by the Section 106 Program Comment, no part of the project or its effects can extend beyond the right-of-way, including laydown areas and construction access.*
>
> ***The Section 106 process must be completed prior to FRA approval of the CE worksheet.*** *FRA environmental staff will record and attach any correspondence and concurrence related to Section 106 to the CE worksheet. Additional information on the Section 106 compliance process is available at: https://www.achp.gov/digital-library-section-106-landing/section-106-applicant-toolkit* [2]

NRCG believes that the Section 106 review should be straightforward to undertake, as the issues associated with rail line reopening can be mitigated through design and operating measures. Specifically, the proposed CRISI Grant project does not involve work within the Historic District, and future freight operations will be lower in volume than historical levels. Furthermore, the freight operations will be of a similar nature to the original purpose of the railroad.

Finally, the completion of Final Design and submission of the CE are anticipated to be performed as part of a future grant award. NRCG recommends the NNRY reach out to the Nevada State Historic Preservation Office concurrent with any Federal grant application to begin the Section 106 determination process.

[2] *FRA Categorical Exclusion Companion Guide, Revised January 2022*

RAILS, TIES, BALLAST, AND RAIL BED

The restoration of the railroad will be approached in two separate pieces, based upon the existing conditions.

North End: NRCG recommends approaching restoration between MP 18.5 (Shafter) and MP 80.4 (Greens) as a traditional out-of-face rail line resurfacing project. For this portion, work will begin with a substantial tie replacement program, with an average of every fourth tie being replaced.

The rails would then be pulled up, and relay rail of minimum 115 lbs. per yard installed, including OTM. Surfacing of this portion would take place with remainder of the surfacing once the southern portion of the line is refinished, but it is anticipated to require a minimum of a 8" ballast lift. This section of track will be returned to FRA Class II track standards.

South End: NRCG recommends restoring the railroad between MP 80.4 (Greens) and MP 135.4 (HiLine Junction) shall be to FRA Class II track standards. As with the work to the North end of the railroad, the work will begin with a substantial tie replacement program, with an average of every third tie being replaced between 80.4 and 128.4. The rails would then be pulled up, and relay rail of a minimum of 115 lbs. per yard would be installed, including OTM. Where practicable, surfacing of this portion of the railroad should include a 12" ballast lift.

Once the entire rail line has been skeletonized with ties and rail, a series of three-to-four ballast lifts across the entire line can commence, working from the south (in the vicinity of McGill Junction) to the north. Three, 3" lifts will be completed on the South End, and two 3" lifts will be completed on the North End, with a final line and surface once finalized. NRCG understands that the ballast will be provided and sourced by the Robinson Mine and other sponsors.

Representative photos of the general difference in conditions between the North and South end of the railroad are included below.

Figure 4 - North End - Photograph at MP 22

Figure 5 - South End - Photograph at MP 122

EXISTING AND PROPOSED SIDINGS

NRCG recommends that all existing sidings be maintained in their current locations to permit storage of MOW equipment and other items along the line (refer to Table Seven). A photograph of the South end of the Shafter Rail Yard is shown at RIGHT. NRCG also recommends restoring the side track at Curry that can be used as a transload facility. This is envisioned to support the ongoing agricultural development at *Silver Lion Farms* (15 miles distant on Highway 93) as well as any additional mining development in the region.

Figure 6 – South end of Shafter Yard, 2023

CULVERTS AND DRAINAGE

As cited in Table Eight, NRCG recommends the replacement of fourteen (14) culverts along the line. Three of these are to be replaced by large, precast concrete box culverts, while the remaining 11 are to be replaced by corrugated steel arch pipes ("CSAP"). NRCG recommends budgeting for the replacement of an additional 10% of the culverts (8 more) with CSAPs throughout the project, given the likelihood of discovering damaged or occluded pipe culverts.

ROAD CROSSINGS

As cited in Table Nine, the five public crossings should be replaced in accordance with the NVDOT recommendations. Other private road crossings along the line will need to be upgraded as part of this project. NRCG recommends adopting a standard unpaved grade crossing design utilizing treated timbers and additional rock ballast.

FENCES

NRCG is aware of at least 20 locations along the railroad where fences and/or cattle guards cross the railroad mainline. Each of these locations will need to be upgraded to meet NVPUC standards for cattle guards. As a potential cost-saving measure, NRCG recommends utilizing surplus 60 lb. rail to form the "deck" of the cattle guards.

COST ESTIMATE

NRCG estimates that restoring the railroad to Class II operational condition between Shafter and HiLine Junction will cost roughly $133.4 million to complete, as outlined in detail in Table Ten. These prices are based upon labor being primarily performed by contractors as part of a government-funded project and in conformance with Davis-Bacon Wages, and with the anticipation of year of expenditure costs based upon a project application in 2024.

The scope of work required to return the railroad to service is outlined in detail as part of the preceding portions of this report. That said, the project will see the rail line returned to FRA Class 2 track condition (25 MPH freight service) and ensure that the line can be operated safely between HiLine Junction and Shafter.

TABLE TEN - ESTIMATED COST TO RESTORE RAIL LINE
(INCLUDING UPGRADING RAIL McGILL - HiLINE JCT)

Item	Description	Total Est. Cost
1	Final Design + Procurement	$252,350
2	NEPA C.E.	208,833
3	Contractor Mobilization, Bonding, Administration, Management	1,802,500
4	Source and Replace Main Line Ties	15,123,581
5	Relay Mainline Track	90,080,802
6	Relay Sidings	2,598,053
7	Replace Culverts	489,765
8	Source Ballast	15,225,997
9	Surface Railroad	3,159,935
10	Replace Grade Crossings, Upgrade Select Crossings	2,108,966
11	Source and Install Cattle Guards	192,610
12	Construction Oversight + Management	311,060
13	Contractor Demobilization	1,802,500
14	Testing and Commissioning	38,883
	Total Estimated Cost, Excl. Grant Administration	$133,395,834

Additional monies should be considered for Grant Administration, should a Federal grant be awarded. Furthermore, a detailed breakdown of the various units referenced in the assembly of Table Ten can be found in Appendix E of this report (PDF Page 337).

NRCG notes that the approach to restore this rail line has been developed with general capital costing in mind. Given the proposed volume of freight traffic and the potential for growth, this approach to rail restoration prioritizes used materials and locally sourced ballast, all in the name of being budget-conscious.

As a "stress test" of the overall approach, NRCG did price out the rail line restoration with all new materials in much the same way the CRS completed its analysis in the early 2000s. To complete a total overhaul of the rail line, including all new sub roadbed, new ties, and new rail would cost an estimated $375,000,000.

4. CONCLUSION

The restoration of the NEVADA NORTHERN RAILWAY to operational conditions for interstate commerce freight operations has the potential to be transformative for the Northeastern Nevada communities that, for decades, have been cut off from freight rail service. This proposed rail line project will serve to position the city of Ely and the surrounding communities to realize ongoing economic development while, at the same time, reducing greenhouse gas emissions related to truck transportation.

As the CITY OF ELY and the NEVADA NORTHERN RAILWAY FOUNDATION consider pursuing funding through the next round of FEDERAL RAILROAD ADMINISTRATION CONSOLIDATED RAIL INFRASTRUCTURE AND SAFETY IMPROVEMENT ("CRISI") Grants, NRCG stands ready to assist with any additional items related to this historic project.

Respectfully submitted,

/s/ Davidson A. Ward	/s/ Thomas P. Loftus, MBA	/s/ R. Lee Meadows Jr., P.E.
Managing Partner	Senior Financial Associate	Senior Infrastructure Associate

APPENDIX A:

"NEVADA NORTHERN RAILROAD PROJECT FEASIBILITY STUDY / BUSINESS PLAN"

Completed by: R.L. Banks & Associates, Inc., November 2, 2001

R.L. BANKS & ASSOCIATES, INC.

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November 2, 2001

Ms. Karen Rajala
White Pine County Economic Diversification Council
957 Compton Street
Ely, Nevada 89301

Dear Ms. Rajala:

It is a pleasure to forward several copies of our Northern Nevada Railroad Feasibility Study/Business Plan, which establishes that the railroad will be a viable economic entity when it becomes the coal carrier for a power plant in the area anticipated to begin operating in approximately five years. We have enjoyed this assignment and hope it will provide Ely with useful information.

Yours very truly,

Robert L. Banks

RLB:lh

Enclosures

Nevada Northern Railroad Project
Feasibility Study/Business Plan

Submitted To The

City of Ely, Nevada

Prepared By

R.L. Banks & Associates, Inc.

Transportation Economists and Engineers
Washington, DC, Tiburon, CA and Ottawa, ON

November 2, 2001

Nevada Northern Railroad Project
Feasibility Study/Business Plan

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Nevada Northern Railroad Project
Feasibility Study/Business Plan

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Tables

Maps

Executive Summary

This Business Plan/Feasibility Study (hereinafter referred to as The Plan) presents the expected financial results and investment requirements that are associated with restoration of freight service over the right-of-way of the former Nevada Northern Railway (NNR). Freight service was last provided over this right-of-way by the BHP Nevada Railroad Company.

When reviewing this study, it must be remembered that The Plan is subject to change as the project moves from the early conceptual stages, its present status, to more highly defined inputs that will occur as the project reaches implementation. In addition, the inputs and assumptions employed in The Plan are interrelated; a change in one assumption or input will affect another input or assumption. Notwithstanding this qualification, it is RLBA's opinion that restoration of the NNR right-of-way is feasible and offers the chance of commercial success described in this report.

Operation of the line as a financially viable entity is entirely dependent on the realization of the revenues that would flow from the siting of a power plant on the railroad. Over the first 20 years of operation, The Plan estimates that almost 75 percent of the estimated freight revenues of $123 million will be obtained from the delivery of 4 million tons of coal to the plant when it becomes fully operational.

Rehabilitation of the railroad and cash shortfalls in the rehabilitation will result in the need to obtain financing in amount of approximately $40 million. It is reasonable to expect that such an investment can be repaid if the power plant is built as proposed.

Track rehabilitation costs have been estimated after examining the traffic projections and operating plan. Track upgrades are recommended commensurate with the planned train speeds and expected tonnages on various segments of the line. Annual capital expenditures and routine maintenance budgets are prepared in the same manner.

The cost to rehabilitate the line to the recommended levels would be approximately $22.5 million over a four-year period. Thereafter, annual required maintenance expenditures would total approximately $1.06 million.

Introduction

The Plan that follows presents the physical requirements and estimated financial investment required to rehabilitate the right-of-way under three of the track standards promulgated by the Federal Railroad Administration (FRA) and specified in Ely's Request for Proposals (RFP). Each of these track standards would permit operation of trains over the right-of-way at different speeds and thus require incurrence of different costs.

The Plan ultimately arrays the financial results associated with rehabilitating the right-of-way to the track standards that RLBA believes are appropriate to the traffic that can reasonably be predicted to move over the line. These results present RLBA's recommended course of action to the City of Ely based upon our physical examination of the railway, review of traffic data, examination of potential railroad operations and our familiarity not only with NNR, (as more fully described in our proposal), but with short lines throughout the United States and Canada.

Background

NNR was incorporated on May 29, 1905 and construction of the rail line was undertaken between 1905 and 1906. On June 12, 1933, Kennecott Copper Corporation (Kennecott) acquired all the capital stock of NNR and operated NNR until its last shipment over the railroad in 1983. Over the next several years, Kennecott negotiated with the Los Angeles Department of Water and Power (LADWP) as to the potential lease or purchase of NNR's right-of-way. LADWP anticipated utilizing the NNR to provide rail transportation access for coal shipments to a site near its right-of-way where LADWP planned to build an electrical generating plant. In 1987, these negotiations resulted in 1) the purchase by LADWP of the portion of NNR's line between McGill Junction, Nevada and Cobre, Nevada and 2) the transfer to the White Pine Historical Railroad Foundation (WPHRF) of the portion of NNR's right-of-way between McGill Junction, Nevada and Copper Flat, Nevada. The assets transferred to WPHRF included NNR's spur lines to McGill, Nevada and East Ely, Nevada and railroad structures at Cherry Creek, Nevada, Currie, Nevada and Cobre, Nevada.

Map One on the following page is a map of the NNR right-of-way and shows the location of the two prospective freight customers described later in The Plan.

Track Condition Assessment and Cost Estimates

The NNR, as defined for the purposes of this study in the RFP, extends between Shafter (Milepost 18.6) in Elk County and McGill Junction (Milepost 128.4) in White Pine County, a distance of 109.8 miles. The track is presently intact between these two points but is not in service.

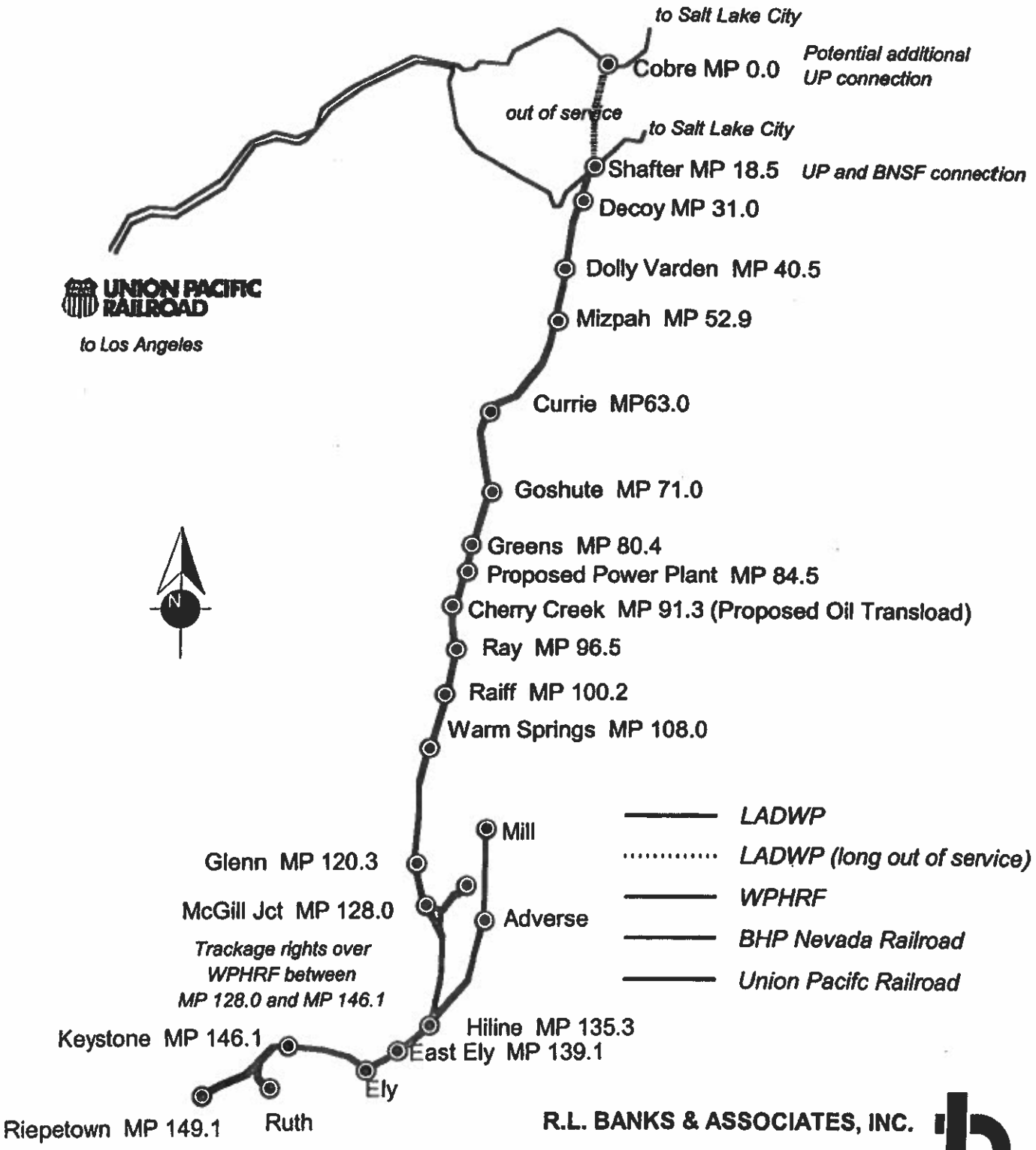
Scott Babcock, RLBA's Director - Rail Projects, hi-railed the line on October 2 and 3, 2001, accompanied by Mr. Steve Leith of the White Pine Historical Railroad Foundation. A representative sampling was made every ten miles of the existing tie and rail condition. Surface, alignment, ballast and drainage conditions were noted continuously throughout the inspection.

Current Condition

The line could not be operated by standard locomotives and freight cars in its present condition. Vegetation in numerous locations has grown to a height of two feet or more. Numerous joint bars connecting the rails together are broken on both sides of the rail, leaving the rails misaligned vertically and horizontally. Undoubtedly many more joint bars are broken or cracked that could not be seen due to the vegetation. There are a few locations where the surface and alignment have deteriorated to the point that repairs would be necessary prior to train operation.

Map One

Lines of the Los Angeles Department of Water and Power
White Pine Historical Railroad Foundation
and of
BHP Nevada Railroad Corporation



R.L. BANKS & ASSOCIATES, INC.

The Federal Railroad Administration (FRA) has established a classification system for track conditions based upon the strength of the track structure (roadbed, ballast, crossties, fasteners and rail), the track geometry (cross-level, gage and alignment) and the maintenance and inspection schedule for the track. Maximum FRA speed for freight trains on the various levels of track contemplated in this study are shown in the following table:

Table 1
Maximum Freight Train Speed

FRA Track Class	Maximum Freight Train Speed (MPH)
1	10
2	25
3	40

Expenditures Associated With Track Structure

Three categories of expenditure have been identified for each class of track:

- **Rehabilitation Cost** - the cost to upgrade the track from its present condition to the desired track class
- **Annual Program Cost** - the annualized cost to replace or rehabilitate major capital items such as rail, ties, ballast and road crossings on a periodic basis
- **Routine Annual Maintenance Cost** - the cost of normal, routine inspection, adjustment and lubrication as well as the normal replacement of small components of the track structure that fail between the periodic capital replacement programs.

Track Rehabilitation

The largest single cost item in the contemplated rehabilitation of the Nevada Northern is rail replacement. The existing rail section is 60AS (60 pounds per yard rolled to the shape designated by American Society of Civil Engineers) rolled in 1906, the year that the railroad was originally built. The smallest rail considered for use on a freight branchline today is 115 pounds per yard, and

main line tracks generally utilize rail in the range of 132 to 136 pounds per yard. This heavier weight rail with its associated higher capacity to support train traffic is necessary for today's heavier axle loadings running at all but minimum speeds.

The Northern Nevada Railroad operated on the existing track between 1996 and 1999. Train speeds were limited to 10 miles per hour, and it was often necessary to send a track inspection crew out ahead of the train to repair broken joint bars prior to train operations. Train length varied between five and 16 cars, and the gross weight of the cars was approximately 250,000 pounds. Service such as this could be resurrected, but it would be inefficient in terms of the ongoing track maintenance needs and high labor cost due to slow speeds. It is also practically inevitable that derailments would occur as rails and/or joint bars break under passing trains or are not detected prior to running trains.

Rehabilitation under this (Class 1) scenario would consist of:

- Mechanical removal of existing vegetation and chemical treatment to retard future growth;
- Spot surfacing of approximately 26 track miles at various locations along the line of road;
- Replace defective rails and joint bars;
- Replace 3000 ties at rail joints; and
- Rebuild the rail/highway grade crossing at Cherry Creek (M.P. 91.3).

The estimated cost of rehabilitation to Class 1 standards for the entire line between Shafter and McGill Junction would be approximately $2.68 million.

Rehabilitation to Class 2 standards would permit trains to run at 25 miles per hour and would probably permit a single train crew to make a round trip on the line within the federally-mandated 12-hour maximum. This rehabilitation would entail:

- Mechanical removal of existing vegetation and chemical treatment to retard future growth;
- Replacement of more than 25,000 main line crossties (approximately 225 per mile);

- Replacement of all main line rail with relay (used) jointed rail having a weight of at least 115 pounds per yard;
- Surfacing and alignment of the entire line; and
- Reconstruction of the five rail/highway grade crossings at Cherry Creek, Greens (M.P. 80.4), Currie (M.P. 63.0), Dolly Varden (M.P. 40.5) and Decoy (M.P. 31.0).

RLBA does not believe that train operations at speeds greater than 10 miles per hour would be safe on the existing 60-pound rail. Rehabilitation to Class 2 standards would require replacement of that rail with 115-pound or heavier rail. This rail could be purchased on the relay (used) rail market at a price considerably less than new. While continuous welded rail (CWR) would be desirable, the jointed rail contemplated here would be sufficient for the proposed speed. Rehabilitation to Class 2 standards would cost approximately $23.0 million.

Rehabilitation to Class 3 standards would permit trains to run at 40 miles per hour and would probably permit a single train crew to make a round trip on the line in approximately eight hours. This rehabilitation would entail:

- Mechanical removal of existing vegetation and chemical treatment to retard future growth;
- Replacement of nearly 42,000 main line crossties (approximately 380 per mile);
- Replacement of all main line rail with new continuous welded rail having a weight of 132 pounds per yard or more.
- Surfacing and alignment of the entire line; and
- Reconstruction of the same five rail/highway grade crossings.

Train speeds of up to 40 miles per hour would exert severe pounding on rail joints, requiring extensive maintenance that would not be cost effective. Installation of welded rail would eliminate this problem. Although welded rail is available on the relay market, it is doubtful that the quantity required for this line would be available on the market all at one time; therefore it is contemplated that new welded rail would be installed. The cost of

rehabilitating the entire line to Class 3 standards would be approximately $27.9 million.

Annual Program Cost

Because the rehabilitation for Class 1 track proposed above does not include replacement of the existing 60-pound rail, an ongoing rail problem will continue to exist. In order to alleviate this problem over a number of years, as well as to generate excess 60-pound rail for broken rail repairs, RLBA recommends a capital program that replaces approximately 7.5 track miles of rail annually over a 15-year period. The annual capital program for track maintenance on Class 1 track would:

- Replace 6600 crossties;
- Surface seven track miles; and
- Replace 7.5 miles of 60-pound rail.

The annual program maintenance cost for Class 1 track would be approximately $1.7 million per year for the first 15 years. At that point, all of the rail will have been replaced and the annual program maintenance cost would drop to $435,000 annually.

Upon rehabilitation to Class 2 standards, the ongoing annual capital program would need to:

- Replace 8150 crossties;
- Surface 14 track miles; and
- Replace 1000 feet of rail due to wear and/or breakage.

The ongoing annual program maintenance cost for Class 2 track would be approximately $634,000.

Once rehabilitated to Class 3 standards, an annual capital maintenance program would:

- Replace 9250 crossties;

- Surface 18 track miles; and
- Replace 1000 feet of welded rail due to wear and/or breakage.

The annual program maintenance cost for Class 3 track would be approximately $738,000.

Routine Maintenance

Table 2 shows the estimated annual routine track maintenance expenditures that will be required on the 110 miles between McGill Junction and Shafter for each class of track:

Table 2
Annual Routine Track Maintenance Expenditures

FRA Track Class	Annual Expenditure
1	$1,193,000
2	820,000
3	886,000

The expenditures shown in Table 2 include labor costs for a maintenance force that varies from 13 to 17 employees, as well as material and equipment costs and expenses for contracted services such as vegetation control and rail testing.

Due to the lack of an initial rail replacement program, annual expenditures for Class 1 track would be considerably higher than for Class 2 or 3. Additional inspection personnel and mobile track gangs would be required in order to detect and repair broken rails and joint bars, and expenditures for replacement materials would be considerably higher. If rehabilitated to Class 2 standards, the annual routine maintenance would be considerably less. Annual routine maintenance required for Class 3 track is only marginally higher than for Class 2 because the rehabilitation to Class 3 track contemplates installation of new CWR, eliminating virtually all rail joints, whose repair consumes a large portion of a railroad's maintenance budget.

RLBA's estimate of the cost to rehabilitate and maintain the NNR track to each FRA track class discussed above is summarized in Table 3. In reviewing Table 3, it is important to remember that the rehabilitation cost associated with FRA track Class 1 must be performed and is additive to the cost shown for FRA track Class 2 or FRA track Class 3.

Table 3
Summary Expenditures to Rehabilitate and Maintain
Track of Nevada Northern Railway
Between Shafter and McGill Jct.

		Initial	Annual Expenditure	
Description	Miles	Rehabilitation	Program Maintenance	Routine Maintenance
FRA Track Class I	66	$ 2,676,758	$1,708,289	$1,192,882
FRA Track Class 2	66	$22,984,107	$ 634,360	$ 820,020
FRA Track Class 3	66	$27,877,342	$ 737,890	$ 885,652

Proposed Business Plan

Following completion of the right-of-way inspection and development of potential rehabilitation and maintenance options discussed above, RLBA's staff interviewed potential shippers to determine traffic volumes and service needs and develop an assessment of the financial prospects for a rehabilitated NNR. Our findings are described below.

Traffic

RLBA's review of available data indicates that there are two potential sources of traffic available to NNR. The first and most immediate traffic consists of inbound crude oil and outbound finished petroleum products to a facility to be constructed by Foreland Refineries at Cherry Creek, Nevada.

The second source of traffic would come from a proposed two unit coal-fired power plant with a total capacity in the range of 1,000 to 1,500-megawatts. Although White Pine County and PG&E National Energy Group (NEG) have executed a Memorandum of Understanding in respect of water supply to a coal fired power plant at a site in the County, NEG has not yet designed the facility. However, an NEG right-of-way application has been filed with the U.S. Bureau of Land Management for a site in northern Steptoe Valley. As more fully discussed below, rehabilitation of NNR is only feasible if this power plant is constructed along the lines described in The Plan.

Cherry Creek Traffic

Foreland Refineries proposes to use the rail line between Shafter and Cherry Creek. Inbound traffic would consist of crude oil now moved by truck from Alberta, Canada. Outbound rail traffic would be finished products consisting of asphalt, vacuum gas oil and diesel fuel. Outbound diesel fuel would require inbound movement of empty clean tank cars. The other products would be reloaded into the cars that carried the crude oil inbound.

At Cherry Creek the company would transload the oil from rail to truck for delivery to its refinery located in the Railroad Valley of Nye County about 100 miles southwest of the transload facility. The company also would do some processing at the Cherry Creek site using equipment to be relocated from its refinery at Tonopah.

Finished product also would move by rail to a number of destinations; namely, Vancouver, BC, Portland, OR, Stockton, CA, Salt Lake City, UT and Pulaski County, KY. This includes log wax that would be produced at a Duraflame facility in Ely.

