

Impacts to Mineral County Visitors and Waste Transportation to Yucca Mountain

September 2002

Mineral County
Office of Nuclear Projects

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1.0 INTRODUCTION

The purpose of this report is to identify key visitor markets for Mineral County, the Walker Lake and Hawthorne areas. More importantly, key visitor markets will also help identify likely highway transportation routes to the Walker Lake and Hawthorne region used by visitors. Currently, vehicle use is the only mode of transportation available to access Mineral County. Visitors to Mineral County provide sizeable economic benefits to the local economy. The primary types of visitors to the area include:

- Outdoor recreation (day and overnight use) principally at Walker Lake.
- Recreational vehicle travelers staying overnight in local parks. U.S. 95 serves as an important route for snowbirds traveling to the south in the Fall and north in the Spring.
- Overnight travelers using local hotels enroute to other destinations.

A smaller segment of visitors are those attending special events in the Hawthorne area. In addition to visitor markets, this report also provides a profile in terms of the length of stay, number of visitors in the party, and likely level of expenditures by visitor category.

Understanding visitor characteristics is important to estimating the potential impacts to Mineral County from shipments of spent nuclear fuel and high-level radioactive waste to Yucca Mountain. Visitors to Mineral County are likely to encounter highway shipments to Yucca Mountain not only during their stay in Mineral County but also along transportation routes through the area. This increased level of encounters may have a heightened level of risk and ultimately affect the number of trips made by visitors to Mineral County, and their willingness to utilize local accommodations. Heightened risk and greater awareness of transportation shipments occurs among visitors because they will share the same routes as truck shipments to Yucca Mountain. Travelers using routes with highway shipments will have greater overall exposure and awareness than those arriving at destinations by air.

Waste Transportation To Yucca Mountain

There are a number of generator sites in the western United States that will be shipping spent nuclear fuel and high-level waste to Yucca Mountain. These sites are comprised of commercial reactor sites, and DOE facilities in four western states. Figure 1-1 shows the location of generator sites and the likely routes connecting to U.S. 95 and Yucca Mountain. Table 1-1 lists the generator site and the number of truck shipments likely to occur from western reactor sites. Those located to the east will probably use highway alternatives such as Interstate 80 to U.S. 93 and 6 in Nevada. The Hanford site and WPPSS in eastern Washington will potentially generate the largest number of shipments to Yucca Mountain utilizing U.S. 95.

**Figure 1-1
Transportation Routes to Yucca Mountain
From Western Generator Sites Using US95**



Using interstate routes would cause Hanford shipments to pass through major metropolitan areas such as Salt Lake City and Las Vegas, or alternatively Portland Oregon and cities in California. U.S. 95 provides easy access to Yucca Mountain and avoids larger metropolitan areas encountered using the Interstate Highway system. Also, U.S. 95 offers overall better highway conditions with few high mountain passes and a lower incidence of winter driving conditions as compared to other highway options.

**Table 1-1
Potential Generator Sites and Shipment Volumes
To Utilize U.S. 95 through Mineral County**

Reactor Site	Yucca Mountain Shipments	
	(2010 – 2033) Proposed Action	(2010 – 2048) Modules 1 & 2
Humboldt Bay (Eureka, CA.)*-SNF	44	44
Rancho Seco (Sacramento, CA)-SNF	124	124
Diablo Canyon I (San Luis Obispo, CA)-SNF	327	617
Diablo Canyon II (San Luis Obispo, CA)-SNF	305	691
INEEL (Twin Falls, ID)-SNF	1,388	1,467
INEEL (Twin Falls, ID)-**HLW	0	1,300
Trojan (Astoria, OR.)*-SNF	195	195
Hanford (Hanford, WA.)*-SNF	754	809
Hanford (Hanford, WA.)*-HLW	1,960	14,500
WPSS 2 (Kenwick WA.)*-SNF	353	736
Total	5,450	20,483

Source: DOE 1999, EIS Yucca Mountain Project. * SNF-Spent Nuclear Fuel, ** HLW -High-Level waste.

The greater amounts shown in modules 1 & 2 (Table 1-1) generally reflect continued operations at nuclear power plants across the country and other projected waste generation volumes at DOE facilities. Shipments from Hanford, Trojan Site, WPPSS, Humboldt Bay, and Rancho Seco are more likely to pass through the Hawthorne area. It is possible that Diablo Canyon and Idaho National Engineering and Environmental Laboratory will also ship through the Hawthorne area.

Under federal regulation, states are allowed to designate alternate highway routes. The State of Nevada has yet to undertake this process. In 1989, the State has undertaken an initial process to identify routes to Yucca Mountain. The initial study did not thoroughly consider western generator sites although Interstate 80 was considered.