Projected traffic would be 1,260 cars of loaded freight in the first year of operation, 3,060 in the second and 3,600 thereafter. Two-thirds of the inbound loaded equipment would be reloaded with "dirty"-finished product. Additional empty carloads also would move in both directions amounting to 420 in first 12 months, 1,020 in second and 1,200 thereafter.

The company has had discussions with the Class 1 railroads and has been quoted linehaul rates to and from Shafter.

Why not transload at a site on UP's mainline across the state? Because the selection of Cherry Creek as the transload facility location is based on efficient use of the company's fleet of tank trucks. Were rail service not available to Cherry Creek the company could not run its operation at Wells, NV, (for example) with its available fleet of trucks.

Coal to the White Pine Power Plant

White Pine County and NEG have executed a Memorandum of Understanding concerning water supply to a coal fired power plant at a site in the County. Although NEG has not yet designed the facility, preliminary plans call for a two unit coal-fired power plant with a total capacity in the range of 1,000 to 1,500-megawatts. The facility would be for a site in northern Steptoe Valley near NNR milepost 84.5.

Although alternate locations are also being considered as part of the site selection process, for example, an area just north of and closer to Ely is now being considered, selection of that site is constrained by the fact that the city is designated as a Non-Attainment Air Quality Area because of the sulfur dioxide pollution from the now discontinued copper smelting activities. However, for the purposes of this analysis, it is assumed that the power plant will be located near milepost 84.5.

The first unit of the power plant is preliminarily expected to come on line in 2006-2007 and the second a year later. Based on RLBA's review of available data and discussions with NEG, RLBA estimates that annual requirements of commodities to be delivered by rail when both units are in operation are as follows:

- Coal 4,000,000 tons
- Diesel Fuel 2,000,000 gallons
- Limestone 136,000 tons and
- Anhydrous Ammonia 7,000 tons.

In order for the plant to come on line in five years, site clearing would begin in the summer of 2003. Initial materials delivered to the site would include steel rebars and structural steel that would move throughout 2004. Materials for concrete would follow shortly. Deliveries of steel rail and other accessories would move during 2005. In early 2006, heavy equipment such as turbines, boilers, generators and transformers would be delivered. Construction phase rail traffic would amount to about 900,000 tons and be heaviest in the second half of 2004.

Track Structure Rehabilitation and Maintenance Costs

The industrial development predicted along the NNR rail line will place different traffic demands on various segments of the line. RLBA has developed The Plan by trying to predict what track expenditures will be necessary to meet that demand without suggesting unnecessary investment for which little or no demand is foreseen. Map Two on the following page graphically depicts the track rehabilitation program contained in The Plan.

Table 4 below summarizes the rehabilitation, capital and routine track maintenance costs contained in The Plan and more fully described below.

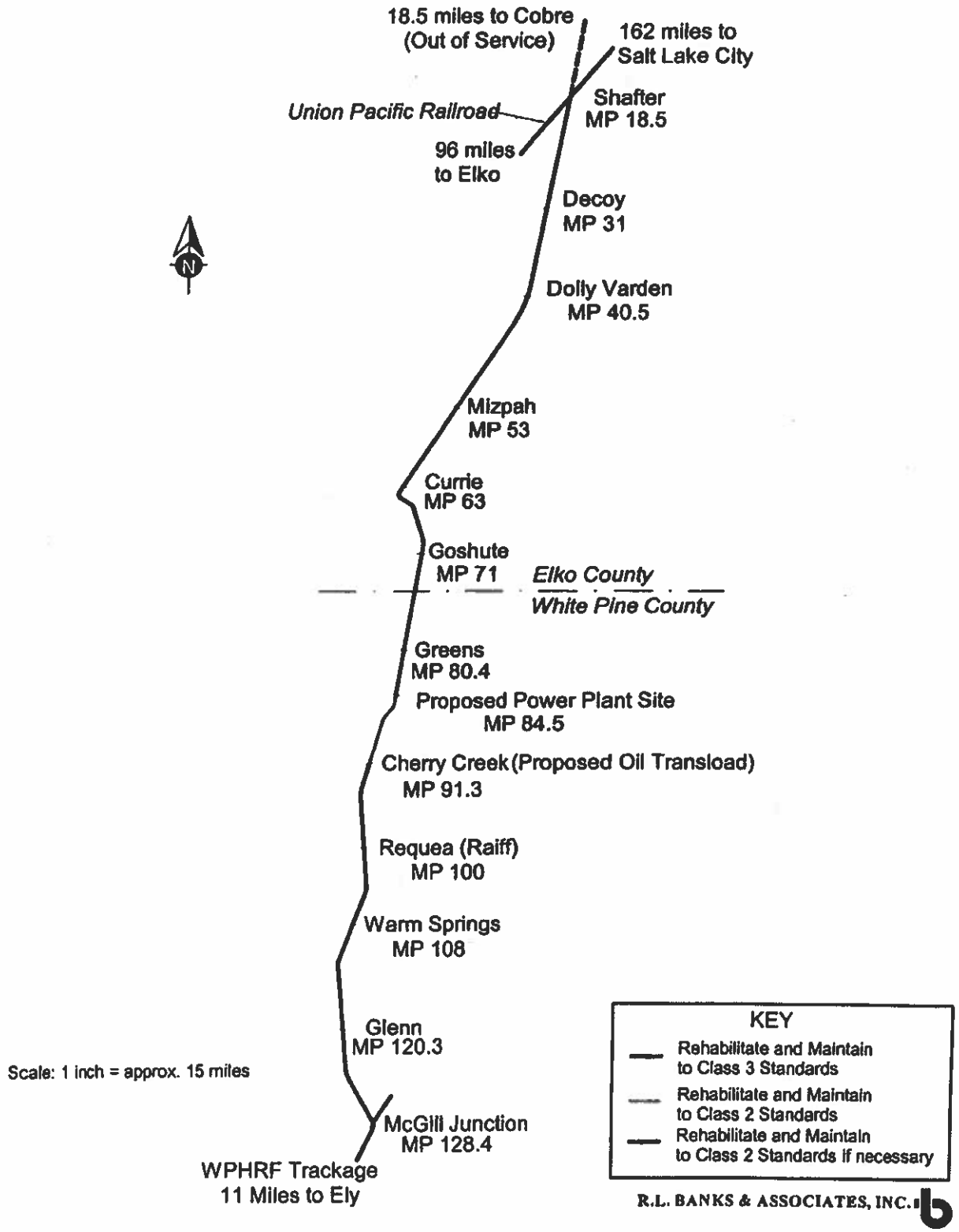
Table 4
Rehabilitation, Capital and Routine Track Maintenance Costs

Year	Activity	Rehabilitation	Capital Expenditures	Routine Maintenance
1	Rehabilitate Shafter – McGill Jct. to FRA Class 1	$2,677,000	-	$790,000
2	Rehabilitate Cherry Creek - Milepost 84.5 to FRA Class 2	3,050,000		717,000
3	Rehabilitate milepost 84.5 - Mizpah to FRA Class 3	7,998,000	$ 39,000	426,000
4	Rehab Mizpah - Shafter – Class 3	8,760,000	251,000	305,000
5+	Ongoing Capital & Routine Maintenance		483,000	583,000
	Ely Service Years 1-15 a/		577,000	403,000
	Ely Service Years 16+ a/		214,000	277,000

a/ Financial impact not included in The Plan. Provided as informational item.

Map Two

Nevada Northern Railroad
Recommended Track Rehabilitation and Maintenance



Year 1

Demand for service at Cherry Creek requires that the railroad be restored to an operational condition. The existing track defects preventing the resumption of service could be repaired in a few weeks, after which a rehabilitation program to bring the track up to a solid Class 1 standard between Cherry Creek and the UP connection at Shafter will be necessary at an approximate cost of $2.68 million. Routine annual maintenance on this 73-mile segment is estimated to cost an additional $790,000.

Year 2

The seven-mile track segment between Cherry Creek and the proposed power plant location at Milepost 84.5 will require rehabilitation to Class 2 standards, including rail replacement. This rehabilitation will cost approximately $3 million, while an annual expenditure of $717,000 will be required to maintain the remaining Class 1 track north to the UP interchange.

Year 3

In preparation for the construction and operation of the coal-fired power plant, the rehabilitation of the northern part of the railroad will begin in the third year. This relatively large rehabilitation project should be spread out over two years with the 31.5 miles between the power plant site and Mizpah being performed in year 3 at a cost of $8 million. The balance of the track north of Mizpah will require $426,000 for maintenance to Class 1 standards in year 3.

Year 4

Completion of the rehabilitation in preparation for coal shipments is proposed for Year 4. The remaining 35 miles between Mizpah and Shafter would be brought up to Class 3 standards at a cost of $8.8 million. Additionally, an 8000-ft. passing siding would be constructed at Mizpah in order to facilitate the movement of more than one unit coal train on the line at any one time. Construction of additional 3000-ft. sidings at Decoy and Goshute would provide locations for the regular freight trains to meet coal trains as well as storage areas for track maintenance equipment. Year 4 maintenance costs on the track between Cherry Creek and Mizpah would consist of $251,000 in capital spending and $305,000 in routine maintenance.

Year 5 and beyond

Ongoing annual maintenance costs for the track between Cherry Creek and Shafter would consist of $483,000 in capital expenditures and $583,000 in routine maintenance.

Service between Cherry Creek and Ely

The 37 miles of track between Cherry Creek and Ely could be brought up to Class 1 standards in the initial rehabilitation in order to satisfy common carrier obligations, but regular service on this section of track is not contemplated in The Plan because no traffic sources of significance have been identified. If this track segment were to be used, its maintenance requirements would be very low (less than $50,000 per year). If service were instituted on this segment, routine annual maintenance costs would be approximately $403,000 in addition to the costs outlined above. This expenditure would maintain the track to Class 1 standards on the existing rail. If service were to be offered on this segment, it is recommended that an annual capital program of $577,000 be implemented that would change (renew) all the rail on this segment over a 15-year period. Once completed, this would allow for operations at Class 2 speeds, at which time the annual capital maintenance costs would be $214,000 and the annual routine maintenance costs would be $277,000. The cost of maintaining the segment between Cherry Creek and Ely is not included in the financial results that follow but has been included as information.

Table 5 on the following page arrays the quantities and total cost to rehabilitate the NNR as recommended in The Plan.

Proposed Freight Service

RLBA believes that the most likely institutional scenario would involve a new shortline railroad operating the NNR trackage (when it becomes timely, RLBA can assist in identifying an operator). Interchange would be made with either Union Pacific (UP) or Burlington Northern Santa Fe (BNSF), or both, at Shafter.

Table 5
Summary of Total Rehabilitation Cost
Between Shafter and McGill Junction

Item	Cost	Unit	Subtotal	Total
Vegetation Control:				
60 Miles Brush Cutting	$750	Track mile	$45,000	
110 Miles Weed Control	$200	Track mile	$22,000	
		Total Vegetation Control:		$67,000
Cross Ties:				
42,000 Main line crossties	$45	Each	$1,890,000	
12,000 Siding crossties	$42	Each	504,000	
		Total Crossties:		$2,394,000
Surface and Line:				
182.6 Pass Miles	$17,000	Pass mile	$3,104,200	
4.7 Siding miles	$15,000	Track mile	$70,500	
15 Main line turnouts	$750	Each	$11,250	
		Total Surfacing:		$3,185,950
Rail:				
4,125 Linear feet 60-lb.	$22	Linear foot	$90,750	
250 Pairs joint bars	$65	pair	$16,250	
66.0 Main line miles (CWR)	$215,000	track mile	$14,190,000	
6.8 Main line miles jointed	$170,000	track mile	$1,156,000	
4.70 Siding miles	$145,000	track mile	$681,500	
15 Main line turnouts	$42,000	Each	$630,000	
		Total Rail		$16,764,500
Road Crossings:				
5 crossings x 150 Track feet	30 feet per crossing = $480	track foot		$72,000
Total Track Rehabilitation Cost				$22,483,450

Source: RLBA.

Two types of service would be operated: delivering coal to the NEG power plant and providing carload service to other on-line customers. The new railroad would require two locomotives to handle oil traffic, miscellaneous inbound materials for the power plant, any other merchandise traffic that may develop and company work trains. Many suitable used locomotives are

available for lease or purchase; The Plan includes projected lease and maintenance costs.

Operations

A new base of operations ("New Yard") would be established at the power plant, including locomotive servicing and storage facilities, modest yard trackage and a small combination office and crew locker building.

Coal traffic would be handled by shortline crews, but arrangements would be made as part of the coal transportation contract to have the delivering carrier (UP or BNSF) leave the road locomotives on coal trains. The shortline crew would go on duty at New Yard and be driven to Shafter. The crew would operate the train from the interchange at Shafter to the power plant, around the loop track or other unloading process and return the empty train to the interchange. The crew would be near its 12-hour maximum work time permitted by Federal Hours of Service regulations, and would go off duty when the train is secured at Shafter. Although off duty, they would remain under pay while being driven back to New Yard.

Oil traffic to/from Cherry Creek likely would be handled in trains separate from the power plant coal. Coal trains would not have sufficient time to pick up, move and set off loaded or empty oil cars and still complete their cycle within the 12-hour time limit. Oil, and any other non-coal traffic, would be interchanged in the existing (upgraded) NNR yard at Shafter. Crews would start at New Yard, proceed to Cherry Creek and pick up outbound cars and take them to the interchange yard at Shafter. There, inbound cars would be picked up and delivered to Cherry Creek. Finally, the crew would return the locomotive to New Yard and go off duty there. This cycle would consume almost all of the crew's 12-hour time limit, so careful scheduling of Cherry Creek trains would be necessary to minimize conflicts with coal trains and resulting delays. Until the line is fully rehabilitated to the mixture of Class 2 and 3 track projected in The Plan, two crews will be required for each oil train operated as a result of slow track speed and Federal law.

Should additional rail customers emerge in Ely, their traffic would be handled between Shafter and New Yard by the Cherry Creek trains. Ely assignments

would be scheduled to forward traffic to Ely, spot inbound cars and take outbound cars to New Yard for movement to Shafter by the next Cherry Creek assignment.

Phase-In of Traffic

The service plan is designed to handle four types of traffic:

- Oil and oil products to/from Cherry Creek
- Power plant construction materials
- Inbound coal to the power plant
- Inbound miscellaneous materials (limestone, etc.) to the power plant

Oil and oil products were phased in starting in the second quarter of 2002, based upon discussions with Steve Wilson, Director of Nevada Operations for Foreland Refineries. Volume increased through 2003 and reached its full and steady volume at the beginning of 2004.

Power plant construction materials were assumed to arrive in 2004 and 2005. The two units would consume four million tons of coal per year, but coal deliveries would build over a two-year period. The coal stockpile for Unit 1 would be built up during 2007, and six months of coal for that unit also would be delivered that year. In 2008, Unit 1 would receive coal for normal production and the stockpile for Unit 2 would be delivered as would six months of coal for that unit. In 2009 and beyond, the full four million tons annually would be delivered. Inbound power plant supplies were assumed to ramp up at the same rate as coal to be consumed. These assumptions were based upon conversations with NEG and our review of relevant materials.

Operating Costs

Operating costs were estimated based upon the projected service plan. Unit costs typical of shortline railroads were applied to work units and materials consumed in executing the service plan. Train and engine crew costs as well as fuel consumption and costs based upon estimated train-hours generated in serving the power plant and Cherry Creek as well as inbound construction materials for the plant and switching, work and re-crew assignments that should be anticipated. The new railroad, at its peak level attained when inbound coal reaches its full anticipated volume, would include a general

manager and an operations manager, two clerical staffers, four dispatchers for 24-hour coverage and two mechanical employees. Administrative headquarters would be in Ely, and a small office at "New Yard" would house the dispatcher and be the base of operations. Railroad employees would perform track maintenance and related work, but the annual capital renewal programs would be let out to a contractor.

Financial Results

Table 6 on the following page arrays the pro forma income statement of the Northern Nevada Railroad obtained in key years of The Plan. The pro forma results shown in Table 6 are entirely dependent upon the transportation of coal moving to the proposed power plant. Over the first 20 years of operation, The Plan estimates that almost 75 percent of the freight revenues will be obtained from the delivery of coal to the plant and additional five percent of the revenues are attributable to the delivery of construction materials and non-coal items to the proposed plant.

The Plan assumes that the Nevada Northern Railroad resumes operations in 2002. Beginning in 2002, the rehabilitation project begins and service is provided to the proposed facility of Foreland Refineries at Cherry Creek. As can be seen from a review of Table 6 the railroad will operate at a loss of approximately $1.4 million in 2002. Through 2006, The Plan predicts that the net losses will continue due to the lack of coal traffic and increasing depreciation expense resulting from the investment in the railroad. In 2006 these losses will reach approximately $3.3 million dollars. Beginning in 2008 and continuing each year thereafter, The Plan projects that the railroad will be profitable and should be able to re-pay the funds required to pay for its rehabilitation of the railroad and cover losses that would have occurred in intervening years.

Table 6
Northern Nevada Railroad
Pro Forma Income Statement - Key Years

(Thousands of Dollars)

	2002	2006	2007	2008	2009	2015	2021
Operating revenues:							
Freight revenue	$ 319	$ 1,202	$3,067	$ 6,147	$ 7,428	$ 8,201	$ 9,049
Switching	16	60	64	72	76	84	93
Total operating revenues	$ 335	$ 1,262	$ 3,131	$ 6,219	$ 7,504	$ 8,285	$ 9,142
Operating expenses:							
Maintenance of way	$ 791	$ 637	$ 651	$ 665	$ 681	$ 777	$ 887
Train operations and administrative	653	1,134	1,293	1,536	1,662	1,897	2,166
Total operating expenses	$ 1,444	$ 1,771	$ 1,944	$ 2,201	$ 2,343	$ 2,674	$ 3,053
Depreciation and amortization	$ 161	$ 1,099	$ 1,122	$ 1,146	$ 1,171	$ 1,329	$ 1,510
Interest income	$ 7	$ 9	$ 10	$ 11	$ 12	$ 13	$ 15
Interest expense	(104)	(1,726)	(1,758)	(1,677)	(1,651)	(475)	-
Income before income taxes	$(1,367)	$ (3,325)	$(1,683)	$ 1,206	$ 2,351	$ 3,820	$ 4,594
Income taxes:							
Current income taxes	$ -	$ -	$ -	$ -	$ -	$ 186	$ 212
Deferred income taxes	-	-	-	-	-	1,342	1,626
Net Income	$(1,367)	$(3,325)	$(1,683)	$ 1,206	$ 2,351	$ 2,292	$ 2,756

Source: RLBA.

Key Financial Estimates

The pro forma results are dependent on several critical assumptions discussed below. The assumptions employed reflect both the data available to RLBA at the time the study was made and the exercise of professional judgement of reasonable expectations derived from experience in similar circumstances. As the proposed project moves forward, it is possible that certain facts or assumptions might change and thus could produce results different from those estimated by this report.

Operating Revenues

Freight revenues in The Plan were estimated by applying an estimated rate per ton to the tonnage transported. Freight rates were developed by reviewing rates contained in the rail freight transportation contract between the Northern Nevada Railroad Corporation (NNRC) and Robinson Mining Company (RMC), the last arms-length negotiation of rates applicable to freight movements over the NNR. These rates were adjusted to reflect the shorter distances of the prospective shipments; an estimated increase in the number of carloads and the proposed operating plan. It is RLBA's opinion that the freight revenues shown in The Plan are a reliable estimate, but it should be remembered that the final rates actually applied to the carrier's business will be the result of negotiations between the parties and take into account not only operating and capital costs but also market conditions at the time the contracts are negotiated and service parameters agreed to by the parties.

In The Plan freight rates increase beginning in 2005 and continue to increase each year thereafter by 1.7 percent per year; the increase of 1.7 percent is based upon 70 percent of the average increase in the GNP Implicit Price Inflator for the past seven years. Rate increases were not implemented until 2005 since the line is undergoing extensive rehabilitation and petroleum shipments to Foreland Refineries at Cherry Creek are the only projected traffic. In 2009, when both the coal and petroleum shipments occur at their typical projected volumes, petroleum traffic to Cherry Creek carries a rate of $1.72 per net ton and coal to the power plant possesses a rate of $1.48. By 2021 the rates rise to $2.10 on petroleum to and from Cherry Creek and $1.80 per net ton on shipments to the power plant.

Switching income is estimated to be equal to five percent of freight revenues from non-coal traffic.

Operating Costs

The operating costs contained in The Plan were computed for each individual year and are based upon the operations conducted in that year. The per unit costs of fuel, wages and salaries were increased by 2.23 percent per year beginning in 2003. The 2.23 percent increase is 70 percent of average annual increase in the Railroad Cost Recovery Index for the Western Region published by the Association of American Railroads during the past seven years.

Depreciation and Amortization

Rehabilitation and program maintenance expenditures discussed above were increased in the same manner as operating expenses when computing depreciation expense. Depreciation and amortization expense is computed by depreciating the track structure over 20 years after allowing for an estimated salvage value of 13.4 percent, a figure derived from RLBA's work of this type.

Interest

As a result of the need to borrow large amounts of capital we have assumed that the project will have to borrow monies only as they are needed and will have only minimal interest income in the early years of the project.

Interest expense was computed by applying an interest rate of 5.42 percent, the 2001 year-to-date average interest rate of state and municipal bonds, to borrowed funds. It is our expectation that should low cost funds not be available from government sources that the NEG would negotiate favorable terms with the City of Ely.

Income Taxes

Income taxes are computed by applying a tax rate of 40 percent to income before taxes. In the initial years, the railroad operates at a loss and those losses offset taxable income in later years until they have been exhausted.

Liabilities and Equity

Table 7 on the following page arrays the pro forma balance sheet of the NNR obtained in key years of The Plan. The pro forma results shown in Table 7 reflect The Plan's findings that over 20 years the NNR will be profitable. As noted earlier these results can only be obtained if the power plant is built.

The pro forma balance sheet reflects The Plan's assumption that sufficient funds are provided by NEG or governmental entities to rehabilitate the railroad and cover operating deficits in the initial years. These loans are assumed to be repaid over a seven year period following the year in which the loan is made. The pro forma balance sheet also conservatively assumes that retained earnings remain with NNR. It would be possible to pay out these retained earnings in the form of dividends to the owner of the line (assumed to be an entity controlled by local governments), rate reductions to shippers or some combination of the two. The strong pro-forma balance sheet also reflects the ability of NNR to withstand financial downturns that would result from reduced coal shipments.

Cash Flow

Table 8 on the second following page arrays the pro forma balance sheet of the NNR obtaining in key years of The Plan. The pro forma results shown in Table 8 reflect demonstrate that a rehabilitated NNR can be profitable over a 20-year horizon.

As can be also seen from a review of Table 8, The Plan calls for an initial purchase of stock in the amount of $200,000 by the owners and loans from government programs or the NEG to fund rehabilitation of the railroad as well as its operating deficits in the early years. Cash above the amount required for operating expenses, capital investment and loan repayment is achieved by 2009. The amount of excess cash continues to grow each year and reaches approximately $5.1 million in 2021.

Table 7
Northern Nevada Railroad
Pro Forma Balance Sheet - Key Years
(Thousands of Dollars)

	2002	2006	2007	2008	2009	2015	2021
Current Assets							
Cash	$ 185	$ 2,573	$ 3,884	$ 3,451	$ 4,127	$ 3,925	$ 27,548
Accounts receivable	40	150	383	768	929	1,025	1,131
Total Current Assets	$ 225	$ 2,724	$ 4,268	$ 4,220	$ 5,055	$ 4,950	$ 28,679
Fixed Assets							
Property, Plant and Equipment	$ 3,577	$ 25,243	$ 25,782	$ 26,333	$ 26,896	$ 30,551	$ 34,723
Less: Accumulated Depreciation	161	3,292	4,414	5,560	6,731	14,299	22,893
Net Fixed Assets	$ 3,416	$ 21,951	$ 21,368	$ 20,773	$ 20,165	$ 16,252	$ 11,830
Total Assets	$ 3,641	$ 24,675	$ 25,636	$ 24,993	$ 25,220	$ 21,202	$ 40,509
Current Liabilities							
Accounts Payable	$ 90	$ 111	$ 122	$ 138	$ 146	$ 167	$ 191
Current portion of long-term debt	268	2,134	2,457	2,756	3,073	1,887	-
Total Current Liabilities	$ 358	$ 2,245	$ 2,579	$ 2,894	$ 3,219	$ 2,054	$ 191
Long Term Liabilities							
Non-current Portion of long-term debt	$ 4,385	$ 29,904	$ 31,565	$ 28,809	$ 25,736	$ 3,803	$ -
Deferred income taxes	-	-	-	-	-	5,858	15,126
Total Long Term Liabilities	$ 4,385	$ 29,904	$ 31,565	$ 28,809	$ 25,736	$ 9,661	$ 15,126
Stockholders Equity							
Common Stock	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
Retained Earnings	(1,302)	(7,674)	(8,708)	(6,910)	(3,935)	9,287	24,993
Total Stockholders Equity	$ (1,102)	$ (7,474)	$ (8,508)	$ (6,710)	$ (3,735)	$ 9,487	$ 25,193
Total Liabilities and Stockholder Equity	$ 3,641	$ 24,675	$ 25,636	$ 24,993	$ 25,220	$ 21,202	$ 40,509

Source: RLBA.

Table 8
Northern Nevada Railroad
Pro Forma Cash Flow Statement - Key Years
(Thousands of Dollars)

	2002	2006	2007	2008	2009	2015	2021
Cash Flows From Operating Activities							
Net Income	$ (1,367)	$ (3,325)	$ (1,683)	$ 1,206	$ 2,351	$ 2,292	$ 2,756
Depreciation	161	1,099	1,122	1,146	1,171	1,329	1,510
Deferred Income Taxes	-	-	-	-	-	1,342	1,626
Deferred Interest	65	508	649	592	624	-	-
Changes In Current Assets & Liabilites							
Accounts Receivable	(40)	144	(233)	(385)	(160)	(17)	(19)
Accounts Payable	90	(29)	11	16	9	4	4
Net Cash From Operating Activities	$ (1,091)	$ (1,603)	$ (134)	$ 2,575	$ 3,995	$ 4,950	$ 5,877
Cash Flows From Investing Activities							
Property Additions	$ (3,577)	$ (527)	$ (539)	$ (551)	$ (563)	$ (643)	$ (734)
Cash Flow From Financing Activities							
Common Stock Issued	$ 200	$ -	$ -	$ -	$ -	$ -	$ -
Proceeds From Borrowings	4,709	6,008	4,118	-	-	-	-
Debt Repayments	(56)	(2,024)	(2,134)	(2,457)	(2,756)	(3,225)	-
Total Cash Flow From Financing Activities	$ 4,853	$ 3,984	$ 1,984	$ (2,457)	$ (2,756)	$ (3,225)	$ -
Net Increase in Cash	$ 185	$ 1,854	$ 1,311	$ (433)	$ 676	$ 1,082	$ 5,143
Cash On Hand At Beginning Of Year	-	720	2,574	3,885	3,452	2,843	22,405
Ending Cash Balance	$ 185	$ 2,574	$ 3,885	$ 3,452	$ 4,127	$ 3,925	$ 27,548

Source: RLBA.