However, recent shipping campaigns to the WIPP site in New Mexico and low-level waste shipment to the Nevada Test Site strongly suggest that alternate route designation largely serve to avoid major metropolitan areas.

Figure 1-2 shows the current highway route designations for western states. These designations are likely to influence the selection of routes needed to access Yucca Mountain. Some of the routes were designated in response to WIPP shipments.

California, Oregon, Utah and Colorado all have preferred route segments. In one instance, the State of Colorado has restricted use of Interstate 70 east of Denver. This route passes through the Central Rocky Mountain region and connects into I-15 going south to Las Vegas. Without the use of I-70, waste shipments from the east will continue through on Interstate 80 and avoid the Las Vegas Valley.

Although the State of Nevada has not designated preferred routes, shipments of transuranic waste from the Nevada Test Site to the WIPP site in New Mexico utilize U.S. 95 to Highway 127 in Nevada. Again the purpose of using this route is to avoid going through major metropolitan areas. Other route designations by Oregon and California may force routes that ultimately pass through northern Nevada and Mineral County.

Final route designations and mode of transportation may not be decided until at least 2005. According to DOE, decisions on whether to use highways or railroads will not be made until 2005, or at least five years before the Yucca Mountain repository can begin receiving the waste. No rail or highway routes have been selected and no decisions will be made until the Department has had an opportunity to talk to states about routes that have been chosen.

Routes to Yucca Mountain haven't been picked. But, if the site in the southern Nevada desert 90 miles northwest of Las Vegas, becomes the country's nuclear repository, U.S. 95 might be judged a good way to reach the dump, according to the state's nuclear transportation expert. "It's absolutely credible and possible," said Robert Halstead, who's worked on the route issue for 24 years and advised Nevada since 1988. Halstead, who lives in Wisconsin, also claims a U.S. 95 designation would bring radioactive waste through Reno and Sparks on Interstate 80 before trucks turn south at Fernley.

Halstead claims the federal government might be left with U.S. 95 as one of the few highway alternatives, especially for waste shipments from the Pacific Northwest, if its preferred routes are blocked by legal, political, financial or safety considerations.

Along with truckloads of nuclear waste on I-80, Halstead also stated that rail shipments from California and the Pacific Northwest would come through Reno and Sparks saying "The worst case is a total of 10 to 20 percent of the rail shipments would come through Reno and Sparks," Halstead said (Reno Gazette-Journal 7/10/02).

2.0 VISITORS TO MINERAL COUNTY

Section 2.0 focuses on visitors to Mineral County in terms of their place of origin and highway routes likely used to access areas in Mineral County. The total number of visitors is difficult to estimate, particularly outdoor recreation users in Mineral County. The primary recreational resource in the area is Walker Lake. The majority of out-of-area recreation users probably have Walker Lake as a destination although other forms of dispersed recreation such as hunting, camping, off-road vehicle use, are readily available in Mineral County.

2.1 Visitor Place of Origin

Estimates of the type and volume of visitors to Mineral County include the following:

- **Hotel/Motel Overnight Visitors**

There are approximately 276 motel rooms in Hawthorne. Based upon discussions with local operators, the overall occupancy rate could be as high as 70 percent resulting in as many as 70,518 room nights per year. The occupancy rate is likely to fluctuate depending upon general economic conditions. The average number of persons per room is assumed to be 2 based upon visitor registration information collected from local motels. The total number of estimated overnight motel visitor's in Mineral County is 41,036, annually. A portion of said visitors attend special events in the Hawthorne area each year. It is important to make this distinction because visitors who attend special events tend to spend more and stay longer as compared to overnight travelers passing through the area.

- **RV Park Visitors**

There are approximately 75 RV spaces in the Hawthorne area. Assuming average occupancy is similar to the hotel/motel rate, there could be approximately 19,162 RV space rentals per year. With an average of 2 persons per RV rental would result in 38,324 visitors per year. RV park visitor are noticeably different from overnight hotel visitors in terms of their place of origin. RV park users from Nevada are a small percentage of the total (9.8 percent) as compared to overnight hotel visitors where Nevada accounts for about 42 percent of this market segment. There are a higher percentage of RV travelers from the Pacific Northwest including Canada as compared to hotel visitors. Canada, Washington, and Oregon account for approximately 16.39 percent of the RV park users. Another strong market area is Arizona (12.3 percent of RV park users), particularly central and southwestern portions of the State. The Sacramento Valley is a sizeable market for both RV park users as well as overnight hotel visitors. Not surprisingly, snowbirds and the movement of travelers during the fall and spring months heavily influence RV park users and their place of origin.