Conclusion

It is RLBA's opinion that restoration of the NNR right-of-way is feasible and offers the chance of commercial success if the envisioned coal project moves forward and the line is rehabilitated as described in this report.

NEVADA NORTHERN RAILROAD FEASIBILITY STUDY AND BUSINESS PLAN

Amendments to the Business Plan

Requirements for the City of Ely to Break Even on a Freight Service

Nevada Northern Railroad (NNR) would break even on freight service if it were to move 15,270 carloads per year, if only cash operating expenses are considered when computing the breakeven point and 16,847 annual carloads when computing the breakeven point to include both cash operating expenses and repayment of a loan to finance required capital outlays and purchase of the line.

In order to conduct operations over the line between McGill Jct and Shafter in a manner consistent with safe railroad operating practices, the right-of-way must be rehabilitated to at least FRA Class I, which limits speeds to no greater than 10 miles per hour. Track that does not meet Class 1 standards may be designated by the owner as "excepted track". Operations are restricted by several provisions, including prohibitions against operating occupied passenger cars or operating freight trains that contain more than five cars required to be placarded as hazardous. (49 CFR 213.4) Excepted track clearly is not appropriate for the line's desired uses including transportation of oil products and use by tourist trains.

The operating cost estimate is based upon two round trips per week between Ely and Shafter. RLBA believes this is the lowest level of service that could be commercially attractive and thus is appropriate for use in a break-even analysis. The analysis demonstrates that a large volume of traffic is necessary for the service to break even. In fact, that volume is so large that it could not be handled by the projected service, so in reality additional train service, switch crews and locomotives would be needed, pushing the break-even cost yet higher.

The breakeven point as it applies to annual cash outlays is computed to as follows:

Cash operating expenses, other than track maintenance	$ 1,680,000
Routine track maintenance expenses	1,193,000
Program maintenance required to rehabilitate the line	1,708,000
Total annual cash outlays required	$ 4,581,000
Estimated revenue per car	$ 300
Carloads required to breakeven on cash expenses	15,270

In order to commence operations the right-of-way must be purchased and must undergo initial rehabilitation to at least FRA Class I. The additional number of carloads required to service the debt associated with purchase and rehabilitation of the line was computed as follows:

Purchase of right-of-way and closing costs	$ 900,000
Rehabilitation of right-of-way to FRA Class I	2,677,000
Total amount borrowed	$ 3,577,000
Assumed rate of interest	5.42%
Term of loan	10 years
Annual loan payment	$ 473,000
Estimated revenue per car	$ 300
Additional annual carloads required to breakeven on debt service	1,577

Contribution a Tourist Train Could Make to the Operation of the Line

Materials prepared by the White Pine County Economic Diversification Council indicate that possible destinations for tourist railroad excursions are Cherry Creek, Currie and Wells. Cherry Creek is the southern boundary of presumed NNR freight operations. Currie, located about 28 miles north of Cherry Creek, would require operating on track used by unit coal trains. Wells is beyond the operating limit of NNR and would require that the White Pine Historical Railroad Foundation (WPHRF) negotiate access with Union Pacific Railroad.

In order for existing tourism operations to expand (that is, to operate trains north of McGill Junction) it would be necessary for WPHRF to contract with the owner of the track, an entity assumed to be Nevada Northern Railroad (NNR) in the Business Plan. That agreement would need to address a wide variety of operating and financial issues including additional improvements to the track beyond those needed for freight service, financing those improvements and the schedule of fees to be paid by WPHRF for use of the track. Revenues accruing to NNR would depend on that schedule as well as actual WPHRF use of the track over the planning horizon (2002, 2005-2009, 2015 and 2021.

In order to estimate the contribution of WPHRF to the NNR Business Plan, it would be necessary to complete additional research including a market forecast and operating and business plans for WPHRF. Notwithstanding the results of such research, we believe that the contribution of tourist operations on NNR would be marginal to the pro-forma financial results for freight operations presented in the NNR Business Plan. This likely could be confirmed by comparing the orders of magnitude of WPHRF's gross revenue and the line's total annual required cash outlay.

APPENDIX B:

"FINAL DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED REINSTATEMENT OF RAIL FREIGHT OPERATIONS ON THE NEVADA NORTHERN RAILROAD"

Completed by: David Evans and Associates, Inc., June 2002

Final Draft
Environmental Assessment
for the proposed
Reinstatement of Rail Freight Operations on the Nevada Northern Railroad

Prepared for:

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JUNE 2002

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1.0 INTRODUCTION

1.1 BACKGROUND

This Environmental Assessment (EA) has been prepared to analyze the potential environmental consequences associated with the reinstatement of commercial rail freight service and tourist rail operations on the Nevada Northern Railroad (NNR). The EA has been developed in accordance with the National Environmental Policy Act (NEPA).

The NNR is a short line railroad built in 1906 to transport copper ore from the mine at Ruth to Cobre. Kennecott Corporation operated the line until 1983 when the company closed both the smelter in McGill and the railroad operations. In 1987, the railroad was purchased by Los Angeles Department of Water and Power (LADWP) for use in conjunction with a proposed coal-fired electrical power plant in North Steptoe Valley. At the time of the purchase, the historic rail yards in East Ely, the historical rolling stock, and 28 miles of track were deeded to the City of Ely and the Historical Railroad Foundation for a tourist operation. The copper ore mine in Ruth reopened in 1995, and the track was leased to the Northern Nevada Railroad Company (NNRC) and then to BHP Copper to haul copper concentrate to Arizona. When the mine at Ruth was closed in mid-1999, BHP ceased operation of the railroad as well, and eventually BHP terminated its lease with both LADWP and the City of Ely. The rail line has not been used since that time, and there has been no rail freight service available. LADWP has expressed an interest in selling the rail line, since it has no further use for the tracks as part of its utility system.

The White Pine Historical Rail Foundation (WPHRF), the City of Ely and the White Pine County Economic Diversification Council have been working on projects that would allow use of the railroad for freight service and to generate jobs and economic benefits to the community. The City of Ely is also planning to construct an inter-modal transfer site which was considered as part of a recently completed feasibility study/business plan for reestablishing rail freight service to Ely over the NNR rail line, connecting with the Union Pacific Railroad (UPRR) line in Shafter. In addition to the freight service, the purchase and renovation of the track would allow use by the WPHRF as part of its tourist operations.

1.2 PROPOSED ACTION

The proposed action consists of reinstating commercial rail freight service and expanding tourist rail operations on the NNR. This includes the purchase of the NNR right-of-way from LADWP, renovation and maintenance of the track, and operation of the commercial freight service. The project area includes approximately 109.9 miles of track and right of way between McGill Junction and Shafter, commencing at the 18.5 milepost in Shafter and extending south to the 128.4 milepost marker at McGill Junction. The service line connects to 18.2 miles of rail line owned by the City of Ely commencing at McGill Junction, extending southeasterly through Ely to Keystone. The rail service line in total would be approximately 128.1 miles in length.

The approximately 109.9 miles of rail line not currently owned by the City of Ely runs through Goshute and Steptoe Valleys. Portions of the track would need to be repaired prior to using the line on a routine basis for freight service. The track includes 60 and 90 pound rail having track conditions which meet criteria under the Federal Railroad Administration (FRA) classification system for Class 1 track, with maximum speeds of 10 miles per hour (mph). FRA track Class 2 rail would permit freight train speeds of up to 25 mph, and Class 3 would permit freight train speeds of up to 40 mph. This EA provides an analysis of potential environmental impacts associated with restoring the track to qualify for Class 1, 2, and 3 operations.

Commercial rail services would include freight service, including the transport of crude oil into the region for refining. Tourist rail operations would allow for extended excursions to Shafter extending current operations on the NNR line to the adjoining 18.2 miles of track between McGill Junction and Keystone, currently operated by the White Pine Historical Railroad Foundation. Project funding would include a grant by the U.S. Department of Commerce Economic Development Administration (EDA). The funds would be used to purchase the 109.9 miles of track and right of way from LADWP, and for design and construction costs associated with track improvements.

1.3 PURPOSE AND NEED

The City of Ely seeks to accomplish the following primary purposes and needs, through the reinstatement of commercial freight service and tourist rail operations on the NNR:

- To reinstate freight rail operations on the 109.9 miles of track;
- To improve freight rail service in the region;
- To generate revenue for the City of Ely;
- To expand tourist operations from McGill Junction and provide a connection to the Union Pacific line at Shafter;
- To create job opportunities in the surrounding community; and
- To promote economic diversification in the region.

Economic conditions in White Pine County and Elko County have historically followed the boom-bust cycle of the mining industry. Reinstating rail freight service in the region would allow the City of Ely to make strides to end the boom-bust economic cycles, by bolstering ongoing economic diversification efforts and generating jobs in the community. Furthermore, the project would contribute directly to the local economy by creating additional demands for goods and services associated with the operation of the railroad and by generating sales tax revenues in the surrounding communities.

1.4 SUMMARY OF PROJECT ALTERNATIVES

Several alternatives have been considered for the project and are analyzed in this EA. These alternatives include the Preferred Alternative (or Proposed Action), the Class 1 Alternative, the Non-rail Transport Alternative, the New Rail Line Route Alternative, and the No Action Alternative.

The *Preferred Alternative* considers the required restoration of the NNR rail line to reinstate freight rail service and expanded tourist excursions on the rail line between Shafter and McGill Junction (approximately 109.9 miles) in Northeastern Nevada. Rehabilitation work would include replacement of the existing 60-pound rail with 115-pound rail, replacement of approximately 42,000 crossties, dumping and distributing ballast material, and surface alignment of the entire rail line. Removal of existing vegetation within the right of way and application of chemical treatment to retard future growth would also be necessary. The corrugated metal pipe (CMP) culverts and concrete box culverts within the NNR right of way would be either serviced or replaced. Reconstruction of approximately 26 rail/road at-grade crossings and four rail/highway at-grade crossings would be required. Under this alternative, commercial rail services would include freight service for potential industrial users, including the transport of crude oil into the region for refining. Tourist rail operations would also be extended to Shafter through the use of the portion of the NNR line currently operated by the WPHRF. Rehabilitation of the entire 109.9 miles of rail to Class 3 operations is expected to be implemented over a four-year period.

The *Class 1 Alternative* considers the restoration of the NNR tracks to reinstate freight rail service and future tourist excursions on the NNR rail line from Milepost 18.5 in Shafter to Milepost 124.4 at a location north of McGill Junction. Under this alternative, the same restoration work described under the Preferred Alternative would be preformed except a 5.4-mile portion of the track from Milepost 123 to 128.4, where restoration would not include placement of fill material to stabilize the track bed. Wetlands occur in this area that could be adversely affected by rail line restoration efforts. In this 5.4-mile segment, in particular along an approximately one-quarter mile segment in the vicinity of Milepost 123 adjacent to Tailings Creek, the proposed track restoration would not include the placement of ballast to stabilize the track bed, and would limit this segment to solely Class 1 operations. However, long-term track maintenance would likely require most or all of the restoration work along the 5.4-mile track segment that this alternative avoids. Mitigation measures for impacts to wetlands and riparian habitat would not be provided as part of this maintenance activity. The Class 1 Alternative would result in longer trip times, and could increase the potential for derailments along this segment because the rail line would not be optimally stabilized. For the cited reasons, this alternative has been rejected from further consideration.

The *Non-rail Transport Alternative* would use truck transport as a sole means of transporting commercial goods and freight in and out of the region. This alternative would use the existing State Highways 93 and 50 to transport goods to and from destinations outside White Pine County. Destinations to the north would include the UPRR rail interchange points in Wells and West Wendover (along Interstate 80), and destinations to the south would include the UPRR rail interchange point in Caliente, extending from Pioche and farther south to Las Vegas (along Interstate

15). Destinations east would include Baker via Delta, Utah, and Fallon, Nevada, as well as other sites west along Interstate 50. Under the Non-rail Transport Alternative, transportation costs would preclude manufacturing and other industrial operators from locating in the region, which would significantly hinder the ability of the City of Ely and White Pine County to improve current economic conditions. For the cited reasons this alternative has been rejected from further consideration.

The *New Rail Line Route Alternative* considers construction of a 150-mile long rail line from Riepetown to Caliente, Nevada, to connect with the UPRR. Because new right-of-way would need to be secured under this alternative, the cost to implement this rail line alternative was considered prohibitive, and would take several years to implement. In addition, the environmental impacts of creating a new, 150-mile long transportation corridor would be considered significantly adverse. Thus, this alternative was eliminated from future consideration.

The *No Action Alternative* would result in the NNR line remaining unused, and reinstatement of rail freight service or tourist excursions would not occur on this segment of the NNR line. The environmental impacts associated with the necessary track restoration to reinstate rail service would not occur. Impacts associated with the operation of rail service along the NNR would be avoided. The existing underutilized and abandoned conditions would continue to remain along the NNR corridor. Because the ability to provide rail freight service is key to attracting businesses into the region, the No Action Alternative would not provide an opportunity for the City of Ely and White Pine County to improve current economic conditions in the region. For the stated reasons, this alternative has been rejected from further consideration.

1.5 Relationship to Statutes, Regulations and Other Plans

In 1994, the Bureau of Land Management (BLM) prepared an Environmental Impact Statement (EIS) on behalf of Robinson Mining Limited Partnership (RMLP) to evaluate the potential environmental impacts associated with reinstating copper and precious metal mining in the Robinson Mining District near Ely. The EIS addressed potential impacts of rail operations over the existing rail segments, as they relate to BLM's approval of RMLP's mining operations. In 1995, the NNRC was granted approval to reinstitute rail operations on the NNR under 49 C.F.R. Part 1150 Subpart C. Prior to this approval, the NNRC submitted a request to the Interstate Commerce Commission's (ICC) Section of Environmental Analysis (SEA) for a waiver of the requirement that SEA prepare an EIS on the proposed new rail line construction. The NNRC also requested clarification under 49 C.F.R. 1105.6 (d) that the modified certificates sought for the McGill Junction to Keystone segment did not require environmental documentation, because the reinstated operations would not involve traffic that would be generated by the proposed rail line construction. In response, the SEA concluded that environmental documentation would not be required to transport the commodities to be handled under the modified certificate.

This EA was prepared to fulfill the requirements of NEPA which apply to federal agencies when activities these agencies manage, regulate or fund have an affect on the environment. Specifically,

this EA evaluates the potential environmental impacts of purchasing the NNR rail line, renovation of the track, and commercial rail freight operations on the rail line, which would obtain funding from the U.S. Department of Commerce Economic Development Administration (EDA).

During the preparation of this EA, a number of governmental organizations were consulted to solicit their comments on the proposed project and environmental issues which should be addressed in this document. In addition, a scoping meeting was held on April 11, 2002 to facilitate comments and discussion of any potential environmental impacts resulting for the proposed project. The responses to this consultation process are included in Appendix A. The issues raised by the respondents, as well as requested mitigation, will be discussed in the appropriate sections of this EA.

1.6 SUMMARY OF ENVIRONMENTAL CONSIDERATIONS

1.6.1 Potential Environmental Effects

Reinstatement of freight rail service on the NNR segment would not result in significant adverse environmental impacts. Potential impacts would include those associated with track restoration activities, and impacts during operations and maintenance, such as a potential hazardous materials spill or a rail-caused fire. Issues and potential environmental impacts, such as the potential for hazardous material releases, rail-caused fires, potential air quality impacts, and potential impacts to wetlands would be mitigated to below a level of significance through measures presented in this EA.

1.6.2 Environmental Justice

As required by Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", this EA identifies and addresses environmental justice concerns, including human health, economic and social effects, to determine if the proposed action would result in disproportionately high and adverse human health or environmental effects to minority populations or low-income populations. Documentation included in this EA addresses environmental justice concerns. Section 3.0 of this EA presents a discussion of the Affected Environment, and Section 4.0 addresses the Environmental Consequences of the proposed reinstatement of freight rail service on the NNR rail line. Impacts associated with the project would be fully mitigated by measures presented in this document. Implementation of recommended mitigation measures would ensure that significant adverse effects are reduced to below a level of significance and that impacts associated with the proposed project would not adversely affect isolated populations, low-income populations, and minority population. This EA concludes that the proposed action would not result in significant impacts to public health and safety (see Subsection 5.8.2), and that the proposed reuse of the NNR tracks would result in beneficial social and economic effects, through the creation of employment opportunities and revenue sources for the citizens of the City of Ely and White Pine County (see Subsection 5.6.2).

1.7 AGENCY COORDINATION

A variety of agencies have been consulted or coordinated with as part of the project design and planning and the environmental review process. Specifically, representatives have consulted with the City of Ely, White Pine County, the U.S. Army Corps of Engineers (ACOE), the United States Fish & Wildlife Service (USFWS), and Bureau of Land Management (BLM) staff in the preparation of this document. Project representative also consulted with the State Historic Preservation Office (SHPO) for cultural and archeological resource clearance of the site. Additionally, during the preparation of the biological surveys, Pacific Southwest Biological Services obtained an updated list of threatened, candidate and species of concern prepared by the USFWS to determine potential impacts to sensitive biological resources. Based on these consultations and coordination, the project has been designed to minimize development impacts on the NNR right of way and adjacent public and private lands.

2.0 ENVIRONMENTAL SETTING

This section provides a discussion of the regional and environmental setting for Steptoe and Goshute Valleys and where the NNR line is located.

2.1 REGIONAL SETTING

As shown in Figure 2-1, *Regional Location Map*, the project area lies within rural northeastern Nevada, in the Great Basin section of the Basin and Range physiographic province. The Great Basin is noted for long, linear mountain ranges separated by broad valleys that usually exhibit interior drainages. The mountain ranges are five to 20 miles in length. The valleys are often equal in length to the mountain ranges and are usually at least 10 to 30 miles across. The Basin and Range Province is tectonically active with frequent earthquakes and well-developed recent fault scarps (steep rock faces formed by shearing of rock) common along the margins of the valley. The existing NNR rail line runs through the Steptoe Valley and the Goshute Valley in the central section of the Great Basin. Figure 2-2, *Vicinity Map*, shows the NNR line location.

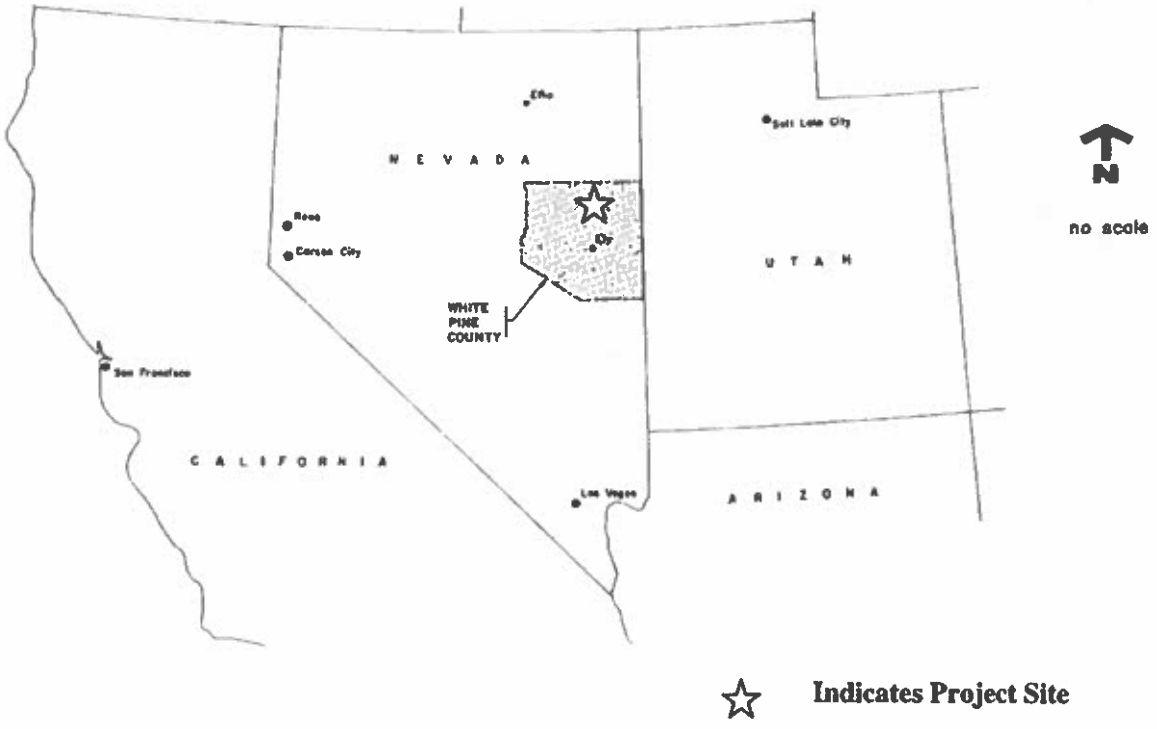


FIGURE 2-1 REGIONAL LOCATION MAP
Source: Davis Evans & Associates

N

The project lies within White Pine County and the southern portion of Elko County. White Pine County consists primarily of public lands (93 percent) under the ownership and management of BLM. The BLM, National Park Service, USFWS, and the U. S. Department of Agriculture's Forest Service lands manage the wilderness areas, public parks, and ecological preserves within the County. Approximately seven percent of the County is privately owned and consists of mostly undeveloped land, rural developments, and agricultural operations.

The climate in the area is semi-arid, mid-latitude with low precipitation, influenced by the surrounding mountains and valleys in the region. Rainfall occurs during all seasons, at an annual average of ten to fourteen inches. Average monthly maximum temperatures in the project area ranges from 86° Fahrenheit (F) in July to 38° F in January. Average monthly lows range from 9° F in January to 48° F in July. The region tends to be windy. Prevailing wind direction is predominantly southerly, indicative of the northerly-southerly direction of Goshute and Steptoe Valleys.

The most populated city along the NNR rail line is Ely, which is located along the rail line's southern segment owned by the City of Ely in Steptoe Valley. The City of Ely had a population of 4,041 in 2000, and is the surface transportation hub of White Pine County. White Pine County had a 2000 population of approximately 9,100 persons and a housing stock of 4,439 housing units. The County has not experienced growth in the last decade, chiefly due to the closing of the mine operations by RMLP and termination of freight service on the NNR by BHP.

The northern segment of the NNR is located in Elko County. Like White Pine County, Elko County consists of mostly public owned lands, and agricultural uses dominate the privately held lands. Elko County had a 2000 population of approximately 45,300. However, the NNR is located in a portion of Elko where there is no significant population base and little demographic information. Only a small fraction of the population of Elko County lives in the vicinity of the NNR, and thus is much less affected by rail operations. For this reason, the EA focuses chiefly on White Pine County and the City of Ely when discussing associated impacts.

2.2 PROJECT LOCATION AND SETTING

The project is located in White Pine and Elko Counties, within the Great Basin section of the Basin and Range Province of Nevada, as shown in Figure 2-2, *Vicinity Map*. The Steptoe and Goshute Valleys where the NNR rail line is located consists of generally rolling terrain at elevations of 6,500 to 7,000 feet above mean sea level (AMSL).

White Pine and Elko Counties are rural in character. Ninety-three percent of the land in White Pine County and roughly 60 percent of land in Elko County is owned by the federal government. Agricultural uses, such as cattle grazing and alfalfa production, comprise most of the private land use. The City of Ely is located approximately 10 miles south of McGill Junction (Milepost 128.4), the southern limit of the NNR rail line this project would restore.

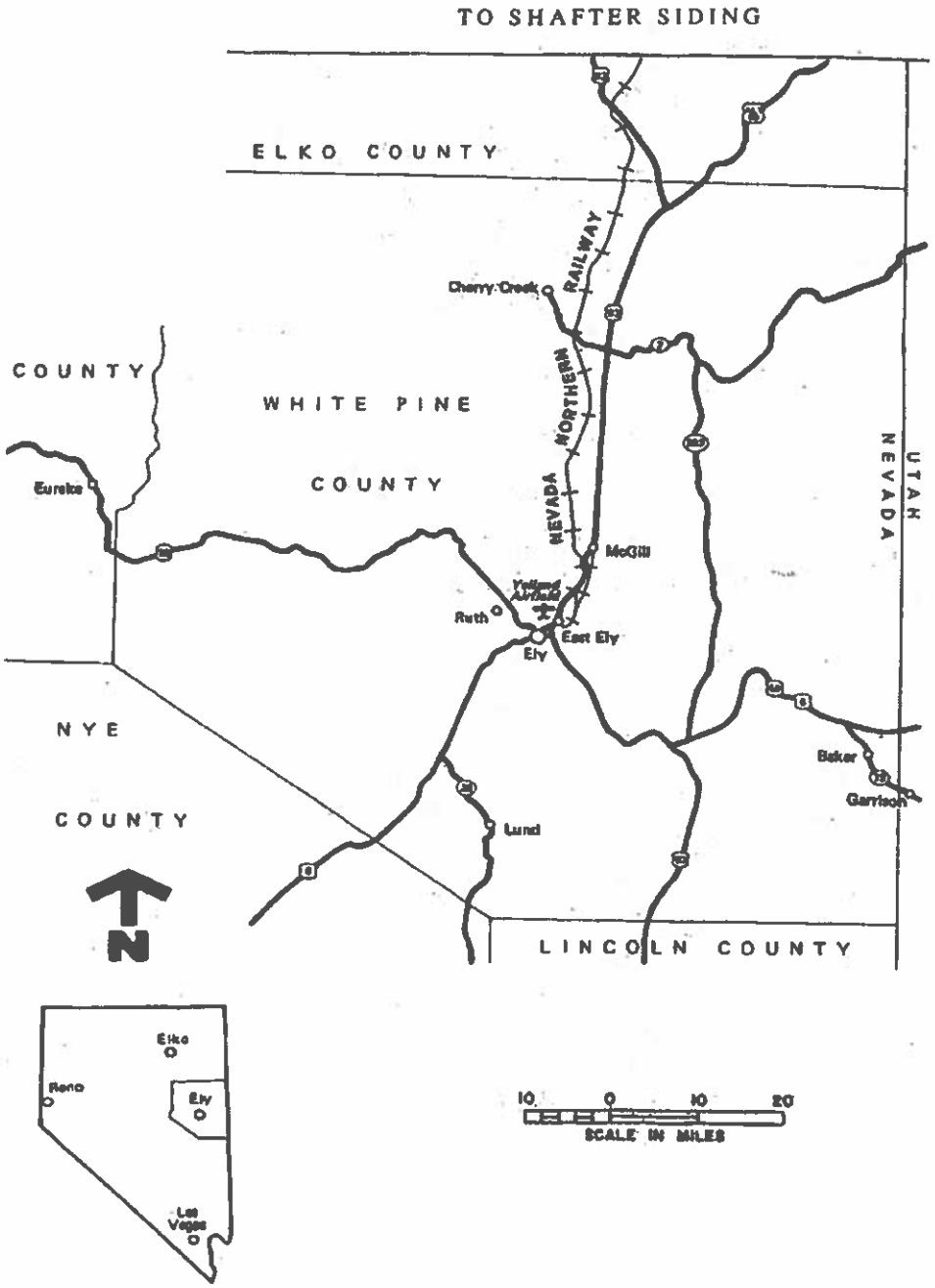


FIGURE 2-2 VICINITY MAP
Source: David Evans and Associates, 2001

The NNR line includes approximately 109.9 miles of track and right of way owned by the LADWP running through Steptoe and Goshute Valleys, between McGill Junction and Shafter. The line begins at the 18.5 milepost at Shafter and extends to the 128.4 milepost marker at McGill Junction. The service line then connects along 18.2 miles of rail line owned by the City of Ely commencing at McGill Junction, extending south through Ely to Keystone. The rail line in total is approximately 128.4 miles in length.

The NNR railroad tracks have a right of way extending 100-feet along either side of the tracks, except in some sections where the right of way narrows to 50 feet from centerline on each side. These narrow sections are located north and south of Shafter, in Currie, and south of Greens. The right-of-way widens in several locations: Cherry Creek widens to 411 feet, Mizpah to 488 feet wide, Dolly Varden to 377 feet wide, and at intermittent sections at Currie.

The annual precipitation rate along the NNR rail line is low, averaging 5 to 15 inches annually (all forms). Surface water in the region is generally the result of precipitation and spring runoff from the adjacent mountain ranges. Although the Steptoe and Goshute Valleys do not have an outlet for these flows, evaporation and transpiration rates exceed precipitation in the valleys, resulting in a net loss of water in the basin. There are 24 CMP culverts, one concrete pipe culvert, and seven concrete box culverts crossing the NNR line between Milepost 18.5 and Milepost 128.4 permitting surface water movement.

The NNR has not been used since 1999 and has been subject to dumping activities, including refractory bricks, slag, metal debris, and waste ores from historic mining operations. There are also barite stockpiles that were used for ballast materials along portions of the railway. The majority of the lands surrounding the NNR support agricultural uses (livestock grazing and alfalfa production) or are vacant land. Historically, several stations were located along the NNR rail line, mainly for handling mining supplies. However, few of the supporting structures have remained. These stations were located in Shafter, Decoy, Dolly Varden, Mizpah, Currie (some structures still remain), Goshute, Cherry Creek (some structures remain), Warm Springs, and McGill Junction (the foundation of a section house, a bunk house, and a well remain). Additionally, five sidings were historically located along the NNR rail line, at Green, Ray, Raiff, Steptoe, and Glenn. (Ray is being renamed Shellborne and Raiff is being renamed Requa). Refer to Figure 3-3, *Regional Rail Lines*, for the location of the sidings and former stations along the NNR corridor.

3.0 DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES

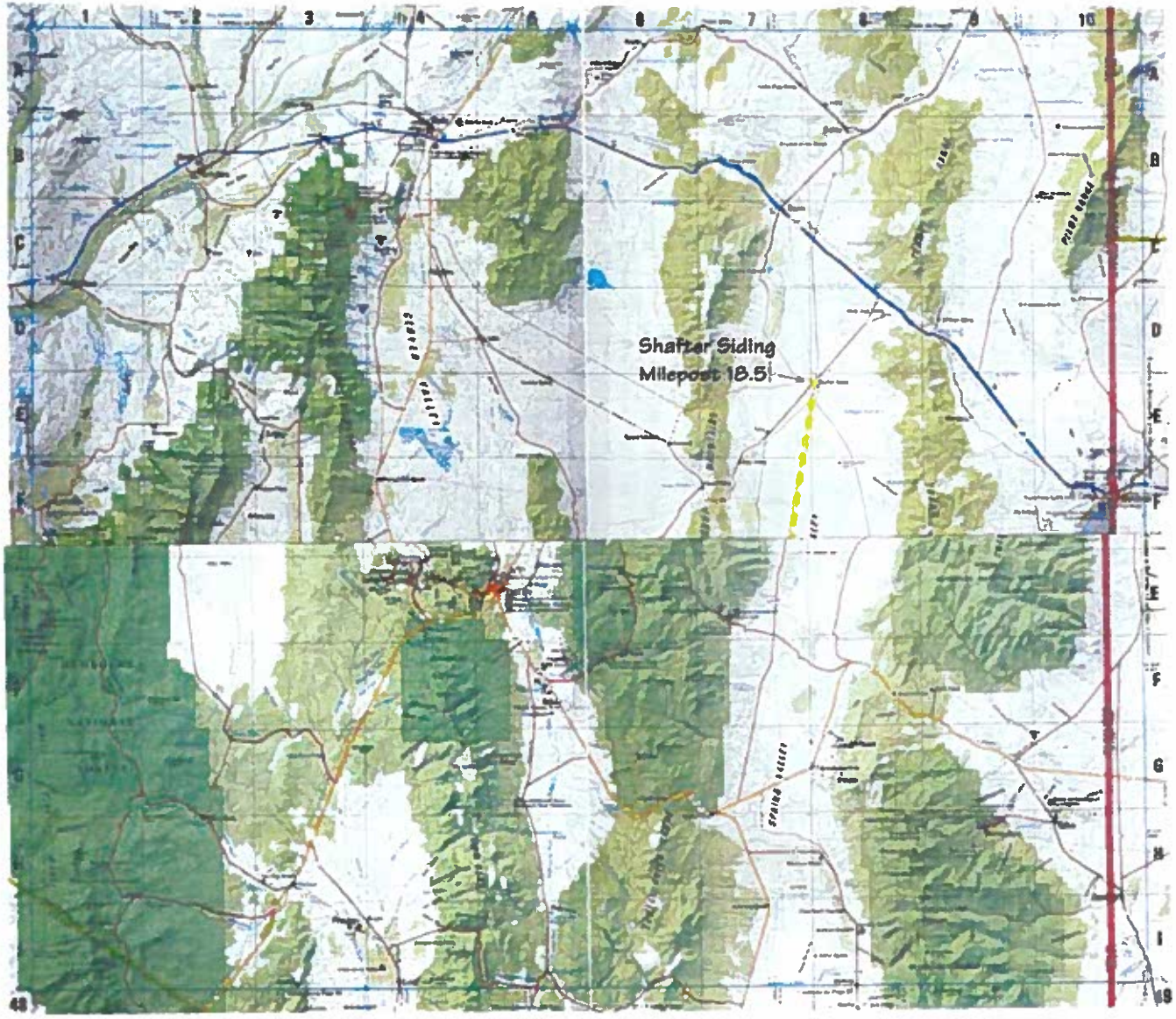
The following alternatives were initially considered for the proposed reinstatement of rail freight operations on the NNR rail line. The proposed project (identified as the Preferred Alternative, see Figure 3-1, *Project Area Map*) and alternative means of implementing the Proposed Action, as considered by the City of Ely, are described in this section and addressed in Section 5.0, Environmental Consequences. The No Action Alternative is also considered. The purpose of the alternatives analysis is to allow informed decisions concerning the environmental consequences of the Proposed Action and the alternatives by responsible and reviewing agencies, the public, and decision makers.

Alternatives include the Preferred Alternative (or Proposed Action), the Class 1 Alternative, the Non-rail Transport Alternative, the New Rail Line Route Alternative, and the No Action Alternative (see Figure 3-2, *Development Alternatives Plan*). The north-south orientation of the Steptoe and Goshute Valleys and the generally unfavorable gradient and grading conditions for alternative routes oriented east-west made selection of a new railroad corridor difficult. The least amount of ecological disturbance would occur if the existing NNR right of way is used. Due to these considerations, other new rail alternative routes were not included.

3.1 PREFERRED ALTERNATIVE OR PROPOSED ACTION

The proposed action involves the City of Ely acquiring from LADWP the NNR rail line between Shafter and McGill Junction and performing the required restoration, reinstating freight rail operations, and expanding tourist excursions over this segment of the NNR. Commercial rail services would include freight service for industrial users, including the transport of crude oil into the region for refining. Tourist rail operations would also be used for extended excursions to Shafter by expanding tourist operations on the adjoining track between McGill Junction and Keystone, as currently operated by the WPHRF. Figure 3-3, *Regional Rail Lines*, indicates the relationship of the NNR to other freight rail routes in the region, and the location of existing and former sidings and station along the NNR.

Rail line rehabilitation would include replacement of the existing 60-pound rail with 115-pound rail, replacement of approximately 42,000 crossties, dumping and distributing of ballast material, and surface alignment of the entire rail line. Four of the 24 CMP culverts within the NNR right of way, at Mileposts 64.7, 64.8, 80.7, and 98.7, should be replaced. Of the seven concrete box culverts along the NNR line, four are considered marginal and may require repair or replacement, as there is some deterioration. Additionally, removal of existing vegetation within the right of way and application of chemical treatment to retard future growth would be necessary. Finally, reconstruction of 26 rail/road crossings and at least four rail/highway grade crossings would be required. Track restoration activities are discussed in detail in the Engineering Report and Cost Estimate prepared by R.L. Banks & Associates, Inc. Figure 3-1, *Project Area Map,* illustrates the location of the rail line being considered for rehabilitation and reuse.



Indicates Nevada Northern Rail Line included in the proposed project

FIGURE 3-1
PROJECT MAP

The proposed reinstatement of rail freight service and restoration would accommodate an extension of excursion train operations of the WPHRF, out of the historic rail yard in East Ely from McGill Junction to Shafter. Thus, revenues for the WPHRF would be increased by the proposed project. However, the City of Ely and the White Pine Economic Diversification Council are interested not only in the improvement of economic conditions for Ely and the WPHRF, but also in the communities along the NNR corridor. The reinstatement of rail freight service on the NNR would increase the viability for other industrial uses that would consider operating in the region, which in turn would generate construction jobs and permanent employment for the residents of the area. These employees would in turn spend money on local businesses and generate sales and property tax revenues for the surrounding communities. The industries served by the NNR rail line would also purchase goods and services throughout the region. In addition, restoring the NNR to permit commercial rail freight service would benefit the community by facilitating more cost efficient transport of goods in and out of the region.

3.2 CLASS 1 ALTERNATIVE

This alternative seeks to reduce potential impacts to wetland areas associated with the required restoration work on the NNR rail line. Under this alternative, the work described under the preferred alternative would be preformed excepting the southern 5.4-mile portion of tracks. Rail tracks and crossties would be replaced, ballast materials distributed and surface alignment would be improved from Milepost 18.5 to Milepost 123.0. Restoration work within the 5.4-mile segment from Milepost 123 to 128.4 would not include the placement of ballast to stabilize the track bed, including where the existing shoulder is narrow and in proximity to Tailing Creek. In this 5.4-mile segment, restoration of the track would qualify the track solely for Class 1 operations. Thus, the southern segment of the NNR tracks would only permit slow train speeds. However, long-term track maintenance would likely require continuous restoration along this track segment, and future impacts to Tailings Creek in this segment would not be avoided. By not optimally stabilizing the track there would be an increase in the potential for derailments along this segment. This alternative would not necessarily avoid impacts to Tailings Creek; would create safety hazards; and would require slower train speeds. For the cited reasons, this alternative has been rejected from further consideration.

3.3 NON-RAIL TRANSPORT ALTERNATIVE

The City of Ely initially considered use of truck transport as a sole means of transporting commercial goods, including crude oil destined for an oil refinery. This alternative would lead to the use of the existing roadway network, such as State Highways 93 and 50, to transport goods to and from destinations outside White Pine County. Destinations to the north would include the UPRR rail interchange points in Wells and West Wendover (along Interstate 80), and destinations to the south would include the UPRR interchange point in Caliente, extending from Pioche and farther south to Las Vegas (along Interstate 15). Destinations to the east would include Baker via Delta, Utah and Fallon, Nevada, as well as other sites west of Interstate 50. Truck transport of goods is necessary to complement a rail freight system in the region, but industries are reluctant to locate in the region as long as trucks remain the sole transportation option for the bulk of shipments. Existing tourist

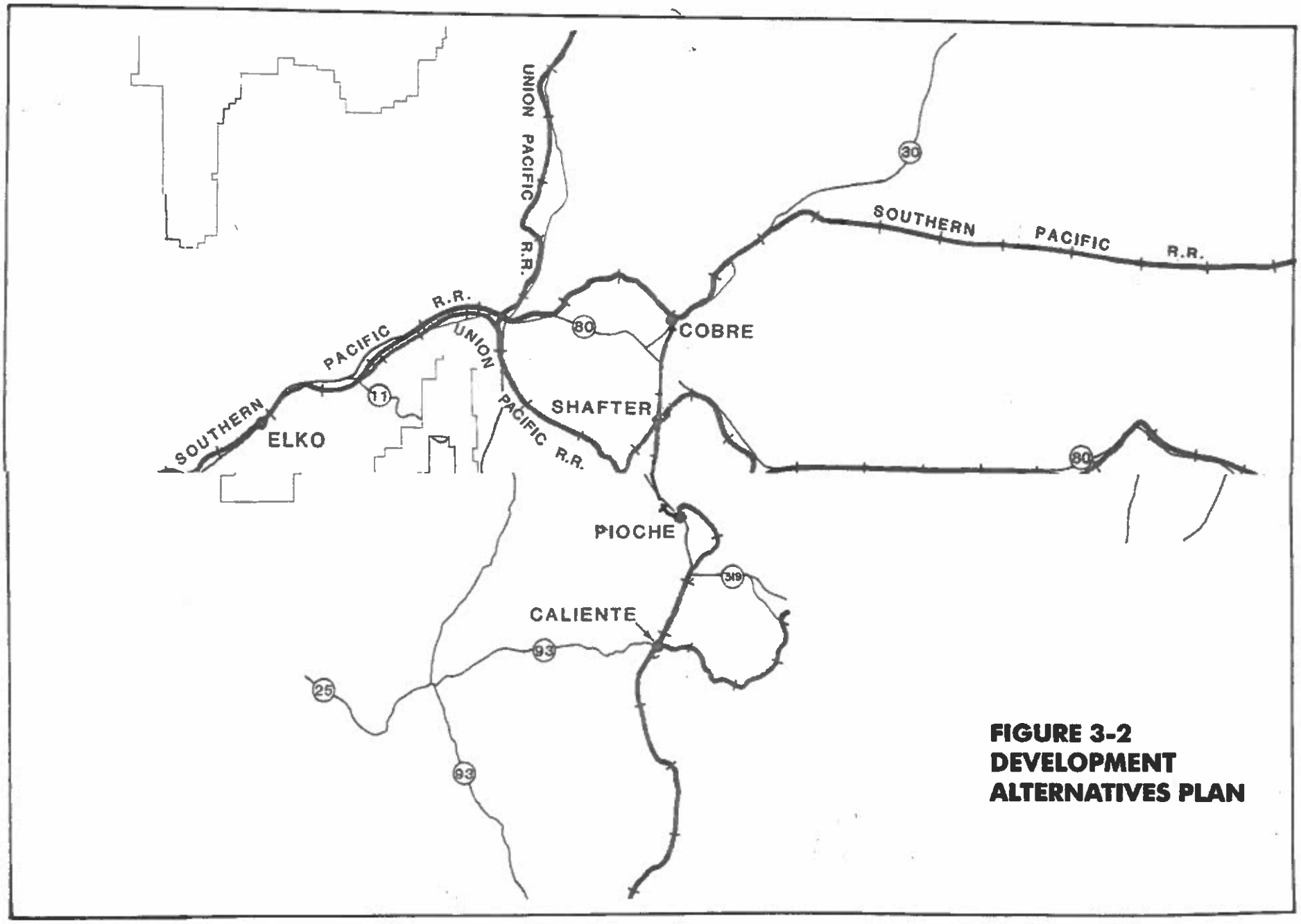


FIGURE 3-2
DEVELOPMENT
ALTERNATIVES PLAN

operations would not be expanded. In addition, reuse of the NNR line would not occur. This alternative has the potential to increase costs, as well as environmental impacts of truck transport as compared to rail movement associated with energy, air quality, noise, and safety issues. This alternative has been rejected from further consideration.

3.4 THE NEW RAIL LINE ROUTE ALTERNATIVE

The City of Ely considered construction of a new 150-mile long rail line from Riepetown to Caliente, Nevada, to connect with the Union Pacific Railroad. Since no right of way for the new rail line exists, this alternative would require the acquisition of private and public lands along the route. The realignment study, environmental clearance, and permit processing for this alternative, coupled with the acquisition process, would result in extensive time and financial investments that the City of Ely and White Pine County cannot afford. In addition, construction of a new rail line route would result in potentially significant adverse impacts associated with construction over vacant and undeveloped lands, and with the introduction of train operations and air quality, noise, and other impacts on presently vacant areas. Displacement of agricultural operations may also occur, along with impacts to sensitive resources along the alternative alignment. This alternative was eliminated from consideration because the right of way would need to be secured, the cost is prohibitive, and because this alternative would take several years to implement. In addition, environmental impacts of creating a new, 150-mile long transportation corridor could be significantly adverse. Thus, this alternative has been rejected from further consideration.

3.5 THE NO ACTION ALTERNATIVE

The No Action Alternative would result in the NNR line remaining unused, with no reinstatement of rail freight service or tourist excursions on the NNR line. The environmental impacts associated with the necessary restoration to reinstate rail service would not occur. Impacts associated with the operation of rail service along the NNR would be avoided. No other uses would occur within the NNR right of way. Essentially, the existing underutilized and abandoned conditions would continue to remain along the NNR corridor, and the condition of the rail line would continue to deteriorate.

This alternative would not meet any of the City's objectives as described in the Introduction to this document. Under this alternative, the City of Ely would have difficulty finding industries that would locate in the region without the capability of accessing a local rail service connection. Thus, under this alternative, the anticipated opportunities for providing regional employment would be significantly hindered. In addition, an expansion of the excursion train operation of the WPHRF would not occur over the NNR line. Specifically, the No Action Alternative would not provide an opportunity for the City of Ely and White Pine County to improve current economic conditions. This alternative would not meet any of the City's objectives and has been rejected from further consideration.

FIGURE 3-3
REGIONAL RAIL LINES

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section describes the existing conditions at the NNR rail line and the surrounding area, as they relate to the various environmental issues under consideration. The discussion provides a baseline from which changes that would result from the proposed reinstatement of freight service on the NNR are assessed.

The 1985 EIS for the White Pine Power Project, and the BLM 1994 EIS for the Robinson Mining Limited Partnership (RMLP) to reinstate copper mining activities in the mining district near Ruth, Nevada form the basis for the discussion of land resources in this section. The 1995 Environmental Assessment for proposed rail line construction and reinstatement of freight operations over the NNR rail line associated with the planned mining operations in Ruth, prepared by the Interstate Commerce Commission (ICC), also draws from these documents and is referred to and cited in this document. A brief summary of the conclusion of those documents is provided below. All documents are on file with the City of Ely and the White Pine County Economic Diversification Program office, located at 957 Campton Street, Ely, Nevada 89301.

- *White Pine Power Project 1985 EIS.* This document considered the environmental impacts associated with development of a power generation facility in White Pine County. Development included: power transmission systems, water transmission systems, and microwave stations throughout eastern Nevada; coal transportation systems from mines in Utah, Colorado, and/or Wyoming over existing, upgraded and new railroad to the facility; and the relocation of Highway 93. It was determined in this document that no authorization would be needed to upgrade the NNR rail line used as part of the coal transportation system.

- *RMLP 1994 EIS.* This document considered the environmental impacts associated with reinitiation of mining operations in the Robinson Mining District. Known as the Robinson Project, it would utilize over 2,000 acres BLM managed land. This document authorized the reinstatement of rail freight service over the NNR rail line owned by LADWP from Cobre to McGill Junction, approximately 128 miles in length, and over the 18.2-mile rail line operated by the WPHRF from McGill Junction to Keystone.

- *ICC Rail Line 1995 EA.* This document evaluated the environmental impacts associated with the construction of a new 3.13-mile long rail line between Keystone and Riepetown. This rail line would connect with the WPHRF line and with the NNRC rail system, and serve the mining operations in Ruth approved as part of the Robinson Project. This document authorized the construction of this rail line.

4.1 LAND RESOURCES

The following sections include baseline data for geologic conditions in the project region. Discussions on topography, soils, various seismic hazards and landslides are summarized below.

4.1.1 Geologic Setting and Topography

The project area lies within the Great Basin section of the Basin and Range physiographic province. The Great Basin is noted for long, linear mountain ranges separated by broad valleys that usually exhibit interior drainage. The mountain ranges are approximately five to 20 miles in length. The valleys are often equal in length to the mountain ranges and are usually at least 10 to 30 miles across. The Basin and Range Province is tectonically active with frequent earthquakes and well-developed recent fault scarps (steep rock faces formed by shearing of rock) common along the margins of the valleys. The NNR is mainly situated east of the Cherry Creek Range and the Egan Range along the southernmost alignment, on rolling terrain at. elevations of about 6, 800 feet to 7,000 feet AMSL, the terrain slopes generally to the west. The existing rail line is located in the Steptoe Valley (southern segment) and the Goshute Valley (northern segment).

4.1.2 Soils

Sediments eroded from the carbonate and volcanic rocks in the area comprise the bulk of the valley fill materials. These unconsolidated materials include gravel, sand, silt, and clay deposited under subaerial or lacustrine conditions. Most of the valleys are underlain by deposits of older, very coarse gravel and boulders deposited by streams on the alluvial fans and narrow pediments along the mountain fronts. The alluvial fan deposits range from coarse sand and gravel, near the heads of the fans (adjacent to the range fronts), to fine sand and silt toward the distal portions of the fans (closest to the valley floor). Silt and clay predominate in the playas in the lowest parts of the internally drained valleys.

4.1.3 Seismic Hazards

The Basin and Range Province has experienced several earthquakes of Richter Magnitude (Magnitude) 7.0 or greater since 1840. Each of these earthquakes occurred within a north-south treading zone extending from Owens Valley in east-central California northward through west-central Nevada. The largest of these events are the 1872 Lone Pine (Magnitude 8.0) and 1915 Pleasant Valley (Magnitude 7.6) earthquakes. These earthquakes have been accompanied by zones of surface rupture up to 50 miles long and three to six miles wide, with scarps as high as 20 feet. In White Pine County, however, earthquakes larger than Magnitude 5.0 are not known to have occurred. Table 4.1, *Major Seismic Events in Nevada*, lists major historic earthquakes that have occurred in the Great Basin region and vicinity. None of these earthquakes are associated with faults in White Pine County.

Active and potentially active faults in the Basin and Range Province appear to be evenly distributed throughout the region and are not confined to a particular area. Figure 4-1, *Regional Earthquake Faults*, shows their general location. The locational distribution of large historic earthquakes is misleading if used for determining seismic risk. In the long term, large magnitude earthquakes could occur anywhere throughout the Basin and Range Province. In the near term (the operating life of the

NNR), earthquakes could occur along the north-south zone of historic seismicity previously discussed or could occur along active faults.

TABLE 4-1
Major Seismic Events in Nevada

Event Date	Epicenter	Maximum Magnitude (M)	Area (sq. miles)
1845, possibly 1852	Stillwater area (?) possibly Pyramid Lake	Greater than 7.0	Unknown
October 2, 1915	Pleasant Valley	Approximately 7.8	500,000
December 20, 1932	Cedar Mountains	7.3	500,000
December 16, 1954	Fairview Peaks and Dixie Valley (2 events, 4 minutes apart). Fairview Peak approximately 34 miles south of Dixie	7.1; 6.8	200,000

Notes to Table:

1. **Magnitude based on the Richter scale.**
2. **Area represents the area over which the effects of the earthquake were felt.**

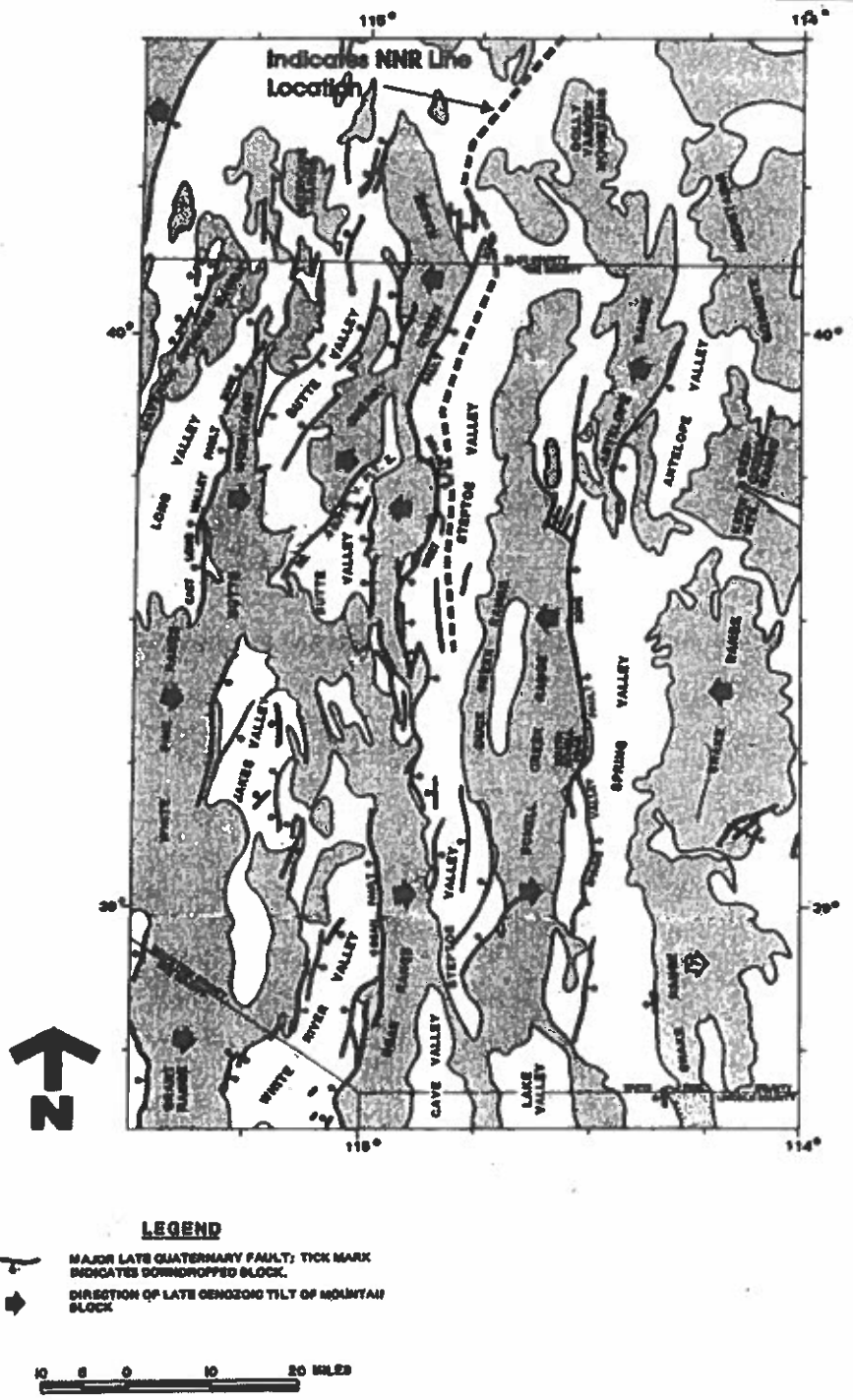


FIGURE 4-1 REGIONAL EARTHQUAKE FAULTS
Source: David Evans & Associates

4.1.4 Liquefaction Hazards

Liquefaction and dynamic settlement are natural phenomenons defined by the loss of soil strength from sudden shock (usually earthquake shaking). Liquefaction occurs when granular (loose, cohesionless, and not clayey) soils are saturated with water (within 50 feet of the surface) and subjected to vibration. Pressure in the water within the soil increases, and the soil particles become suspended in water. The liquefied soils then behave like a thick liquid. Liquefaction causes excessive structural settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations. Dynamic settlement can occur in both dry and wet soils.

Based on previous geotechnical investigations of the project area, the potential for liquefaction and dynamic settlement is not expected to be a major geotechnical hazard in the area. Minor exceptions include loose silty sand of mudflow origin and aeolian sand. However, these conditions are not found near the NNR right of way.

4.1.5 Hydrocompaction

Hydrocompaction (soil collapse) is a phenomenon whereby soils, with a loose particle structure and weakly cemented by water soluble minerals or by clay bonding, collapse under their own weight or under foundation loading upon initial wetting. The potential for hydrocompaction is greatest in soils associated with young alluvial fan deposits which tend to be underconsolidated and, therefore, may be moderately compressible under heavy structural loads. Due to the age of the NNR rail line and the absence of hydrocompaction conditions occurring on the rail line, this is not considered to be an issue.

4.1.6 Landslides

Landslides are the downward movement of rock and soils, usually due to gravity, on hillsides and slope banks as the materials become unstable. Due to the relatively shallow slope gradients present in the valley floors, landsliding of unstable slopes is not present along the NNR rail line.

4.2 WATER RESOURCES

The 1985 EIS for the White Pine Power Project, and the BLM 1994 EIS for the RMLP to reinstate copper mining activities in the mining district near Ruth, Nevada form the basis for the discussion of water resources in this section. The relevant findings of these documents are summarized below.

4.2.1 Hydrologic Setting and Surface Waters

The NNR rail line lies in the Steptoe Valley and Goshute Valley Basins. The Steptoe Valley Basin, in which the southern portion of the NNR line is located, has a drainage area of approximately 1,975 square miles. This basin extends roughly 110 miles north from the southern end of White Pine County to the southern part of Elko County. Rainfall ranges from a low of six inches per year in the valley to more than 20 inches per year in the mountains that border the basin. Evaporation and transpiration by plants generally exceed precipitation, leading to a net loss of water from the basin. Flow into the Steptoe Valley Basin comes from the adjacent mountain ranges both as surface and subsurface flow, primarily in the late spring. Similar conditions are present in the Goshute Valley Basin.

A wetland survey was conducted through review of the National Wetland inventory maps and an aerial reconnaissance conducted during October 1993.[1] Wetland areas were found along the existing NNR line. Sensitive water sources that occur along the existing railroad corridor include Steptoe Slough, Duck Creek, Bassett Lake, the area north into Cherry Creek, Goshute Lake, and Shafter Knoll (located within Goshute Valley north of Raif Siding). Some of the wetlands along the existing rail corridor would likely be within the jurisdiction of the ACOE.

Ten wetland areas (19 linear miles total) occur along and near the existing NNR rail corridor (See Figure 4-2, *Wetlands Area Map*). Of those 10 areas, six are located along Duck Creek, which generally parallels the railroad grade. The largest wetland area traversed by the railroad corridor is west of the town of McGill at the interface of the historic tailings pond and the railroad embankment. At this location, extensive wetland areas are present along both sides of the railroad embankment. The railroad also crosses the western edge of Goshute Lake, an ephemeral lake. Six of the ten wetland areas are classified as palustrine emergent wetlands, one as riverine intermittent streambed (near Cherry Creek Station), one as palustrine emergent/open water (south of Goshute Lake), one as lacustrine littoral unconsolidated shore (Goshute Lake), and one as numerous wetland basins (north of Raif Siding). Potential impacts of the proposed line on drainage ways and wetlands are discussed in Section 5.2 Water Resources.

[1] A wetland is defined as an area that is inundated or saturated by surf ace or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are valuable because they provide habitat for a variety of wildlife species and because they filter overland runoff, serve as stormwater storage basins, and stabilize streambanks.

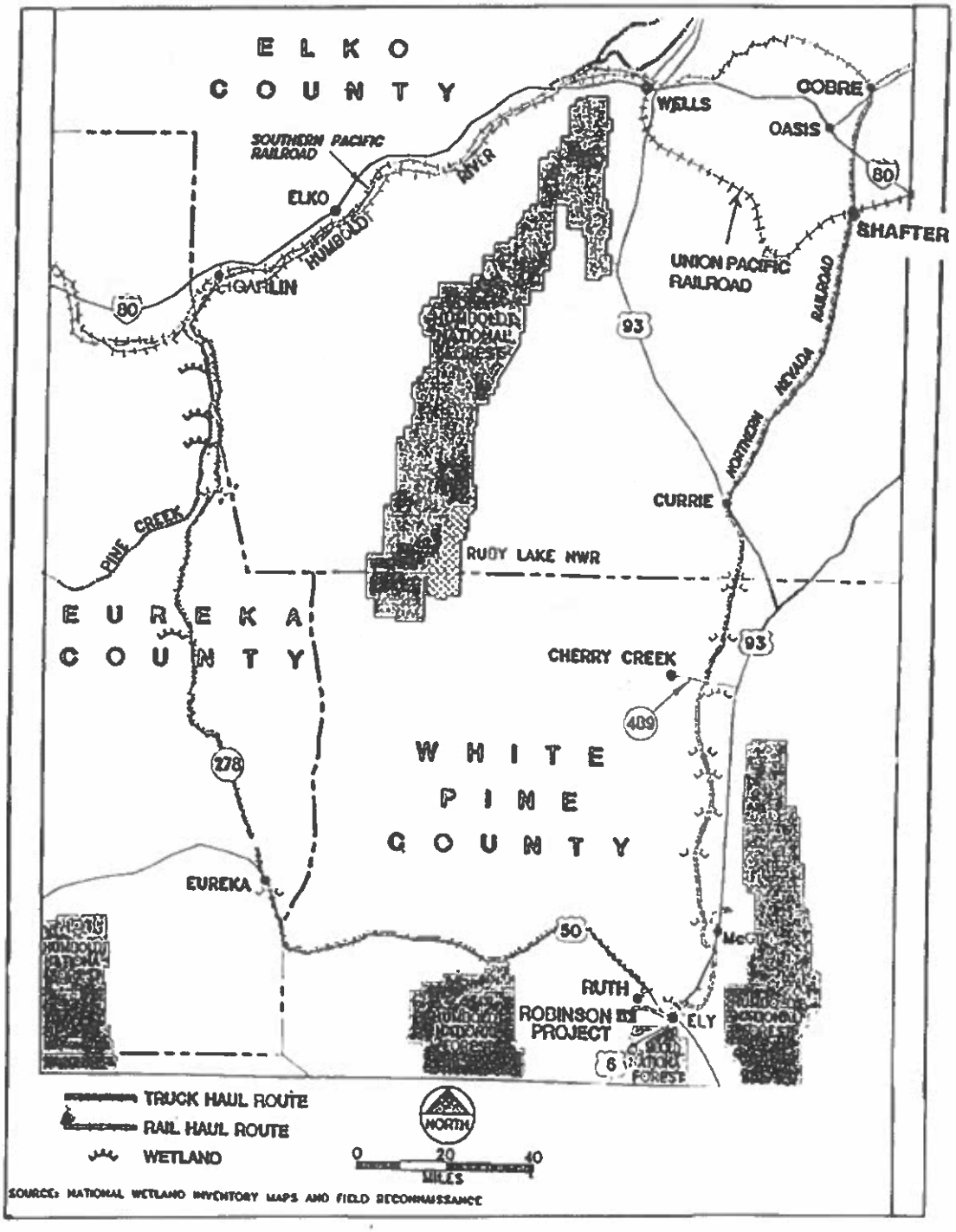


FIGURE 4-2 WETLANDS AREAS MAP

4.2.2 Groundwater Resources

Groundwater in the Egan Range west of the project site, the Robinson Mining District, and along the rail line corridor occurs primarily in Paleozoic limestone and secondarily in the alluvial gravels of the stream valleys. Groundwater in the alluvial valleys is unconfined and found at varying depths in the gravels depending on topography and the permeability of the gravels.

Groundwater Quality

Figure 3-1, *Project Map*, shows regional surface hydrology features. Surface water in the region originates from precipitation runoff, snowmelt, and groundwater base flow to trunk streams. Past mining activity, especially the historical acidification of dumps for copper leaching in the Robinson District, has degraded both surface waters and groundwaters. Past rail operations have not likely caused significant groundwater degradation. There is no historical evidence that underground storage tanks (USTs) were used in association with rail line operations. However, a suspect UST was identified in a previous site reconnaissance at Shafter, north of the highway crossing and outside the NNR right of way. It is believed this UST contained fuel to operate a Union Pacific switch gear, which now appears to operate on propane, and no visual impacts of contamination were noted.

The proposed rail line restoration would occur in the vicinity of the tailings pile at McGill, between Mileposts 123 to 128.4. In this area, drainage channels are located on both sides of the track, with the water course (Tailings Creek) on the west side connecting with Duck Creek and eventually draining into Bassett Lake.

4.2.3 Water Supply

Water use in the vicinity of the right of way is limited to irrigation water for agriculture, which is provided by individual groundwater wells. A small portion of the runoff from agricultural uses in the Steptoe and Goshute Valleys ends up in local creeks, and an extensive network of culverts allows pre-rail construction drainage patterns from being impeded.

4.2.4 Flood Hazards

Flood hazards are not considered to be a significant concern for the NNR. There is no historical evidence that flooding affected track or rail operations during the time Kennecott, NNRC, or BHP operated over the rail line. The NNR corridor has no FEMA Zone classification.

4.3 AIR RESOURCES

The following sections include baseline data on air resources in White Pine County, based mainly on information obtained from the 1985 EIS for the White Pine Power Project. The discussion of the existing air quality environment is summarized below.

4.3.1 Climate

White Pine County is located near the southern rim of the Great Basin of the western United States. Climate in the project area is semi-arid mid-latitude, with the mountains and valleys influencing the regional climate. Local climate is influenced by the interior location, regional weather systems, and the north-south topographic orientation of the Mountains and Valleys which dominate the area. Valleys are typically 50 to 100 miles in length and 10 to 15 miles in width.

The average annual temperature in Ely, Nevada, is 44°F. The warmest temperatures occur in July, with an average daily maximum is 86°F and an average daily minimum is 48°F. The coolest month is January, which averages a daily maximum of 38°F and a daily minimum of 9°F. Temperatures below freezing (32°F) occur almost every day in December and January and, on the average, 218 days per year. Temperatures below 0°F or above 90°F each occur about 18 days per year.

The average relative humidity in Ely is 49 percent. The average monthly relative humidity values range from 63 percent in January and February to 33 percent in July. Relative humidity is lowest in the mid-afternoon and highest during night and early morning. The highest average values of 73 percent are attained in February during the early morning hours. Lowest average values of 21 percent are attained in July during mid-afternoon.

Average annual precipitation in Ely is 8.7 inches, which falls at a relatively constant rate throughout the year. Annual precipitation in Ely generally ranges from five inches to 15 inches. The maximum amount of precipitation to fall in a single month was 3.67 inches. Snowfall averages 46 inches per year and is greatest from January to March. The maximum snowfall to occur in a single month was 24.8 inches.

The average annual wind speed in Ely is 10.5 mph. Average monthly wind speeds are fairly constant throughout the year, ranging from 10.1 mph in November and December to 11 mph in April. The prevailing direction is southerly. The relative frequency of southerly winds is approximately 25 percent, with winds from the other directions between south-southeast and southwest occurring an additional 28 percent of the time. This and the secondary maximum of northerly winds are indicative of the north-south orientation of Steptoe Valley.

Severe weather in Ely is primarily restricted to occasional thunderstorms which are most frequent in July and August, occurring eight days per month on the average. Thunderstorms are least frequent from November through March when they occur less than one-half day per month on the average. Since 1916, only two tornadoes have been reported in White Pine County. During the same period,

approximately 20 tornadoes were reported throughout Nevada. Data regarding the severity of these tornadoes are not available.

4.3.2 Air Quality Standards

Establishment of ambient air quality standards is the responsibility of the Environmental Protection Agency (EPA) and the State of Nevada Division of Environmental Protection (DEP). The Clean Air Act (CAA) of 1970, as amended, established National Ambient Air Quality Standards (NAAQS) for six primary air pollutants: ozone (O_3), airborne particulates (PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). These standards serve to protect public health from dangerous exposure levels to these pollutants. The EPA is responsible for developing clean air standards and ensuring that these standards are met. Individual states are delegated authority to implement the Clean Air Act, and some states further delegate responsibilities to municipal or county agencies. In Nevada, this responsibility has been given to the Nevada Bureau of Air Quality.

Air quality is considered acceptable if pollutant levels are continuously less than or equal to NAAQS or, in the case of short-term federal standards (24-hour average or less), exceed the standards no more than once each year. The State of Nevada has also set ambient air quality standards. Federal and state standards require the prevention of significant deterioration (PSD) of air quality in regions that attain NAAQS. These attainment areas are designated as follows:

a. Class I areas where almost no increases are allowed.
b. Class II areas where normal industrial growth is allowed.
c. Class III areas where greater than normal industrial growth is allowed.

Current regulations require that a new source of air pollution in a non-attainment area (or outside the area, but causing a significant impact on the area) must produce a net air quality benefit in that area. This net air quality benefit is obtained using emission offsets (reductions in air pollutant emissions from existing sources in the non-attainment area) of sufficient magnitude to result in the required net air quality benefit. In addition, the new source would be required to use Lowest Achievable Emission Rate (LAER) control technology. LAER is more stringent than Best Available Control Technology (BACT) and New Source Performance Standards (NSPS), and is defined as the lowest emission rate allowed or achieved anywhere without regard to cost or energy use.

Table 4-2, *Ambient Air Quality Standards,* outlines the Nevada and Federal Ambient Air Quality Standards for primary pollutants.

TABLE 4-2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Nevada Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_2)	1 Hour	0.12 ppm (235 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)	Same as Primary standard	Ethylene Chemiluminescence
	8 Hour	-		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	50 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	50 µg/m³	Same as Primary standard	Inertial Separation and Gravimetic Analysis
	24 Hour	150 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	50 µg/m³		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	35 ppm (40 mg/m³)		35 ppm (40 mg/m³)		
				-		
Nitrogen Dioxide (NO)	Annual Arithmetic Mean	0.053 ppm (100 µg/m³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary standard	Gas Phase Chemiluminescence
				-		
Lead	30 days average		AIHL Method 54 (12/74) Atomic Absorption	-	-	High Volume Sampler and Atomic Absorption
	Calendar Quarter	-		1.5 µg/m³	Same as Primary standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.030 ppm (80 µg/m³)	Fluorescence	0.030 ppm (80 µg/m³)	-	Pararosoaniline
	24 Hour	0.14 ppm (365 µg/m³)		0.14 ppm (365 µg/m³)	-	
Sulfur Dioxide (SO_2)						
	3 Hour	0.5 ppm (1300 µg/m³)		-	0.5 ppm (1300 µg/m³)	
Crystalline Silica	8 hours	2.38 µg/m³		-	-	

Legend: ppm = parts per million; mg/m³ = milligrams per cubic meter; pm_{10} = particulate matter of 10 microns or less; $PM_{2.5}$ = particulate matter of 2.5 microns or less

Table 4-2 includes the 1997 adopted federal standards for chronic (8-hour) 0_2 exposure and for ultra-small diameter particulate matter of 2.5 microns or less in diameter (PM-2.5). However, EPA's authority to adopt such standards was legally challenged, and the U.S. Court of Appeals has issued a stay in implementing these two standards. EPA and the Department of Justice have appealed the decision to the Supreme Court. The Supreme Court ruled the EPA has authority to promulgate standards without specific congressional authority. The Court also ruled, however, that there was an attainment schedule inconsistency between "old" and "new" standards, which must be resolved before the new standards are considered fully implemented. Data collection for these standards is ongoing, but no additional attainment action can be taken until all schedule issues are resolved.

4.3.3 Local Air Quality

For the purposes of statewide regulatory planning, the Nevada Bureau of Air Quality has designated Hydrographic Basin 179 (Steptoe Valley) as unclassifiable. The current levels of criteria pollutants are not known in the valley due to a lack of monitoring data. However, the area had previously been designated as non-attainment for SO_2, based on emissions from a copper smelter which is no longer in existence.

White Pine County is a rural area with limited industrial activity. In recent history, the only major industrial pollutant source was the McGill smelter. Pollutants emitted from the McGill smelter were primarily SO_2 and particulate matter (PM). SO_2 emissions from the McGill smelter averaged 20,000 to 30,000 pounds per hour (lb/hr),occasionally exceeding 65,000 lb/hr. As a result of smelter emissions, Steptoe Valley was designated by EPA as a non-attainment area (existing air quality worse than NAAQS) for SO_2. Wind-blown dust also contributes to PM emissions in the County.

The NNR rail line is currently not in use. Therefore, it does not currently generate any air pollutant emissions.

4.4 LIVING RESOURCES

Work performed as part of the 1985 EIS for the White Pine Power Project, and the BLM 1994 EIS for the Robinson Mining Limited Partnership to reinstate copper mining activities in the mining district near Ruth, Nevada form the basis for the discussion of living resources in this section. Additionally, information obtained during the wetland survey conducted through review of the National Wetland inventory maps and an aerial reconnaissance during October 1993 is cited. The findings of the assessments are summarized below.

4.4.1 Vegetation

The NNR rail line transverses an area primarily located in the Northern Desert Shrub Biome of the Cold Desert Formation. The Northern Desert Shrub Biome is characterized by shadscale and sagebrush vegetation zones. The predominant vegetation type along the existing rail corridor is "northern desert shrub/ sagebrush."

The northern desert shrub/sagebrush occurs in valley bottoms and alluvial fans adjacent to washes. Big sagebrush is dominant on deeper soils and may be accompanied by winterfat, four-wing saltbush, Mormon tea, spiny hopsage, and rubber rabbitbrush. Black sage is dominant on shallower soils and is associated with Mormon tea, winter fat, four-wing saltbush, and rabbitbrush. Additional understory species common to all soils are needle-and-thread, Great Basin wildrye, bottlebrush squirreltail, sandberry bluegrass, Indian ricegrass, scarlet globemallow, and several penstemon species. Figure 4-3, *Vegetation Communities*, shows the vegetation communities of the Basin and Range Province, including those within 6,000 to 7,000 feet AMSL, which would include the NNR rail line corridor.

4.4.2 Wildlife

The NNR rail corridor includes two basic habitat types used by various terrestrial wildlife species. The Valley floor primarily provides shrub-steppe habitat composed of the shad-scale, sagebrush, and greasewood communities. Shrub-steppe is typically utilized by black-tailed jackrabbit, pronghorn, wild horse, horned lark, sage sparrow, Brewer's sparrow, sage thrasher, sage grouse, western fence lizard, and western rattlesnake. The valley floor also includes wetland habitat, consisting of cattails, assorted saltgrasses, rushes and sedges. The wetland areas provide breeding habitat and staging areas for many species of waterfowl and shorebirds.

Common big game species in the region include mule deer, pronghorn antelope, elk, mountain lions, wild horses, and bighorn sheep. Other mammals include Nuttall's cottontail, least chipmunk, deer mouse, cliff chipmunks, woodrats, coyote, and bobcat. Common upland gamebird species include sage grouse, blue grouse, chukar partridge, valley quail, and Hungarian partridge. Common non-game bird species include Say's phoebe, scrub jay, hairy woodpecker, mountain bluebird, and rufous-sided towhee. Raptors expected to occur in the general region include Cooper's, sharp-shinned, and red-tailed hawks, as well as the golden eagle. Common reptiles include sagebrush lizards, collared lizard, Great Basin gophersnake, and western diamondback rattlesnake.

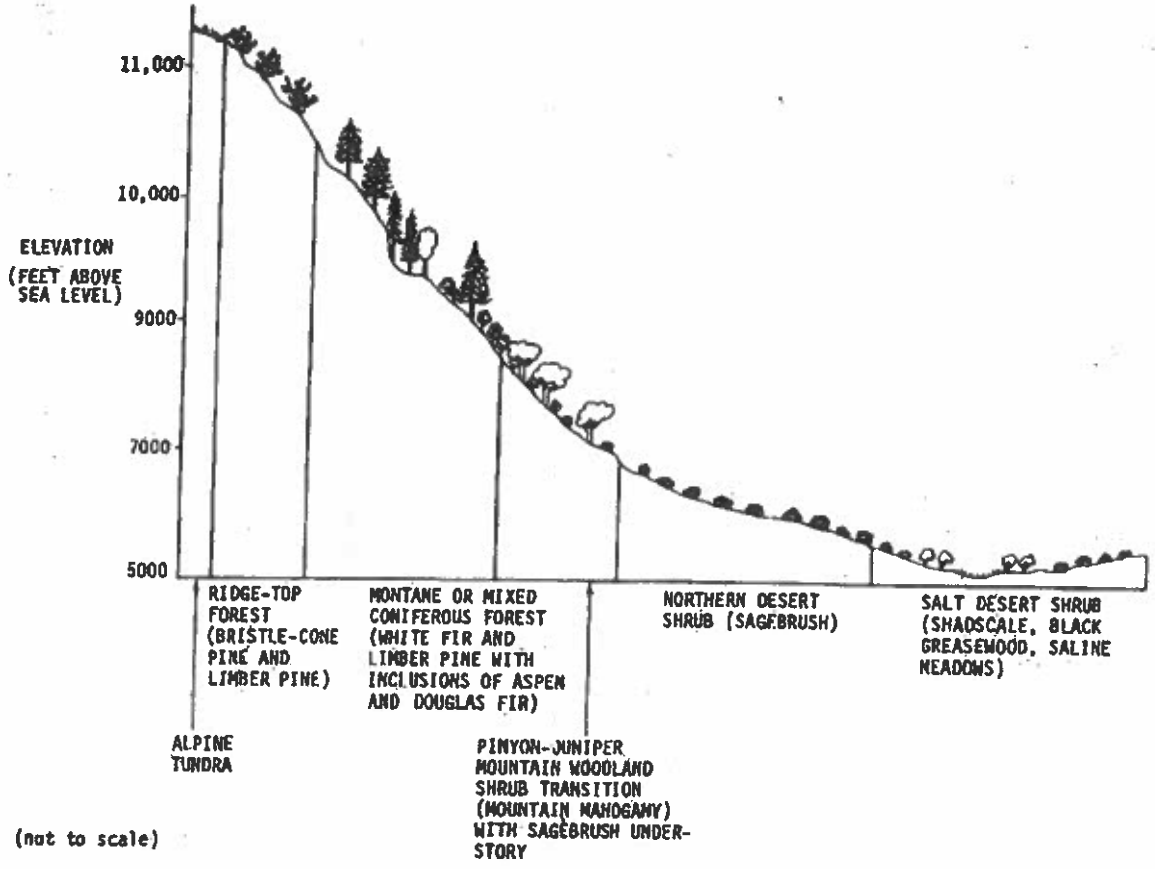


FIGURE 4-3 VEGETATION COMMUNITIES
Source: David Evans & Associates

The existing railroad corridor intersects pronghorn yearlong range, with pronghorn use being seasonally heavy in specific areas. Mule deer also occur along this corridor, particularly along the southern portion during the winter season and between the Schell Creek and Cherry Creek Ranges. The rail corridor receives incidental use by wild horses. Other mammals, reptiles, amphibians, and bird species common to the Great Basin environment are likely found along the existing rail corridor.

As available water is a limiting factor, riparian and wetland habitat supports a higher population diversity and density of wildlife species than any other habitat type occurring in the region. Waterfowl and shorebirds of the project region occur on large bodies of water, as well as on small wetlands, area stockponds, playa lakes, and natural springs. The existing rail corridor crosses important nesting and foraging areas for both waterfowl and shorebird species along Steptoe Slough, Bassett Lake, and Duck Creek, north to Cherry Creek and through areas of Steptoe and Goshute Valleys, depending on precipitation. The wetland areas associated with Duck Creek can be substantial during periods of high precipitation.

Fishing occurs along the railroad route. Tailings Creek, which lies adjacent to the railroad embankment west of McGill, supports game fish, including rainbow, brook, and tiger trout. Bassett Lake contains warm water fisheries with northern pike and largemouth bass. Northern pike also occurs in Duck Creek near McGill.

4.4.3 Sensitive Species

The following federally listed, federal candidate species or species of concern were identified as potentially occurring along the existing rail corridor or as having the potential, to occur throughout the area within the appropriate habitat types (A refers to area-wide, RR to rail corridor):

TABLE 4-3 FEDERALLY PROPOSED, THREATENED, OR ENDANGERED PLANTS AND ANIMALS

Birds	
American peregrine falcon (Falco peregrinus anatum)	A
Bald eagle (Raliaeetus leucocephalus)	RR
Northern goshawk (Accipiter gentilis)	A
Ferruginous hawk (Buteo regalis)	RR
Black- tern (Chlidonias niger)	RR
White-faced ibis (Plegadis chihi)	RR
Western least bittern (Ixobrychus exilis hesperis)	RR
Western burrowing owl (Athene cunicularia hypugea)	RR
Sage grouse (Centrocercus urophasianus)	A
Yellow-billed cuckoo (Coccyrus americarius)	A
Mammals	
Pacific western big-eared bat (Corynorhinus townsendii townsendii)	A
PaleTownsend's big-eared bat (Corynorhinus townsendii pallescens)	A
Spotted bat (Buderma maculatum)	A
Pygmy rabbit (Sylvilagus idahoensis)	A
Small-footed myotis (Myotis ciliolabrum)	A
Long-eared myotis (Myotis evotis)	A
Fringed myotis (Myotis thysanodes)	A
Long-legged myotis (Myotis volans)	A
Sierra Nevada red fox (Vulpes vulpes necator)	A
Fishes	
Relict dace (Relictus solitarius)	RR
Bonneville cutthroat trout (Oncorhynchus clarki utah)	A
Invertebrates	
Steptoe Valley crescentspot butterfly (Phyciodes batesii arenacolor)	A
White River wood nymph butterfly (Cecyonsis pegala pluvialis)	RR
White River Valley skipper (Herperia uncas grandiosa)	RR
Schell Creek mountainsnail (orehelix nevadensis)	A
Plants	
Grouse Creek rockrose (Arabis falcatoria))	A
Elko rockcrest (Arabis falcifrucia)	A
Monte Neva paintbrush (Castilleja salsuginosa)	A
Welch's cryptantha (Cyptantha welshii))	A
Barren Valley collomia (Collomia renacta)	A
Waxflower (Jamesia tetrapetala)	A
Parish's phacelia (Phacelia parishii)	A
Jan's catchfly (Silene nachlingerae)	A
Rock voilet (Viola lithon)	A

No special status plant species were identified as occurring or potentially occurring within the existing rail corridor. Potential habitat for some special status plant species may occur along the existing rail corridor; however, no documented populations of special status plant species are known to occur adjacent to the rail corridor. Both the peregrine falcon and bald eagle are federally listed as endangered. The bald eagle has been proposed for downlisting to federally threatened status. The other species listed above are federal Candidate - Category 2 species: species that may be listed as federally threatened or endangered but for which conclusive biological data to support the listings are not currently available. The peregrine falcon has been recorded in southern Steptoe Valley and Duck Creek Basin east of McGill. Bald eagle use is considered moderate along specific areas of the existing rail corridor. A winter concentration of eagles occurs in the Bassett Lake and Steptoe Slough area north to Cherry Creek. Five to six wintering eagles may annually occupy this area, depending on environmental conditions.

There are no known goshawk nesting sites along the existing rail route. Therefore, goshawk use of the areas would be limited to occasional occurrences. No active ferruginous hawk nest sites are known to occur near the existing rail route. The loggerhead shrike is common in the region and nests in desert shrublands and pinyon/juniper habitats and mainly forages in open grasslands and shrublands.

Intermittent, as well as perennial, wetlands provide habitat for resident or migrant shore birds. The long-billed curlew and white-faced ibis are reported to nest in wetlands and low, marshy areas along the rail corridor, including Steptoe Slough, Duck Creek, Bassett Lake, and Cherry Creek. The black tern, western snowy plover and western least bittern are not known to nest along the rail route but may be present during migration. During periods of high precipitation, wetlands located along the existing rail corridor, particularly along Duck Creek and Steptoe Slough, may be used extensively by these species for resting and feeding.

The Pacific western big-eared bat may also occur in areas along the existing rail corridor. The spotted bat is considered rare in Nevada and appears to be associated with steep topography and water sources; however, available resource data are limited.

Other sensitive mammal species in the project area include the pygmy rabbit and the Sierra Nevada red fox. The pygmy rabbit is typically found in big sagebrush plains and alluvial fans and likely occurs along the existing rail corridor within the appropriate habitat type. The Sierra Nevada red fox would not be considered widespread along the rail route. The relict dace occurs in many of the springs and outflows into Duck Creek along the existing rail route.

Sensitive invertebrate species that may occur along the rail line or in the area include the Steptoe Valley crescentspot butterfly, the White River wood nymph butterfly, and the Schell Creek mountain snail. The Steptoe Valley crescentspot butterfly occurs in the moist flats immediately adjacent to Duck Creek along the existing rail corridor from Bassett Lake and Steptoe Slough north of Warm Springs. The White River wood nymph butterfly occurs in low-elevation marsh habitats within Steptoe Valley from Comins Lake to south of the Elko County Line. The Schell Creek mountain snail occurs approximately 1.5 to 2 miles west and upgrade of the existing rail corridor.

4.5 CULTURAL RESOURCES

4.5.1 Cultural Resources

The NNR was built in 1906 to transport copper ore from the mine at Ruth to Cobre. Kennecott Corporation operated the line until 1983 when the company closed both the smelter in McGill and the railroad operations. In 1987, the railroad was purchased by LADWP for use in conjunction with a proposed coal-fired electrical power plant in North Steptoe Valley. The electrical power plant was never constructed. At the time of the LADWP purchase, the historic rail yards in East Ely, the historical rolling stock, and 28 miles of track were deeded to the City of Ely and the Historical Railroad Foundation for a tourist operation. The mine reopened in 1995 and the track was leased to the NNRC and then to BHP Copper to haul copper concentrate to Arizona. When the mine at Ruth was closed in mid-1999, BHP ceased operation of the railroad as well, and eventually BHP terminated its lease with both LADWP and the City of Ely. The rail line has not been used since that time.

Portions of the existing rail right of way had previously been surveyed for cultural resources as part of the environmental review for past projects, including the BLM RMLP Project in 1994. When reinstatement of rail freight operations were being considered in 1994, the Nevada State Historic Preservation Office (SHPO) indicated that any previously uninventoried area within the proposed rail right of way should be surveyed. These surveys in the Robinson District were completed at that time.

Surveys associated with the RMLP EIS identified no sites within the right of way as on or eligible for inclusion in the National Register of Historic Places (National Register). The later survey of previously uninventoried areas identified: a site consisting of five seepage collection ponds for the Juniper and Puritan Dumps, one previously unrecorded historic archaeological site, two other prospect pits (Prospect Pits 1 and 2), and the abandoned NNR line itself.

The NNR right of way from the earlier mines at Ruth through Robinson Canyon and Ely to the copper smelter at McGill was listed on the National Register several years ago. The Nevada SHPO records indicate that most of the NNR north of McGill Junction that would be restored as part of this project has not been surveyed for cultural resources. A programmatic agreement regarding treatment of historic properties between the BLM, the Nevada SHPO, and the Advisory Council on Historic Preservation was in effect for the mining project.

4.6 SOCIOECONOMIC CONDITIONS

The purpose of this chapter is to give a brief overview of the existing socio-economic conditions in the area affected by the proposed reinstatement of freight rail line service on the NNR line. Potential environmental impacts are discussed in Chapter 5.

4.6.1 Demographics and Population

Reinstitution of freight operations would occur in White Pine and Elko Counties, although the primary potentially affected area is White Pine County, because a majority of the NNR line is in White Pine County and the lands adjoining the portion of NNR line within Elko County are sparsely populated. The primary population centers along the existing line segments are Ely and McGill (2000 populations of 4,041 and 1,054 residents, respectively). White Pine County's population trends have reflected the boom-bust cycle of the mining industry. County population peaked at 12,377 persons in 1940, declined in the 50's, and then slowly began to rise through the 1980's. Year 2000 population in White Pine County is 9,181 persons and 45,291 persons in Elko County. White Pine County population decreased 0.9 percent between 1990 and 2000; however, Elko County population increased by 35.3 percent during this period. Economic diversification efforts, the opening of a new state prison, and renewed precious metal mining activities were chiefly responsible for the population growth. Mine closures in recent years likely resulted in the downward growth cycle of the 1990's. Census 2000 data indicates that White Pine County has a total housing stock of 4,439 units, and of these units 1,157 homes, over 26 percent, were vacant. Ely has a 2000 housing stock of 2,205 units.

4.6.2 Employment and Income

Employment in White Pine County consists of jobs in the government, agricultural sector and retail and professional services related to recreation and tourism in the region. In White Pine County, the estimated nonfarm employment in 2000 was 2,331 jobs, and of those, over 500 jobs were local government employment. The average income for households in White Pine County in 2000 was $39,026, nearly matching the average household income of $39,280 in the State of Nevada. In Elko County, the estimated nonfarm employment in 2000 was 16,484 jobs, and of those, over 1,600 jobs were through local governments. The average income for households in Elko County in 2000 was $49,822, 26 percent greater than the average household income in the State of Nevada.

Agricultural lands comprise the majority of private land use in the County. The primary agricultural activities include livestock grazing and alfalfa production. Past and present land uses in the vicinity of the rail line include mining, livestock grazing, wildlife habitat, dispersed recreation, and firewood cutting.

4.6.3 Low-Income and Minority Populations

The racial and ethnic breakdown for White Pine County reflects that of many rural communities in Nevada. The 2000 Census indicates that 86.4 percent of the population is of white or caucasian decent, with all other races making up the remaining 13.6 percent. The breakdown is similar in Elko County, with 82 percent of the population being white or caucasian in decent, and a combined 18 percent being descendents of all other races. The number of households living below poverty was 13.4 percent in White Pine County, 7.3 percent in Elko County, and was 10.7 percent statewide. The number of children living below poverty was 15.3 percent and 15.4 percent for White Pine County and the State of Nevada, respectively. In Elko County, 8.4 percent of the children in 2000 were living below poverty. Lack of employment options and economic growth are rising concerns in Ely and White Pine County.

4.6.4 Community Infrastructure

Water Services

Water service is not available along the NNR right of way. Water wells serve adjacent agricultural lands.

Sewer Services

Sewer services are not available to the NNR right of way. The privately held ranches and homes adjoining the NNR right of way are currently served by on-site septic systems. Sewer service is available in larger communities such as Ely and McGill.

Storm Drainage

Storm drainage on the NNR right of way and the surrounding areas is currently provided by ground percolation and sheet flow on adjoining BLM and agricultural lands. Storm water runoff flows generally follow local topography and run east and west into nearby creeks and channels, and south toward Bassett Lake.

Waste Disposal

Solid waste disposal services in the area is provided by a regional Class II landfill operated by the City of Ely. The landfill is located just outside the City of Ely near the White Pine County Golf Course.

Power, Gas, and Telephone Services

Electrical service in the area is provided by Mt. Wheeler Power, a rural electrical power co-op serving areas within White Pine and Eureka Counties, as well as portions of Western Utah. Telephone service is provided by Nevada Bell. Gas service is not provided in Ely or White Pine

County. However, propane gas is available at various locations to residents that have storage tanks.

4.6.5 Public Services

Fire Protection Services

Fire protection from wildfires, including rail-caused brush fires in the project area, is provided by the BLM. Fire protection for private structures in the project vicinity is provided through the White Pine County Fire Department, but would receive assistance from the BLM. The BLM has a regional field office in Ely where staff and equipment would be dispatched.

Police Protection Services

Police protection services (criminal offenses and civil cases) are provided by the White Pine County Sheriff's Department to the region, including the project area.

Medical Services

Due to the low population of White Pine County, limited medical services are available in the project vicinity. However, there is a hospital near to the project site in Ely, and a regional facility in Salt Lake City, Utah. Medical emergencies are often life-flighted to the regional facility in Salt Lake City.

Schools

The White Pine School District provides school services to the project area. The proposed project is not located near a school facility, and would not impact or otherwise affect operations of the local School District.

4.7 RESOURCE USE PATTERNS

4.7.1 Land Uses

The NNR rail line is located in the northeastern section of the State of Nevada, in portions of the Steptoe and Goshute Valleys, generally between the cities of Ely and Shafter. The NNR right of way that would be purchased by the City of Ely from the LADWP consists of approximately 2,545 acres and is 109.9 miles long.

The NNR rail line goes through private and public lands in the project area. As previously stated, 93 percent of the land in White Pine County is owned by the United States government, with almost all of that owned by four agencies: the BLM, National Park Service, the USFWS, and the U.S. Department of Agriculture's Forest Service

Agricultural lands comprise the majority of private land use in the County. The primary agricultural activities include livestock grazing and alfalfa production. Past and present land uses in the vicinity of the rail line include mining, livestock grazing, wildlife habitat, dispersed recreation, and firewood cutting. The BLM has an adopted Resource Management Plan (RFP) for the greater Steptoe and Goshute Valley region. This plan designates where certain activities, such as timber harvesting and mining, would be appropriate. The plan also manages natural resources by limiting access in other areas, by indicating where wilderness areas, recreational areas, and other uses should occur. Adjacent land use designations to the NNR rail line within the County of White Pine and Elko include Agriculture and Mining.

4.7.2 Recreation

Recreational resources in the project vicinity of the NNR rail line include fishing; hunting; wildlife viewing, particularly migrating wild game; and operation of the tourist train. The existing railroad corridor intersects pronghorn yearlong range, with pronghorn use being seasonally heavy in specific areas. Mule deer are also found along this corridor, particularly along the southern portion between the Schell Creek and Cherry Creek Ranges and during the-winter season. Tourist train operations currently occur along the portion of City-owned rail line from Keystone to McGill Junction. The project would allow for the extension of this operation from McGill Junction to Shafter.

4.7.3 Natural Resources

Mining and Logging

The region has a rich history of mineral mining dating back to the late 1800's. Kennecott Copper Corporation operated the NNR from 1933 until 1983, when the copper ore mine near Ruth and the smelter in McGill were shut down. In 1987, LADWP purchased the portion of NNR line from McGill Junction to Cobre, and transferred the portion of NNR line from McGill Junction to Copper Flat to the WPHRF. In 1995, the RMLP reinstated copper and gold mining and processing in the

Robinson Mining District near Ely. This included using leased NNR rail line segments to transport RMLP mining products from the RMLP processing facilities, and for transporting inbound mining supplies. In 1999, the mining operation shut down, and freight service on the NNR ceased as well. Commercial timber harvesting does not occur in Steptoe and Goshute Valleys; however, current land uses in the project area include firewood cutting.

Agriculture

Agricultural land uses are currently found adjacent to the NNR right of way, chiefly consisting of livestock grazing and alfalfa production. No portions of the right of way are in agricultural production, and a substantial amount of the right of way has been disturbed by paved road and trails.

4.7.4 Transportation Network

The City of Ely is located at a major highway junction in eastern Nevada, where U.S. Highways 6, 50, and 93 intersect (See Fig 2-2). Current traffic volumes on major arteries in Ely are well below capacity of the roadway network. Traffic congestion occasionally occurs at the 90 degree junction of Highways 93 and 50 in Ely. In rural areas north of McGill, west of Ruth and south of Ely, current traffic volumes are less than eight percent of capacity. Several at-grade private and public road crossings occur in the portion of NNR being considered for reinstatement of freight service.

As noted earlier, tourist trains use portions of the existing NNR track between McGill Junction and Keystone. There have been no freight operations over the NNRC line in about three years. The UPRR line with which the existing NNR line would connect at Shafter is part of a UPRR mainline between Omaha, Nebraska, and the West Coast. The portion of NNR rail line extending north from Shafter to Cobre, which is also part of a Standard Pacific (SP) main line to the West Coast, would not be restored as part of this project.

Level of service (LOS) describes the quality of traffic flow and ranges from the most optimum level, LOS A, which represents little or no delay, to the lowest or worst level, LOS F, consisting of extreme delay and congestion. Table 4-4, *Level of Service Criteria-Unsignalized Intersections*, demonstrates the relationship between stopped delay per vehicle in seconds and LOS. The project area does not experience traffic congestion, as all traffic intersection in the project vicinity operates at a LOS of A, as defined in Table 4-4.

TABLE 4-4 LEVEL OF SERVICE CRITERIA – UNSIGNALIZED INTERSECTIONS		
STOPPED DELAY PER VEHICLE (seconds)	**LEVEL OF SERVICE (LOS)**	**DESCRIPTION**
≤ 5	A	Little or no delay
> 5 and ≤ 10	B	Short traffic delay
>10 and ≤ 20	C	Average traffic delays
>20 and ≤ 30	D	Long traffic delays
>30 and ≤ 45	E	Very long traffic delays
>45	F	Extreme delays potentially affecting other traffic movements in the intersection
Source: *Highway Capacity Manual*, Transportation Research Board, Special Report No. 209, Washington, D.C., 1994.		

4.8 OTHER VALUES

4.8.1 Visual Resources

The BLM has established Visual Resource Management (VRM) classifications for portions of the Steptoe and Goshute Valley region. The classes range from Class 1 to 5, and describe the degree of modification allowed to the basic elements of the landscape. The most scenic and visually sensitive areas are given a classification of Class 1, which would include wilderness areas and wild and scenic rivers. The NNR rail line is located within an area dominated by expanses of sage/shrub habitat, and has been given a classification of 4. This classification would allow modification as described in the BLM guidelines as "*Any contrast may attract attention and be a dominant feature of the landscape in terms of scale, but it should repeat the form, line, color, and texture of the classification landscape.*"

The existing condition of the NNR right of way would be described as disturbed sage/scrub habitat. The topography of the area is generally flat with very little visual diversity and contrast in vegetation. The background views are dominated by the Egan and Cherry Creek Mountain ranges to the west, and the Schell Creek Mountain range to the east that form the foundations of the valleys within which the NNR lies.

4.8.2 Public Health and Safety

Airport Hazards

Yelland Airfield is located south of the most southerly portion of the NNR rail line being evaluated for rail fright service by this document. Federal Aviation Regulation (FAR) Part 77 regulations regarding obstructions to aircraft operations set building height limits for structures constructed near airports. However, no structures are proposed as part of this project, and the rail line is well outside any emergency touchdown zones and safety zones of the airfield.

Hazardous Material Users

There are no underground storage tanks along the NNR right of way, and there is no ongoing hazardous materials use. The reinstatement of rail freight services could, however, include the transport of crude oil and diesel fuel; items classified as hazardous materials.

Waste identified during a previous site reconnaissance included used oil, oil and fuel filters, empty containers (fuel, lubricants, and coolant), and aerosol cans. Limited hazardous waste is expected to have been generated from previous operations of the NNR rail line.

4.8.3 Noise

The NNR line is located within a largely undeveloped area and has a relatively quiet noise environment. Noise sources are limited to vehicle traffic noise on nearby roads which is the primary source of noise in the project vicinity. Sensitive receptors would be limited to the residences and ranches found along portions of the NNR right of way. The nearest of the adjacent residences to the NNR right of way are located at least 1,000 feet from the rail lines.

5.0 ENVIRONMENTAL CONSEQUENCES & MITIGATION MEASURES

This section evaluates the potential environmental changes associated with the rehabilitation and reinstatement of train operation over the existing NNR. The primary concerns addressed in this section relate to issues associated with the restoration of the rail line. In addition, environmental effects that would occur with the project alternatives are also briefly discussed under each environmental issue.

5.1 LAND RESOURCES

5.1.1 Topography

The portion of the NNR being considered for reinstatement and restoration is within the Steptoe and Goshute Valleys, characterized as north-south oriented basins with a relatively flat topography, and a slight cross-slope to the west. No change to existing topography is proposed. Disturbance for the project would be limited to dumping and distribution of ballast and sub-ballast materials, and replacement of cross ties. Impacts are not considered significant, because the work would be performed within the NNR right of way, little cut or fill would be required, and the proposed track improvements that require the placement of ballast would significantly reduce the likelihood of a derailment-caused hazardous materials release into water resources.

5.12 Soils

Soil disturbance that would occur as a result of the proposed restoration would include excavation to facilitate replacement of the rails, cross ties, and ballast within the right of way for alignment of the tracks. Only limited soil disturbance and associated impacts would occur once operations are reinstated. This work would generate some fugitive dust and could result in limited soil erosion. Although soil disturbance would not result in a significant impact, erosion and dust control measures during restoration work are recommended to help reduce project-related soil erosion and fugitive dust.

Recommendations for reducing soil erosion and fugitive dust:

- *Erosion control measures and dust control measures should be incorporated during construction activities in order to reduce project-induced soil erosion and fugitive dust. These may include daily watering, use of soil binders, reseeding of disturbed areas, etc.*
- *All drainage runoff should be directed away from the track bed, and disturbed areas should be reseeded at the earliest time possible to reduce soil erosion.*

5.1.3 Geologic Hazards

The project area may be subject to groundshaking hazards associated with earthquake faults in the Basin and Range Province and the presence of localized faults. Seismic hazards in the area could

lead to groundshaking, surface rupture, and structural hazards of the rail line and trains. However, the reoccurrence intervals for large earthquakes on faults in the Basin and Range Province are estimated to be a few thousand to several hundred thousand years long. Thus, the probability for a major earthquake occurring within the operating life of the NNR is low and renders the potential effects due to surface rupture insignificant.

In order to prevent differential settlement and subsidence, ballast material would be dispersed onto the existing track bed to prevent saturation by rainfall or runoff. This material would also act as a foundation for the rail system, transferring and distributing the loads from the cross ties to the subballast and grade. This maintenance activity would improve track stability and further reduce the likelihood that groundshaking resulting from a seismic event would affect the track system. No impacts to geologic hazards are expected.

5.1.4 Mitigation Measures

The proposed project (or Preferred Action) would not result in impacts associated with soil disturbance and geologic hazards. Thus, no mitigation measures are proposed.

5.1.5 Effects of Project Alternatives

The reinstatement of rail freight service on the NNR would not result in potentially significant affects associated with soils (i.e. soil erosion during restoration of the rail line). Alternatives to the proposed action could result in different environmental effects on land resources. The environmental effects of other project alternatives are discussed below.

Class 1 Alternative

Under this alternative, there would be similar impacts associated with soil disturbance related to rail line restoration and maintenance activities, except for the rail segment from Milepost 123 to 128.4 where potential filling of wetland areas would be avoided. However, long-term track maintenance would likely require continuous restoration along this track segment, including similar soil disturbance activities as anticipated under the Preferred Alternative; thus impacts in this segment would not be avoided. As a result, no significant reduction in environmental impacts on land resources would be anticipated with this alternative.

Non-Rail Alternative

This alternative would increase the use of trucks on existing surface roads to boost freight transportation in the region. Under this alternative, there would be no impacts associated with soil disturbance related to rail line restoration and maintenance activities. No new roads or roadway improvements are proposed under this alternative. Thus, no changes to topography, soils or geologic conditions would occur. No significant change in environmental impacts on land resources would be anticipated with this alternative.

New Rail Line Route Alternative

This alternative would result in significantly greater environmental impacts associated with construction of a new rail line. Vacant land would be disturbed, and significant grading for track bed construction would be required under this alternative. It is likely that this additional grading would result in generating greater runoff volumes, and generating significant amounts of fugitive dust in the project area.

No Action Alternative

The No Action Alternative would not result in any physical change to the NNR line. No soil disturbance, grading, or excavation activities associated with rail line restoration would occur. It is expected that the NNR would remain unutilized under this alternative. Project-related impacts associated with the potential for erosion would be avoided under this alternative.

5.2 WATER RESOURCES

5.2.1 Groundwater Resources

The restoration of the tracks and proposed train operations on the NNR line do not include construction of new wells. Thus, no impacts to neighboring wells and groundwater resources are anticipated.

5.2.2 Water Demand

Water requirements for this project are limited to water used during construction and for fire protection of the rail line. The restoration of freight rail service on the NNR rail line would not require delivery of potable water. Water required for construction purposes, chiefly used during grading for dust control, would not affect the delivery capabilities of neighboring wells, as trucks would bring water to the construction site. Substantial consumption of water resources is also not expected with the proposed project. Therefore, significant impacts associated with water demand are not expected.

5.2.3 Hydrology

The rehabilitation of the rail tacks or proposed train operations would not result in an increase in impervious areas, less ground absorption or greater runoff. No increase in runoff to areas outside the NNR right of way would occur.

5.2.4 Water Quality

Shipments over the proposed and existing NNR line are expected to include a variety of products and raw materials, described in the Introduction of this EA (Section 1.0), some of which are classified by the U.S. Department of Transportation as hazardous materials. The most environmentally significant of these are diesel fuel and crude oil. The BLM Final Environmental Impact Statement for the Robinson Project contains extensive analysis of the likelihood that a derailment resulting in a hazardous material release would occur during rail operations along the NNR rail corridor. The EIS determined that although the probability of such releases is quite small, it is not zero. The proposed stabilization of the rail bed between Mileposts 123 and 128.4 would further reduce the likelihood for a derailment resulting in a hazardous material release. However, depending on the material released, the amount released, and the location, an accident resulting in a hazardous material release could cause significant adverse impacts on water resources and on wildlife present in the area.

Restoration and safety measures included in the Engineering Study prepared by R.L. Banks & Associates, Inc. for the City of Ely, if implemented, would allow for the safe transport of railcars weighing up to 286,000 pounds. These measures, as summarized below, are intended to permit the safe transport of freight along the NNR rail line.

- Improve ballast and roadbed conditions,

- Replace defective cross ties,
- Replace as necessary track rail, tie plates and angle bars,
- Repair broken joint bars,
- Replace missing rail spikes and anchors,
- Service or replace all existing CMP and concrete box culverts, and
- Renew all road crossings.

The proposed rail line construction would have potential impacts to stormwater. The water quality of stormwater discharges from the site may become contaminated if rainfall and runoff come in contact with pollutants on exposed surfaces during restoration and operation of the rail line. Typical surfaces include graded land, materials storage and stockpile areas, and materials loading and unloading facilities. Stormwater runoff from these exposed areas may contain suspended solids, including sediment from land disturbance, oil and grease, brake fluid and other hydraulic fluids, gasoline and diesel fuel, trash, and debris, which can contribute to the degradation of surface water quality.

Potential impacts to water quality associated with stormwater runoff are regarded as significant. Construction associated with the restoration of the rail line would conform to the conditions of a Storm Water Pollution Control Permit obtained from the Nevada Department of Environmental Protection for Construction Activities in order to preclude adverse stormwater pollution. This would involve the implementation of best management practices (presented under Section 5.2.5 below) that prevent or reduce runoff pollution.

Pest management activities along the existing NNR right of way could affect wetland and riparian resources. Chemicals can leach into the soil and affect groundwater as a result of pest maintenance activities. Potential water quality impacts associated with pesticide use are regarded as significant. Mitigation measures, presented in Section 5.2.5, such as consultation with the BLM and assisting in the preparation of an integrated pest management plan for the project are recommended to prevent adverse impacts on water quality and wildlife resources.

5.2.5 Mitigation Measures

The proposed project (or Preferred Action) has the potential to result in an incremental contribution of urban pollutants to surface water quality during reconstruction activities. The following mitigation measures would reduce the project's potential impacts on runoff and water quality:

- *The City of Ely shall obtain the necessary Storm Water Pollution Control Permit from the Nevada Department of Environmental Protection and will comply with all conditions attached to the permit, including the implementation of best management practices, such as:*

    1. *Confining all vehicles used during restoration, operations and maintenance activities to the minimum area necessary within the NNR right of way;*
    2. *Requiring restoration or routine maintenance activities within the right of way not be performed during times when the soil is too wet to adequately support construction*

equipment;

3. *Limiting areas of soil disturbance to retain existing vegetation, whenever feasible;*
4. *Reseeding disturbed areas using a similar seed mixture as that used on lands within the BLM right of way grant specified in grant N-56525;*
5. *Covering earthen stockpiles with tarps before forecasted rainfall;*
6. *Implementing appropriate measures, such as dampening unpaved access roads and spraying of water during grading operations, to protect disturbed soil and completed grading work from wind erosion and to reduce fugitive dust.*

- *The operator shall prepare and implement an Integrated Pest Management Plan developed in coordination with the BLM, which shall include:*

1. *Control of right of way vegetation in or near drainageways and wetland areas shall solely include herbicides registered with the United States EPA for use in aquatic sites;*
2. *Compliance with State and Federal laws and regulations regarding use of pesticides (i.e. insecticides, herbicides, fungicides, rodenticides, and other similar substances) within the right of way proposed for reinstatement of freight service;*
3. *Requirement that only individuals holding a Nevada herbicide applicator's permit or license shall apply maintenance herbicides in the NNR right of way.*

Implementation of these measures would reduce the potential for impacts to surface water quality to below a level of significance.

5.2.6 Effects of Project Alternatives

The reinstatement of freight rail service on the NNR corridor would not result in significant adverse affects associated with water quality, with implementation of the recommended mitigation measures. The project would not result in significant adverse affects associated with water demand and hydrology. Alternatives to the proposed action could result in different environmental effects on water resources. The environmental effects of other project alternatives are discussed below.

Class 1 Alternative

This alternative would result in similar environmental impacts to water resources as in the preferred alternative. Limited disturbance of the wetland area at the southern section of the NNR line is proposed under this alternative. However, most of the work this alternative avoids would likely be completed without regard to conditions included in this document as part of ongoing track maintenance. Impacts on water resources would remain the same.

Non-Rail Alternative

This alternative would increase the use of trucks on existing surface roads to boost freight transportation in the region. Impacts on water resources are expected to be avoided under this alternative, since existing roadways would be used and groundwater resources and water quality would generally not be affected. Under this alternative, there would be no impacts

associated with soil disturbance related to rail line restoration, construction, and maintenance activities. Stormwater runoff under this alternative would be confined to the roadways in the area and away from the NNR line and adjacent water channels. Thus, less environmental impacts on water resources would be anticipated with this alternative.

New Rail Line Route Alternative

This alternative would result in an increase in environmental impacts on water resources. Significantly more land area would be disturbed, and significantly more grading for track bed construction would be required. The additional grading and ground disturbance would result in generating greater runoff volumes and the potential for siltation runoff pollutants of the neighboring waterways. Impacts on water resources would be greater under this alternative.

No Action Alternative

The No Action Alternative would not result in any physical change to the NNR line. No potential for runoff pollutants associated with restoration, maintenance or operations would occur. No water demand for construction would be necessary. It is assumed that the NNR rail corridor would remain unused and abandoned under this alternative, and no stormwater pollutants would be generated. Project-related impacts to water resources and water quality would be avoided under this alternative.

5.3 AIR RESOURCES

Due to the projected low level of rail traffic which would occur over the NNR rail line, impacts on air quality resulting from the reinstatement of freight rail service are expected to be minimal.

5.3.1 Climate

The proposed reinstatement of rail service on the NNR rail line is not expected to cause a change in the climate of the area, nor result in changes in local temperatures. The proposed train operations would not have any major or permanent impact on climate in the area.

5.3.2 Construction Emissions

The proposed reinstatement of freight rail service on the NNR rail line would generate pollutant emissions in the area during the restoration phase, and to a lesser extent during maintenance operations of the rail line. The proposed restoration work would result in localized increases of total suspended particulates and fugitive dust, as well as construction equipment emissions.

The NNR right of way is located in a rural area, and there are no residences in close proximity to areas where restoration activities would occur. Construction activities generate substantial amounts of large diameter particulates that settle out of the air soon after their release. They are too large to be inhaled into deep lung tissue and there are minimal health effects associated with these larger particulates.

Construction equipment use would generate pollutant emissions, dependent on the type, number and power of the equipment. The mobile nature of equipment emissions is such that no single receptor is exposed to equipment emissions for any extended period. Due to the distance of the right of way to adjacent developments, these emissions are not expected to adversely affect adjacent residents, or other sensitive receptors. Also, they would not be of a concentration that would create a measurable nuisance or a threat to clean air standards. Air quality impacts during the construction phase are expected to be short-term and would cease when restoration activities are completed. Additionally, recommendations are provided in Section 5.1.2 which would help to reduce project-related soil erosion and fugitive dust. Maintenance of the NNR line is not expected to result in any measurable pollutant emissions. Impacts would be less than significant.

5.3.3 Long Term Emissions

The proposed project would not cause a deterioration of air quality in the local area as a result of pollutant emissions generated by the reinstatement of freight rail service. Train operations are likely to generate nitrogen oxides which would contribute to ozone levels in the area. Hydrographic Basin 179 (Steptoe Valley) is currently designated as unclassifiable by the Nevada Bureau of Air Quality. The current levels of criteria pollutants are not known in the valley due to a lack of monitoring data. However, the area had previously been designated as non-attainment for sulfur dioxide, based on emissions from a copper smelter which is no longer in existence. Emissions resulting from up to four trains per day on average would not be large enough to cause the area to violate SO_2 or O_2

standards. Heightened freight rail service to Ely may actually reduce the number of commercial truck trips coming to and from Ely, which should lower emissions in the area. Long-term train emissions would not result in significant adverse regional or local air quality impacts.

5.3.4 Mitigation Measures

The proposed reinstatement of rail freight service on the NNR would not result in significant air quality impacts. No mitigation measures are required.

5.3.5 Effects of Project Alternatives

Grading and ballast placement and distribution activities associated with the proposed project would generate fugitive dust, and train emissions associated with the proposed project has the potential to increase air pollutants in the region. Such emissions are not anticipated to be significant and would not change the unclassifiable status of Hydrographic Basin 179 (Steptoe Valley). Alternatives to the proposed action could result in air quality impacts different than the impacts associated with the proposed project. These are addressed below.

Class 1 Alternative

Under this alternative, there would be similar impacts associated with air quality related to rail line restoration, operation and maintenance activities to the Preferred Alternative. As a result, no significant reduction in air quality impacts would be anticipated with this alternative.

Non-Rail Alternative

This alternative would increase the use of trucks on existing surface roads to boost freight transportation in the region. Impacts on air quality under this alternative are expected to be slightly greater than those of the Preferred Alternative, since movement of freight via trucks is considered less efficient and would generate more truck emissions than train operations. Under this alternative, there would be no impacts associated with soil disturbance related to rail line restoration and maintenance activities; thus, no fugitive dust associated with restoration work would occur. Environmental impacts associated with truck emissions would be anticipated under this alternative.

New Rail Line Route Alternative

This alternative would result in significant environmental impacts on air quality. Construction activities under this alternative would involve more grading for track bed construction. It is anticipated that the additional grading would generate significant amounts of fugitive dust and construction equipment emissions. However, train emissions under this alternative would be the same as the Preferred Alternative. Short-term air quality impacts would be significant under this alternative.

No Action Alternative

The No Action Alternative would not result in air quality impacts associated with the reinstatement of rail service. No short-term air quality impacts would occur if the NNR line is not disturbed. Grading and track stabilization associated with rail restoration would not be necessary, thereby eliminating the associated emissions, particularly suspended particulate matter (i.e., PM_{10}) and fugitive dust. Other emissions resulting from restoration activity, including the operation of construction equipment, consumption of energy resources, etc., would also be eliminated. No train emissions would occur under this alternative. Potential long-term impacts resulting from increased trucking activities and stationary source emissions (i.e., the emissions generated from the consumption of natural gas and electricity) would occur, but these potential impacts are not considered to be significant. Air quality impacts of the proposed project would be avoided under the No Action Alternative.

5.4 LIVING RESOURCES

The Biological Assessment prepared by Dames and Moore for the White Pine Power Project EIS, the BLM EIS for the RMLP to reinstate copper mining activities in the mining district near Ruth, Nevada, and information obtained by R. L. Banks & Associates, Inc. and David Evans and Associates, Inc. during a site inspection on March 28, 2002 form the basis for the discussion of biological resource impacts in this section. The EA for proposed rail line construction and reinstatement of freight operations over the NNR rail line associated with the planned mining operations in Ruth, prepared by the Interstate Commerce Commission (ICC) also draws from these documents, was referred to and cited in this document.

5.4.1 Vegetation

The Preferred Alternative would lead to the removal of existing vegetation on the NNR tracks to permit train operations, and chemical treatment would be necessary to retard future vegetation growth. An approximately one-quarter mile of wetlands along the NNR rail in the vicinity of Milepost 123.0 could be affected by the placement of fill to stabilize the track bed.

The project site supports sagebrush, shadscale and black greasewood scrub. Removal of scrub vegetation along the rail corridor is not expected to have significant adverse impacts on the area's biological resources, due to the presence of abundant vegetation in the surrounding area and region. Also, the plants in these vegetation communities are not considered federally sensitive species. However, in the reinstatement of rail freight and tourist train operations would result in the potential for rail-caused fires along the NNR corridor. Any rail-caused fires could potentially have an adverse affect on the biological resources in the region. Mitigation measures to reduce potential impacts resulting from rail operation-caused fires to a level of insignificance are included below

There are approximately 19 linear miles of wetland and riparian areas along and near the existing NNR corridor, some of which are located within the NNR right of way. Pest management activities, including application of pest management chemicals within the right of way, could adversely affect wetlands and riparian resources. However, that possibility would be minimized through adherence to pest management procedures set forth in an Integrated Pest Management Plan, which would be developed in collaboration with the BLM.

5.4.2 Wildlife

Indigenous animals species that currently graze and forage in the vicinity of the NNR right of way would likely avoid the area and occupy other areas in the region during track restoration and construction activities. Historically, train operations on the NNR have not affected the migration and foraging habits of native fauna. Federally listed threatened and endangered species are known to exist in the project vicinity; however, none are known to occur on the NNR right of way. Track restoration associated with reinstatement of freight rail operations is not expected to have significant

adverse impacts on wildlife from Milepost 18.5 to Milepost 123, because threatened or endangered species are not known to be present in the project vicinity, and other wildlife species would likely avoid the area during restoration. Fish and aquatic life could be affected by the placement of fill to stabilize the track bed in various locations along the segment of rail from Milepost 123 to 128.4, in particular along an approximately one-quarter mile section in the vicinity of Milepost 123. This work may require The City of Ely to apply for and obtain approval from the U.S. Army Corps of Engineers a section 401/404 permit. Depending on the amount and volume of fill being placed into the wetland areas, this would entail securing a Nationwide Permit, a Letter of Permission, or an Individual Permit. Implementation of mitigation required by the USACOE would reduce the potential for impacts to wetlands to below a level of significance.

Rail freight operations along the NNR would include pest management activities, which have the potential to affect wetland and riparian resources. These activities may result in adverse impacts on wildlife that utilize these resources, including several threatened or endangered species. However, as noted above, implementation of the Integrated Pest Management Plan should minimize this possibility.

5.4.3 Mitigation Measures

The proposed project has the potential to result in impacts to biological resources resulting from rail-caused fires, pest management activities and the filling of wetlands. Mitigation measures provided in Section 5.2.5 adequately address the potential impacts resulting from pest management activities. The following are mitigation measures to reduce the potential impacts associated with the filling of wetlands and rail-caused fires to below a level of significance:

For Approval to place fill in jurisdictional wetlands:

- *The City of Ely shall prepare an evaluation of biological resources for the portion of NNR right of way from Milepost 123 to Milepost 128.4. A biological field survey shall be conducted by a qualified biologist, acceptable to the City of Ely and the BLM. If the survey determines there is the potential for significant impacts to sensitive habitat or wildlife species, modifications to the design for the shoulder of the track or mitigation measures will be required. Mitigation may be in the form of creation or restoration of affected habitat to he satisfaction of the City of Ely and/or the responsible agencies, such as the State of Nevada Department of Natural Resources.*

- *In order to complete work between Milepost 123 and 128.4, the project may require approval of a USACOE Section 404 permit. In conjunction with the permit, mitigation for significant impacts to wetlands will be required. Mitigation may take the form of creation, restoration or preservation of like or higher quality habitat at an agreed upon ratio (typically no less than 2:1) in order to ensure a "no net loss" of wetland resources.*

To reduce potential impacts resulting from rail operation-caused fires:

- *The operator shall require that all locomotives used on the NNR be equipped with spark arrestors on exhaust stacks, and fire extinguishers suitable for flammable liquid (diesel fuel) fires.*
- *The operator shall install low-spark brake shoes on all rolling stock under ownership, and on all foreign-owned rolling stock needing brake shoe replacement while on NNR rail line.*
- *The operator shall make every effort to prevent causing any fires, to contain and control any fires it might cause, and shall immediately report all such fires to the appropriate fire fighting agency.*
- *The operator shall inspect and maintain trackage and right of way in accordance with the "Track Safety Standards" of the Federal Railroad Administration, 49 CFR Part 213.*

5.4.4 Effects of Project Alternatives

The reinstatement of rail service on the NNR would increase the likelihood for a rail-caused fire in the region, would require pest management activities, and could include the placement of fill into wetlands in various locations along the segment of rail from Milepost 123 to 128.4. In particular, an approximately one-quarter mile section in the vicinity of Milepost 123 may require filling an existing wetlands. These activities have the potential to affect wetland and riparian resources in the project area. Alternatives to the proposed action could result in different environmental effects on on-site biological resources. The environmental effects of other project alternatives are discussed below.

Class I Alternative

While the intent of this alternative is to avoid the proposed fill of wetland areas, the long-term impacts on water resources under this alternative are expected to be the greater than the Preferred Alternative. This is because most of the work this alternative avoids would likely be completed in the future, without securing permits from any regulatory agencies and mitigation in place, as part of ongoing track maintenance. Thus, under this alternative, impacts associated with rail line restoration and maintenance activities on living resources would likely be greater than under the Preferred Alternative. As a result, an increase in environmental impacts would be anticipated with this alternative.

Non-Rail Alternative

This alternative would result in the use of trucks to transport goods in the region, primarily using Highways 93 and 6. No sensitive biological resources are found along the existing highways in the area. No impacts on wetland areas and biological resources would occur under this alternative since no removal of vegetation and fill of wetland areas are proposed. Additionally, no impacts resulting from rail-caused fires or pest management activities would occur under this alternative. Impacts on living resources would be less under this alternative than the Preferred Alternative.

New Rail Line Route Alternative

This alternative would construct a new rail line in the area. Impacts on biological resources under this alternative are expected to be greater since disturbance of vacant lands in the region would occur for rail construction. If there are sensitive biological resources along the new route, significant adverse impacts on biological resources may occur. Greater impacts are expected on living resources under this alternative.

No Action Alternative

The No Action Alternative would not result in any physical change to the NNR rail corridor and the project area. No ground disturbance, vegetation removal or habitat destruction, as associated with the restoration of the rail line and reinstatement rail freight operations would occur. It is assumed that the NNR right of way would remain unutilized under this alternative. Project-related impacts to vegetation, wildlife and ecosystems would not occur under this alternative.

5.5 CULTURAL RESOURCES

The discussion of Cultural Resources in the White Pine Power Project EIS, and the BLM EIS for the RMLP to reinstate copper mining activities in the mining district near Ruth, Nevada, form the basis for the discussion of cultural resource impacts in this section. The Environmental Assessment for proposed rail line construction and reinstatement of freight operations over the NNR rail line associated with the planned mining operations in Ruth, prepared by the Interstate Commerce Commission (ICC) also draws from these documents, is referred to and cited in this document.

5.5.1 Archaeological and Cultural Resources

Portions of the NNR rail line have previously been surveyed for cultural resources in the process of the BLM permitting procedure for proposed mining activities in the area. The NNR right of way from the earlier mines near Ruth through Robinson Canyon and Ely to the copper smelter at McGill Junction was listed on the National Register several years ago. No restoration work is proposed on this segment as part of this project. The 1994 Class III Cultural Resources Inventory of previously uninventoried portions of the NNR right of way did not identify any archaeological sites where additional significant information could be recovered. The report concluded that the discovered sites were not eligible for the National Register and recommended no additional cultural resource work was required.

The segment of the NNR rail line from Milepost 18.5 to Milepost 128.4 was not surveyed for cultural resources, as part of any previous environmental review. It is not known if any cultural resources are present along the NNR right of way, thus impacts to cultural resources along the NNR right of way, including the actual rail right of way and the historic track, may result from the proposed track restoration. The operator should have the NNR rail line from Milepost 18.5 to Milepost 128.4 evaluated for cultural significance, and should consult with the Nevada State SHPO and the BLM to mitigate potentially adverse effects of the proposed restoration.

5.5.2 Mitigation Measures

The reinstatement of rail freight service on the NNR could result in an adverse impact on cultural resources potentially located in the project area. Mitigation measures to reduce potential impacts resulting from restoration activities and operations to a level of insignificance are included below:

- *The operator shall complete a cultural resource survey of the portion of the Nevada Northern Railroad from Shafter Siding (Milepost 18.5) to McGill Junction (Milepost 128.4).*
- *The operator shall complete a photographic recording of this segment of the Nevada Northern Railroad prior to any disturbance of the rail line or right of way.*
- *The operator shall coordinate with the Nevada State Historic Preservation Officer (SHPO) to determine if Section 106 compliance will be necessary, and if required shall coordinate any Section 106 compliance efforts with the SHPO and BLM.*
- *The operator shall cease restoration activities and notify the SHPO if previously unrecorded historic or prehistoric sites or objects are encountered during restoration activities. If*

significant cultural materials are found within the right of way, an appropriate mitigation strategy shall be developed at that time in consultation with the SHPO. Mitigation may involve performing scientific data recovery by Native American consultants, and notification or consultation with affected Native American groups.

5.5.3 Effects of Project Alternatives

The proposed reinstatement of freight rail service on the NNR would potentially result in significant adverse affects associated with archeological or cultural resources. Mitigations have been prepared to reduce potential impacts resulting from restoration activities and operations to a level of insignificance and are included herein. Alternatives to the proposed action could result in different environmental effects on on-site cultural resources. The environmental effects of other project alternatives are discussed below.

Class 1 Alternative

Impacts on cultural resources under this alternative are expected to be similar to the Preferred Alternative. This is because the same restoration work would occur on the NNR rail line. As a result, no change in environmental impacts resulting from the proposed project would be anticipated with the alternative.

New Rail Line Alternative

This alternative would result in potential disturbance of cultural resources along the new route. Cultural surveys would be needed to determine what, if any, archeological or cultural resources may be present along the new rail line corridor, and if the construction would adversely affect any significant resources. Although it is currently unknown, potentially significant adverse impacts on cultural resources could occur under this alternative.

Non-Rail Alternative

This alternative would lead to the increase in truck traffic on existing highways, but would not include constructing new roads. No train operations would occur on the NNR line. Thus, no impacts on cultural resources would occur under this alternative.

No Action Alternative

The No Action Alternative would not result in any physical change to the NNR right of way. No ground disturbance, excavation or grading activities associated with restoration would occur. It is expected that the right of way would remain vacated and abandoned under this alternative. Project-related impacts to cultural resources sites would not occur under this alternative.

5.6 SOCIOECONOMIC CONDITIONS

5.6.1 Demographics and Population

The reinstatement of rail freight service on the NNR is expected to have an indirect impact on the population or demographics of the City of Ely, White Pine County and Elko County. The City of Ely and White Pine County has not experienced growth in the last decade, chiefly due to the closing of the mine operations by RMLP and of freight service on the NNR by BHP. One of the primary objectives of the proposed project is to facilitate the economic diversification efforts in the region, and regional rail freight service on the NNR is considered critical for meeting this objective. The reinstatement of rail freight service on the NNR could attract industry to the region, indirectly leading to the retention of the existing population base as well as the potential for workers to come to White Pine County and The City of Ely due to the availability of greater employment opportunities. Economic diversification could spur long-term, sustained growth through employment opportunities in the region, as is viewed as a positive alternative to the boom-bust economic cycles that the regions mining-based economy has historically produced. This impact is not considered adverse or significant.

5.6.2 Employment and Income

The restoration of the NNR line and operation of rail freight service is expected to result in short-term construction employment opportunities, as well as long-term employment for the region. Track restoration activities would require a variety of skilled and unskilled laborers, which would be met primarily by the local employment base. Reinstatement of freight rail service would result in new employment to support train operations and would attract a variety of industries into the region. In turn, these industries could bring short-term employment during facilities construction, as well as long-term skilled and unskilled employment to the region. Freight operations would also require a variety of skilled and unskilled workers. In addition, by expanding the excursion tourist train operations the City of Ely would benefit from increased tourism activities in the area. These impacts are expected to be economically beneficial to the City of Ely and White Pine and Elko Counties.

5.6.3 Low-Income and Minority Populations

The proposed reinstatement of freight rail operations on the NNR line is not expected to have a negative socioeconomic impact on minority and low-income populations. There are no minority or low-income residents or employees that would be displaced by the project. Adjacent homes are located over 1,000 feet from the right of way and would not be adversely affected by restoration activities and future rail line operations. Rather, the proposed project would result in beneficial social and economic effects to the local population, through the creation of jobs for the local community, the development of new industries in the region, and the generation of new income sources to the City of Ely. In addition, the reinstatement of freight rail service would indirectly stimulate the economy of the region through the expenditure of income from employees and tourists, and through increased demand for local goods and services from local enterprises.

The proposed project is not expected to have an impact on or displace existing agricultural land uses. It is also not expected to make agricultural production economically infeasible, since there is no direct relationship between agricultural operations and the restoration and use of the NNR rail line. Adjacent agricultural lands to the NNR right of way would not be affected by the proposed restoration activities or rail line operations. No impact on farm or ranch workers is expected with the proposed reinstatement of freight rail services.

There are no specific minority, low-income or American Indian residents along the NNR right of way that would be adversely affected by the project. Thus, the proposed project is not expected to have any significant adverse impact on low-income and minority populations. No adverse impacts on population and social services are expected by the proposed rail line restoration.

5.6.4 Community Infrastructure

Infrastructure improvements affecting local transportation and utility systems would be limited to reconstruction occurring at road and highway crossings. No on-site wells, water tanks, or water distribution system piping would be required for the project. No sanitation sewer lines, septic systems, power and gas lines, telephone lines, or detention basins for stormwater runoff would be constructed. Thus, no project impacts regarding community infrastructure are anticipated.

Replacement and reconstruction of existing culverts would be made along the NNR right of way, to allow for more effective drainage flows across and under the rail line to accommodate increased train loads. These improvements would facilitate storm drainage and would not be considered a significant adverse impact.

5.6.5 Public Services

Fire and Police Protection

Activities associated with the NNR track restoration and reinstatement of rail freight service operations on the NNR line would increase the potential for fire and accidents due to train operations and a potential for emergencies due to the increase in the number of people on the NNR line in White Pine and Elko Counties. Thus, the proposed project would potentially increase the demand for fire protection services, law enforcement services, and emergency services in the project area.

The NNR right of way lies mainly adjacent to and within lands under the jurisdiction of the BLM. Accordingly, fire protection services in the project area are provided by the BLM, which would also provide first-response to fires on the privately held ranches and residences that abut the NNR right of way. The potential increase in demand for fire protection services can be reduced by ensuring that train operations adhere to public safety requirements and conditions, as outlined in Section 5.4.3.

The reinstatement of rail freight service would include several rail/roadway intersections which could lead to an increase in the potential for traffic accidents. However, the likelihood for vehicle/train accidents is very low, primarily due to the low level of vehicle traffic in the project

area. The proposed train operations would result in an increase in the number of people at the NNR rail line. These include train operators, maintenance personnel, tourists on the trains, and other visitors to the project area. Therefore, the potential for criminal elements associated with the rail line may increase. However, the presence of criminal elements would be expected to be minimal. Due to the largely freight use of the trains on the NNR line, it is not anticipated that a significant number of incidents requiring law enforcement and police services would occur. An increased demand for police services is not expected.

Medical Services

The County Fire Department would provide emergency medical service response to the NNR rail line. It is expected that medical service would be provided by the regional hospital in Ely and other hospitals in Salt Lake City, Utah, located northwest of the project area. The rail line restoration and future freight rail service would be conducted in accordance with federal, state, county and city public health and safety regulations and no major demand for medical services is expected with the project. No significant impacts to medical services are anticipated.

Schools

No housing development that would generate children who would require school services is proposed as part of the reinstatement of freight rail service on the NNR line. One of the project objectives is to encourage economic growth in the region, and the development of industries that are established in the region in the future could lead to future housing development in the area. However, increases in residential developments in the area are not expected to be significant nor would such residential growth generate substantial increases in student population. Thus, no direct impact on school services is expected.

5.6.6 Mitigation Measures

The proposed reinstatement of rail freight service on the NNR line would not result in significant adverse socioeconomic impacts associated with population, employment, community infrastructure, and police and school services. No mitigation measures would be required.

5.6.7 Effects of Project Alternatives

The proposed project would not demand service from on-site utilities or connections to existing infrastructure within the project area. Additionally, the project would not require significant increases in fire and police protection services. Alternatives to the proposed action would result in community infrastructure and public services needs similar to the proposed project, and as described below.

Class 1 Alternative

The socioeconomic impacts of this alternative would be the same as the preferred alternative, since the same freight rail operations would occur; although under this alternative a section of

the NNR line would be limited to Class 1 operations. Impacts associated with community infrastructure and public services under this alternative are expected to be similar to the preferred alternative. This alternative also does not require service from on-site utilities or connections to existing infrastructure. Because operations would be similar, demand for school services would likewise not be required. Increase in demands for fire and police protection services would also be similar. However, not constructing the optimal track bed stabilization measures recommended in the segment of rail line from Milepost 123 to 128.4 may lead to more train accidents and greater demands on fire, police, and medical services. Thus, greater environmental impacts on public services would be anticipated under this alternative than the Preferred Alternative.

New Rail Line Alternative

Since the same freight rail operations would occur under this alternative, similar impacts associated with employment would result. However, with no tourist train operations, income sources to the City under this alternative may be slightly less. Impacts on public services would be the same as those of the preferred alternative, since the freight rail operations on the NNR line or on the new rail line under this alternative would be largely the same. As with the proposed project, this alternative would not demand on-site utility services or connections to existing infrastructure. Additionally, the project would be required to implement the same mitigation measures for fire protection services. Beneficial impacts in terms of income would be slightly less.

Non-Rail Alternative

This alternative would lead to increase truck traffic on existing highways, but would not include constructing new roads. Employment and income with his alternative would be limited to increases in truck operators. No tourist activity increase would occur. As with the preferred alternative, operations would not require utility services. An increase in fire and police protection services may occur due to the increase in traffic volumes on the existing roadway network, and the associated potential for traffic accidents associated with the increase in interfaces of freight trucks with existing vehicle traffic in the area. Impacts to socioeconomic conditions and public services under this alternative would be greater than the proposed project.

No Action Alternative

No impacts to the population, employment, community infrastructure, and public services would occur under this alternative, as no demand for utilities and services and no rail freight operations would occur. This alternative would avoid all socioeconomic, infrastructure and public service impacts of the proposed project.

5.7 RESOURCE USE PATTERNS

5.7.1 Land Use

The proposed reinstatement of rail freight service on the NNR line is not expected to significantly affect land uses or recreational opportunities in the project area. The NNR has historically operated on the rail corridor for decades, and the current right of way configuration would not be altered. No changes in existing or planned land uses on adjacent areas is proposed.

5.7.2 Recreation

The NNR right of way is not used for any existing recreational purpose. The proposed project would not affect access to recreational uses near the NNR right of way, such as Bassett Lake near McGill, nor would the project limit or significantly affect wildlife viewing by hindering the migration of fauna across the NNR right of way. Sport fishing that occurs in Tailings Creek near Milepost 123 could be potentially impacted by the placement of fill into the creek for stabilizing the track bed as part of the track restoration. The proposed project would include the expansion of tourist train operations from McGill Junction to Shafter. This would create beneficial impacts to tourism activities in the area. Potential adverse impacts on recreation associated with the proposed freight rail operations would be limited to impacts on sport fishing in Tailings Creek; however, the EA includes mitigation measures in Section 5.4.3 that would reduce the impacts below a level of significance.

5.7.3 Natural Resources

Mining and Logging

The mines in the Robinson Mining District have been closed since 1999. Restoration of the NNR rail line would permit the cost-effective transport of ore from the Mining District to outside markets or industrial areas, should mining become active again in the Robinson District. No commercial logging activities are found near the project area. The reuse of the existing rail line would not affect the presence or access to mineral resources in the project area. Therefore, the proposed restoration of the NNR line rail operations would have no adverse impact on mineral and timber resources and activities.

Agriculture

The NNR right of way is not used for agriculture purposes, although agricultural land uses are present along the right of way. No impact on these adjacent agricultural lands is expected with the proposed project. Thus, the proposed reinstatement of rail freight service is not expected to have direct adverse impacts on the agricultural operations.

5.7.4 Transportation Network

The proposed rail line operations would improve rail transportation in White Pine County. This would improve the transport of goods to and from the project area and is considered a beneficial impact. The project can also affect the transportation network in the following ways:

- There is a potential for train-vehicle accidents at grade crossings.
- There is a potential for delays of vehicular traffic at grade crossings.
- There is a potential for train derailments.
- There is a potential for train collisions at crossings of other rail lines.

These potential transportation conflicts and accidents would be minimized through compliance with pertinent FRA regulations. These include the provision of railroad crossing stop signs at all private road crossings along the NNR line and flashing lights and crossbucks at public road crossings. Table 5-1 lists the at-grade public road crossings and crossing protection that would be improved or provided along the existing NNR rail corridor. These protections would prevent train-vehicle accidents at grade crossings.

TABLE 5-1
AFFECTED ROAD CROSSINGS AND PROPOSED SAFETY PROTECTIONS

Road Name	Milepost	Proposed Crossing Warning	ADT (1)
Shafter Road	18.5	Crossbucks	1
U.S. Highway 93	63.07	Flashing lights	490
Currie-Cherry Creek Road	65.75	Crossbucks	20
Cherry Creek Road	91.2	Crossbucks	80
Warm Springs Road	108.0	Crossbucks	26

(1) Average Daily Trips

Due to the low projected rail traffic level along the NNR rail lines (up to four train movements per day), potential grade crossing safety and delay impacts are expected to be minimal. The NNR at-grade crossing of UPRR rail line at Shafter has an electric lock on the NNR-UP switch, which would be interlocked with UP's Centralized Traffic Control System, to prevent possible collisions at this location. Thus, train collisions would be prevented.

Any train operation over a rail line involves a potential for derailment. This issue is a particular concern in this case due to the fact that proposed shipments over the NNR line would include hazardous materials. Derailments that involve hazardous material spills could lead to ground contamination and health hazards. Safety measures as required by the FRA regulations would be implemented to prevent train derailment and to develop emergency procedures during a derailment. Due to the largely vacant and undeveloped lands adjacent to the NNR right of way, the low density of nearby developments, and the limited anticipated train traffic, this impact is not expected to be significant. Hazardous materials are further discussed in Section 5.8.2, *Public Health and Safety.*

The WPHRF operates a limited number of special excursion trains each year over 18.2 miles of NNR line currently owned by the City of Ely and south of McGill Junction. These excursion trains typically run from mid-May to Mid September, on weekends, with limited weekday excursions. The WPHRF could likely expand its operations by adding an extended excursion over the restored portion of the NNR line as far north as Shafter. WPHRF tourist trains would be scheduled so not to conflict with freight rail operations, as mandated by the Federal Transit Authority (FTA). Achieving time separation between rail freight service and WPHRF excursion trains as required by the FTA is not expected to result in an impact.

5.7.5 Mitigation Measures

No adverse land use, recreation, or natural resource impacts are expected with the proposed project. The reinstatement of rail freight service on the NNR line would not generate rail traffic to a degree that would result in potentially significant grade crossing safety and delay impacts, with implementation of the crossing signs and protection measures. No mitigation measures are needed.

5.7.6 Effects of Project Alternatives

The proposed reinstatement of rail freight service would result in the same land use within the NNR right of way that has occurred for decades. The proposed project would not adversely affect resource use patterns, and would not generate new vehicle trips on area roadways. The proposed project would help to achieve the goals regarding economic diversification sought by the White Pine County Economic Diversification Council and the City of Ely. Alternative scenarios would provide different impacts on resource use patterns and the transportation network. These are discussed below.

Class 1 Alternative

This alternative would not result in impacts affecting land use patterns or recreational resources in the area. By not optimally stabilizing the track bed and limiting the portion of track from Milepost 123 to 128.4 to Class 1 operations, the potential for derailments along this segment would increase significantly. It is likely that long-term track maintenance would require most or all of the track restoration proposed as part of the Preferred Alternative along this track segment as well, and mitigation measures for impacts to wetlands and riparian habitat would not be provided as part of this maintenance activity. potentially affecting sport fishing resources along this segment. No increase in vehicle traffic on the existing roadway network would occur under this alternative. Under this alternative, impacts to wetlands would likely be greater than under the Preferred Alternative.

Non-Rail Alternative

This alternative would not affect existing land use patterns, since truck traffic under this alternative would occur on existing roadways, such as Highways 93 and 6. No impacts on recreational uses or natural resources under this alternative are expected, similar to the preferred alternative. However, with the reliance on the roadway transportation network, this

alternative would result in increases in roadway traffic volumes at several roadways in the City of Ely, White Pine County and the surrounding areas where goods and freight would be transported. Greater impacts on the roadway transportation network would occur under this alternative.

New Rail Line Route Alternative

This alternative could significantly affect existing and planned land uses and recreational resources in the region. Acquiring right of way and constructing the new rail line would result in significant impacts on surrounding agricultural uses. Construction, particularly in and near wetland areas, creeks and tributaries, could also result in significant adverse impacts on aquatic resources and water quality. Since train operations would be similar to the proposed project, no increase in vehicle traffic on the existing roadway network would occur under this alternative. However, significant adverse impacts to land use would occur under this alternative. These impacts are greater than the impacts of the proposed project.

No Action Alternative

The No Action Alternative would not result in any change in land use patterns on the property and the surrounding area and this alternative would not increase or impact recreational opportunities in the project region. Established land uses would not be affected, and no impacts to natural resources would occur with the reinstatement rail freight operations. It is assumed that the NNR right of way would remain abandoned and underutilized under this alternative. No increase in train or vehicle traffic would occur under this alternative. Impacts affecting land use, recreation, natural resources, and transportation would not occur under this alternative.

5.8 OTHER VALUES

5.8.1 Visual Resources

The NNR rail line is located within an area dominated by expanses of sage/shrub habitat, and has been given a classification of 4 by the BLM. This classification allows modification as described in the BLM guidelines as "*Any contrast may attract attention and be a dominant feature of the landscape in terms of scale, but it should repeat the form, line, color, and texture of the classification landscape*".

The proposed restoration, operation, and maintenance of the NNR line would retain the visual quality of the railroad tracks and the surrounding landscape. No above ground structures are proposed which may obstruct public views. The project would not affect the existing scrub and brush vegetation in the project area, except for the vegetation that has grown within and near the tracks. Thus, the proposed project would not adversely affect existing visual resources.

5.8.2 Public Health and Safety

To ensure public health hazards are not created by the project, all areas proposed for restoration shall be conditioned to remain in a sanitary condition at all times during track restoration, maintenance and operation. In addition, waste materials generated by restoration, maintenance and operation activities shall be disposed of promptly at a State of Nevada approved sanitary landfill site.

Airport Hazards

Yelland Airfield is located in the vicinity of the portion of the NNR line that is owned and operated by the City of Ely and the WPHRF. However, the airfield is several miles from the most southerly portion of the NNR line being considered for restoration under this project. No structures or otherwise habitable space is proposed within the extended runway centerline (ERC) zone, or the traffic pattern zone (TPZ) of Yelland Airfield. Thus, the project would not conflict with Federal Aviation Administration (FAA) safety standards, affect airport service or result in potential issues regarding development within an airport safety zone.

Use of Hazardous Materials

Rail freight operations would require the storage and utilization of hazardous materials for routine maintenance activities. These hazardous materials would include pesticides, herbicides, diesel fuel, cleaning solvents, and other similar compounds. All storage, use and disposal of these materials would be in accordance with State and Federal regulations. As a result, no significant adverse impacts associated with the storage and utilization of hazardous materials is anticipated.

As noted earlier, the BLM FEIS analyzed the potential for train derailment on pages 4-41 through 4-45 of the PETS. The BLM estimates that, over the life of the RMLP mining operation, 0.32 releases of diesel fuel could occur along the entire NNR rail corridor, and 2.6 releases of sulfuric acid could

occur along the corridor. These spills could lead to ground contamination and health hazards. The FEIS concluded that the probability of a large sulfuric acid or diesel fuel release along the rail corridor was low. The FEIS indicated that, based on the low speed of the trains, the construction of the tank cars, and the requirement for Spill Prevention, Control, and Countermeasures Plan being in place prior to operations that it is unlikely wildlife species would be affected. In the event of a large release into one of the more sensitive wetland/riparian areas along the rail corridor, site remediation would be critical in keeping adverse impacts short-term and re-establishing the riparian system.

5.8.3 Noise

The proposed track restoration and rail operations would result in an increase in noise levels along the NNR rail line due to rail reconstruction activities and passing trains. However, because there are few sensitive receptors in the project vicinity and none are located directly adjacent to the NNR right of way. Noise impacts associated with this project are not considered significant.

Construction Noise

The proposed project would result in temporary noise impacts associated with track restoration activities. Temporary construction noise impacts would vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used, which changes during the course of the project. Heavy equipment noise can exceed 90 dBA (A-weighted decibel) and averages about 85 dBA at 50 feet from the source when the equipment is operating at typical loads

Point sources of noise emissions are atmospherically attenuated by a factor of six dB per doubling of distance. The loudest construction may require 500 feet of distance between the source and a nearby receiver to reduce the average 85 dBA source strength to a generally acceptable 65 dB exterior exposure level. Construction noise is not anticipated to be a source of significant impact because of the distance of the NNR line from adjacent developments and the lack of any substantial concentration of noise-sensitive land uses in the area. Construction noise would not affect the long-term noise exposure in the project vicinity.

Rail Operations Noise

The operation of rail freight service on the NNR line would result in the resumption of train-generated noise in the project vicinity. However, there is a substantial distance separation between the NNR corridor and the closest sensitive noise receptors, which are the existing residences located near the right of way, mainly in Steptoe Valley on the privately held lands abutting the rail corridor. The anticipated number of train trips is not expected to be exceed four per day. Thus, noise from passing trains would be intermittent, short term and limited. The reinstatement of rail freight service on the NNR is not expected to create adverse noise impacts to the residences in the project vicinity.

5.8.4 Mitigation Measures

No significant visual quality, public safety and noise impacts are expected from project implementation and thus, no mitigation is recommended.

5.8.4 Effects of Project Alternatives

Public safety issues of the project include potential train derailment and the hazardous materials. The proposed project would create temporary noise impacts during restoration activities and occasional increased noise levels associated with train operations. Project alternatives would also generate impacts related to public safety, noise, as described below.

Class 1 Alternative

This alternative would result in similar impacts on visual resources, public safety and noise as the preferred alternative, since the same train operations would occur on the existing NNR line, and the same residences would be exposed to the visual quality, public safety, and noise impacts. Hazardous materials use associated with rail operations would not change under this alternative. Similar impacts on visual resources, public safety, and noise are expected under this alternative. However, under this alternative, the potential for derailments resulting in hazardous material spills and ground contamination would be greater along the segment from Milepost 123 to Milepost 128.4 because the rail line would not be optimally stabilized. Thus, hazards associated with public health and safety impacts under this alternative are greater than the proposed project.

New Rail Line Alternative

This alternative would result in significantly more noise impacts associated with new rail line construction, and could have greater impact on visual resources in the region since existing vacant and undeveloped areas would have to be disturbed and utilized for the new rail line. Use of hazardous materials under this alternative would be similar to uses under the Preferred Alternative. Short-term construction noise would increase, mostly due to an increase in required grading, and noise impacts associated with rail operations could occur if the selected route was located closer than the existing NNR right of way to sensitive noise receptors, potentially resulting in greater impacts than the Preferred Alternative.

Non-Rail Alternative

This alternative would likely result in an increase truck traffic on existing highways, but would not include construction noise associated with track restoration activities. Since no new roads would be built under this alternative, no impacts on visual resources would occur. Increase in noise would be limited to the increase in noise from cumulative vehicle traffic volumes on existing roadways. Increases in roadway traffic volumes may increase the potential for accidents and associated hazardous materials spills. No hazardous materials for NNR line maintenance would be needed under this alternative. Impacts on visual resources, noise, and public health and safety are expected to be less under this alternative than the proposed project.

No Action Alternative

The No Action Alternative would not result in a physical or visual change to the NNR right of way. No use or handling of hazardous materials, vegetation removal, grading, or other restoration-related activities would occur. It is expected that the right of way would remain abandoned and underutilized under this alternative. No noise from reconstruction activities or train operations would occur. Project-related impacts on visual resources, public safety, and noise would not occur under this alternative.

6.0 ENVIRONMENTAL CONSIDERATIONS

6.1 SUMMARY OF IMPACTS

As determined in the assessment process, significant long-term beneficial socioeconomic impacts are anticipated under the proposed reinstatement of rail freight service on the NNR line. The project would create employment opportunities for local residents and generate revenue for Elko County, White Pine County, and the City of Ely.

Environmental effects associated with the proposed development are associated with soils (erosion during restoration activities), drainage and hydrology (runoff and water quality, including requirements regarding pesticide use), air quality (fugitive dust), cultural resources, and impacts to biological resources resulting from placement of fill into wetlands, a rail-caused fires, or hazardous materials release. These impacts will be fully mitigated through measures presented in Section 5.0 of this EA. The recommended mitigation measures are summarized below.

6.1.1 Land Resources

The proposed project (or Preferred Action) would not result in a significant impacts associated with on-site soil characteristics. Thus, no mitigation measures are required. However, the following measures are being recommended to help reduce soil erosion and fugitive dust:

- *Erosion control measures and dust control measures shall be incorporated during construction activities in order to reduce project-induced soil erosion and fugitive dust. These may include daily watering, use of soil binders, reseeding of disturbed areas, etc.*

- *All drainage runoff shall be directed away from the track bed, and disturbed areas shall be reseeded at the earliest time possible to reduce soil erosion.*

6.1.2 Water Resources

The proposed project (or Preferred Action) has the potential to result in an incremental contribution of urban pollutants to surface water quality. The following mitigation measures would reduce the project's potential impacts on runoff and water quality:

- *The City of Ely shall obtain the necessary Storm Water Pollution Control Permit from the Nevada Department of Environmental Protection and will comply with all conditions attached to the permit, including the implementation of best management practices, such as:*

1. *Confining all vehicles used during restoration, operations and maintenance activities to the minimum area necessary within the NNR right-of-way;*
2. *Requiring restoration or routine maintenance activities within the right-of-way not be performed during times when the soil is too wet to adequately support construction equipment;*
3. *Limiting areas of soil disturbance to retain existing vegetation, whenever feasible;*

4. *Reseeding disturbed areas using a similar seed mixture as that used on lands within the BLM right-of-way grant specified in grant N-56525;*
5. *Covering earthen stockpiles with tarps before forecasted rainfall;*
6. *Implementing appropriate measures, such as dampening unpaved access roads and spraying of water during grading operations, to protect disturbed soil and completed grading work from wind erosion and to reduce fugitive dust.*

- *The operator shall prepare and implement an Integrated Pest Management Plan developed in coordination with the BLM, which shall include processes such as:*

1. *Controlling right-of-way vegetation in or near drainageways and wetland areas shall solely include herbicides registered with the United States EPA for use in aquatic sites;*
2. *Compliance with State and Federal laws and regulations regarding use of pesticides (i.e. insecticides, herbicides, fungicides, rodenticides, and other similar substances) within the right-of-way proposed for reinstitution of freight service;*
3. *Require that only individuals holding a Nevada herbicide applicator's permit or license shall apply maintenance herbicides in the NNR right-of-way.*

6.1.3 Living Resources

The proposed project (or Preferred Action) would potentially result in impacts associated with biological resources and the filling of wetlands. The following measures are recommended to mitigate the impacts associated with impacts to the placement of fill in jurisdictional wetlands:

For Approval to place fill in jurisdictional wetlands:

- *The City of Ely shall prepare an evaluation of biological resources for the portion of NNR right of way from Milepost 123 to Milepost 128.4. A biological field survey shall be conducted by a qualified biologist, acceptable to the City of Ely and the BLM. If the survey determines there is the potential for significant impacts to sensitive habitat or wildlife species, modifications to the design for the shoulder of the track or mitigation measures will be required. Mitigation may be in the form of creation or restoration of affected habitat to he satisfaction of the City of Ely and/or the responsible agencies, such as the State of Nevada Department of Natural Resources.*

- *In order to complete work between Milepost 123 and 128.4, the project may require approval of a USACOE Section 404 permit. In conjunction with the permit, mitigation for significant impacts to wetlands will be required. Mitigation may take the form of creation, restoration or preservation of like or higher quality habitat at an agreed upon ratio (typically no less than 2:1) in order to ensure a "no net loss" of wetland resources.*

To reduce potential impacts resulting from rail operation-caused fires:

- *The operator shall require that all locomotives used on the NNR be equipped with spark arrestors on exhaust stacks, and fire extinguishers suitable for flammable liquid (diesel fuel) fires.*
- *The operator shall install low-spark brake shoes on all rolling stock under ownership, and on all foreign-owned rolling stock needing brake shoe replacement while on NNR rail line.*
- *The operator shall make every effort to prevent causing any fires, to contain and control any fires it might cause, and shall immediately report all such fires to the appropriate fire fighting agency.*
- *The operator shall inspect and maintain trackage and right of way in accordance with the "Track Safety Standards" of the Federal Railroad Administration, 49 CFR Part 213.*

6.1.4 Cultural Resources

The reinstatement of rail freight service on the NNR could potentially result in an adverse impact on cultural resources potentially located in the project area. Mitigation measures to reduce potential impacts resulting from restoration activities and operations to a level of insignificance are included below:

- *The operator shall complete a cultural resource survey of the portion of the Nevada Northern Railroad from Shafter Siding (Milepost 18.5) to McGill Junction (Milepost 128.4).*
- *The operator shall complete a photographic recording of this segment of the Nevada Northern Railroad prior to any disturbance of the rail line or right-of-way.*
- *The operator shall coordinate with the Nevada State Historic Preservation Officer (SHPO) to determine if Section 106 compliance will be necessary, and if required shall coordinate any Section 106 compliance efforts with the SHPO and BLM.*
- *The operator shall cease restoration activities and notify the SHPO if previously unrecorded historic or prehistoric sites or objects are encountered during restoration activities. If significant cultural materials are found within the right-of-way, an appropriate mitigation strategy shall be developed at that time in consultation with the SHPO. Mitigation may involve performing scientific data recovery by Native American Consultants, and notification or consultation with affected Native American groups.*

6.2 ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that "*each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental affects of its programs, policies, and activities on minority populations and low-income populations*" (Environmental Justices, Guidance Under the National Environmental Policy Act, Council on Environmental Quality, December 10, 1997).

As part of the environmental review process, the EA must identify and address environmental justice concerns, including human health, economic and social effects. As evaluated in this EA and summarized in this section, the proposed project would not result in disproportionately high and adverse human health or environmental effects to minority populations or low-income populations.

The Memorandum accompanying Executive Order 12898 identifies four important ways to consider environmental justice under the National Environmental Policy Act. These guidelines are presented in Table 6-1, *Reference Summary of Environmental Justice Evaluation*. Table 6-1 also includes a cross-reference to discussions presented in the EA, which respond to each guideline.

TABLE 6-1
REFERENCE SUMMARY OF ENVIRONMENTAL JUSTICE EVALUATION

Environmental Justice Discussion Guidelines	EA Discussion Reference
• An analysis of the environmental effects, including human health, economic, and social effects of Federal actions on minority populations, low-income populations and Indian tribes when such analysis is required by NEPA.	Section 5.0 of the EA addresses the Environmental Consequences of the proposed project. Environmental effects on Public Health and Safety are addressed in Section 5.8. Economic and social effects of the proposed project are addressed in Section 5.6.
• Mitigation measures identified as part of the NEPA document should, whenever feasible, address significant and adverse effects of proposed Federal actions on minority populations, low-income populations and Indian tribes.	This EA addresses mitigation measures and their effects in Section 5.0 under each issue. These measures are also listed above.
• Each Federal agency must provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.	Section 8.0 documents the consultation and coordination process, which occurred during the preparation of the EA.
• Review of NEPA compliance must ensure that the agency preparing the NEPA analysis and documentation has appropriately analyzed environmental effects on minority populations, low-income populations or Indian tribes, including human health, social and economic effects.	In accordance with this requirement, the EA will undergo review as required by NEPA.

In accordance with Executive Order 12898 and the guidelines provided above, this EA includes the necessary documentation to ensure that environmental justice concerns have been adequately addressed. This EA includes a detailed analysis of the environmental effects associated with the proposed reinstatement of rail freight service on the NNR line. Section 4.0 of the EA presents a discussion of the Affected Environment, and Section 5.0 addresses the Environmental Consequences of the proposed project.

The analysis in the EA concludes that potentially significant effects associated with soils and geology, drainage and hydrology, air quality, and public services. These impacts would be fully mitigated by measures presented in Section 5.0 of the EA. Implementation of recommended

mitigation measures will ensure that effects are reduced to below a level of significance and that impacts associated with the proposed project will not adversely affect minority populations, low-income populations and Indian tribes. The proposed project would not result in significant impacts to public health and safety (see Section 5.8.2), and that the proposed project would result in beneficial social and economic effects, through the creation of employment opportunities and income to the Tribe (see Section 5.6.2).

As discussed in Section 8.0, a substantial amount of consultation and coordination has occurred prior to and during the preparation of the EA. Consultants representing the City of Ely and the White Pine Economic Diversification Council (WPEDC) have met with various agencies to address environmental conditions and coordination efforts with local agencies. As part of the environmental review process, the EA will be reviewed by the City of Ely and WPEDC Staff, the BLM, the USFWS, the ACOE, and a variety of responsible and interested agencies. This review will culminate in preparation of a final EA by the City of Ely for the reinstatement of rail freight service on the NNR, which will further consider any comments received during the review period.

7.0 CONSULTATION AND COORDINATION

This chapter presents the consultation and coordination process which occurred during the preparation of the EA. This discussion includes contacts made during the development of the Proposed Action and the writing of the EA.

In order to initiate the preparation of the EA and to discuss the document scope, a meeting were conducted with representatives of the City of Ely, R.L. Banks & Associates, Inc., and David Evans and Associates, Inc. (DEA) in March to discuss key issues. A separate meeting was held with representatives from DEA and Pacific Southwest Biological Services in which biological-related issues were discussed. During preparation of the EA, the City of Ely, the White Pine County Economic Diversification Council, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, The State of Nevada Historic Preservation Officer, and The Bureau of Land Management were contacted by DEA. As part of the assessment process, the following knowledgeable individuals were consulted regarding data availability and scoping of environmental issues.

- Karen Rajala, City of Ely and White Pine County Economic Diversification Council
- Steve Leith, White Pine County Economic Diversification Council
- Dean Day, City of Ely
- Ken Withers, R.L. Banks & Associates, Inc.
- Jim Winger, R.L. Banks & Associates, Inc.
- Shelley Carter, U.S. Army Corps of Engineers
- Lois Metcalf, Bureau of Land Management
- Alice Baldrica, State of Nevada Historic Preservation Office
- Mary Jo Elpers, U.S. Fish & Wildlife Service
- Laura Richards, State of Nevada Department of Conservation and Natural Resources
- R. Mitchell Beauchamp, Principle Pacific Southwest Biological Services
- Ed Wynes, Elko County Planning Department

A scoping meeting was held in Ely on April 11, 2002, which was attended by four persons, with one person offering public comment in support of the project. The Ely City Council has scheduled a hearing on July 11 to hear public comments on the Project EA.

8.0 REFERENCES

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Interstate Commerce Commission, Construction and Operation Exemption and Modified Rail Certificate Environmental Assessment for the Northern Nevada Railroad Corporation, 1995.

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U.S. Census Bureau, State and County QuickFacts.

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APPENDIX C:

"NEVADA NORTHERN RAILROAD PROJECT ENGINEERING STUDY AND COST ESTIMATE"

Completed by: R.L. Banks and Associates, Inc., July 2002