The RV park users and the overnight hotel visitors appear to be two distinct market areas. A vast majority of overnight hotel visitors are within close proximity whereas RV park users come from more distant origins.

- **Recreational Users**

The Bureau of Land Management operates a campground and other day use facilities at Walker Lake. Total visitation as recorded by BLM was 34,086 visits and a total of about 21,000 visitor days. A visitor day is defined as one visit on one day. At Sportsman’s Beach total visits were 20,274 in 2001 and 12,629 visitor days. BLM sees heavier usage at Sportsman’s Beach during the off-season primarily due to snowbirds moving through the area either south in Fall or north in the Spring. Additional information from BLM concerning the place of residence or length of stay for recreation users was not available. Given that a number of visitors are snowbirds traveling in RV units, information about RV park visitors may be similar to those using Sportsman’s Beach, particularly in terms of their place of residence.

- **Special Events**

Table 2-1 shows the estimated number of special event visitors to the Hawthorne area based upon attendance estimates by the Mineral County Chamber of Commerce.

**Table 2-1
Special Event Visitors
Mineral County: 2001**

Event	Days	Visitors	Visitor Days
Armed Forces Day	6	2,000	12,000
Loon Festival	2.5	500	1,250
Fishing Derby	2	600	1,200
Arts Festival	1	600	600
Total Visitor Days			15,100
Total Room Nights			7,050

Source: Mineral County Chamber of Commerce: 2001

The origin of special event visitors is unknown, but assumed to be similar to overnight hotel visitors.

2.2 Visitor Markets

Overnight Visitors

Table 2-1 shows the distribution of visitors by place of residence. The origins of overnight visitors were grouped by region. The highest concentration of visitors comes from the Reno/Sparks and Carson City areas as well as the Sacramento Valley and the Bay area. Combined these two areas account for about 45 percent of all overnight hotel visitors. Most visitors are from northern origins. That is, about 70 percent access Mineral County from routes to the north. About 85 percent of all visitors will utilize routes with waste shipments. In some cases, visitors may be traveling on waste shipment routes for several hours. Table 2-1 also shows the likely route used from each area and whether or

not it will be used as a shipment route to Yucca Mountain. In most cases, highway travelers coming to Mineral County will be on highway routes used for waste shipments for several hours.

Figure 2-1 shows the general origins and percentage of visitors along major route segments. Figure 2-2 also shows likely routes to be used for waste shipments and current route designations by states. Two main entry points that will ultimately lead to shipments through Mineral County will be Interstate 80 at Reno and U.S. 95 at the Oregon Border. The majority of visitors consolidate on these two routes. Overall, about 60 percent of overnight hotel visitors will use these two points of entry. U.S. Highway 395 at Susanville California is another point of entry for travelers. U.S. Highway 395 crosses through the northern portion of the Sierra Nevada Mountain range providing access for communities in northern California, southern and central Oregon and possibly Washington.

**Table 2-2
Hotel/Motel Survey Overnight Visitors Regional Markets: 2002**

Region	Visitors	Percent of Total	Primary Route Segments	YMP Route
Boise	298	3.64%	U.S. 95/I-80	yes
Bay Area	130	1.59%	U.S. 95/I-80	yes
Eastern Nevada	69	0.84%	U.S. 95/I-80/95	yes
Eastern Oregon	192	2.34%	U.S. 95/I-80/95	yes
Eastern Washington	32	0.39%	U.S. 95/I-80/95	yes
Los Angeles	288	3.52%	U.S. 395	no
Lone Pine/Bishop	475	5.80%	U.S. 395	no
N. Sacramento Valley	303	3.70%	I-80/95	yes
Hawthorne	329	4.02%	U.S. 95	yes
Other California	109	1.33%	NA	
Portland	619	7.56%	I-80/95	yes
Reno/Carson City	2,394	29.24%	I-80/95/U.S. 50	yes
Sacramento	866	10.58%	I-80/95	yes
San Bernadino	128	1.56%	U.S. 395	no
San Diego	58	0.71%	U.S. 395	no
Southern Nevada	949	11.59%	U.S. 95	yes
Southern Oregon	186	2.27%	I-80/95	yes
S.Sacramento Valley	256	3.13%	I-80/95	yes
Tucson	45	0.55%	U.S. 95	yes
Utah	29	0.35%	U.S. 95	yes
Western Arizona	241	2.94%	U.S. 95	yes
Washington	192	2.35%	Various Routes	yes
Total	8,188	100.00%		

**Figure 2-1
Visitor Origins**

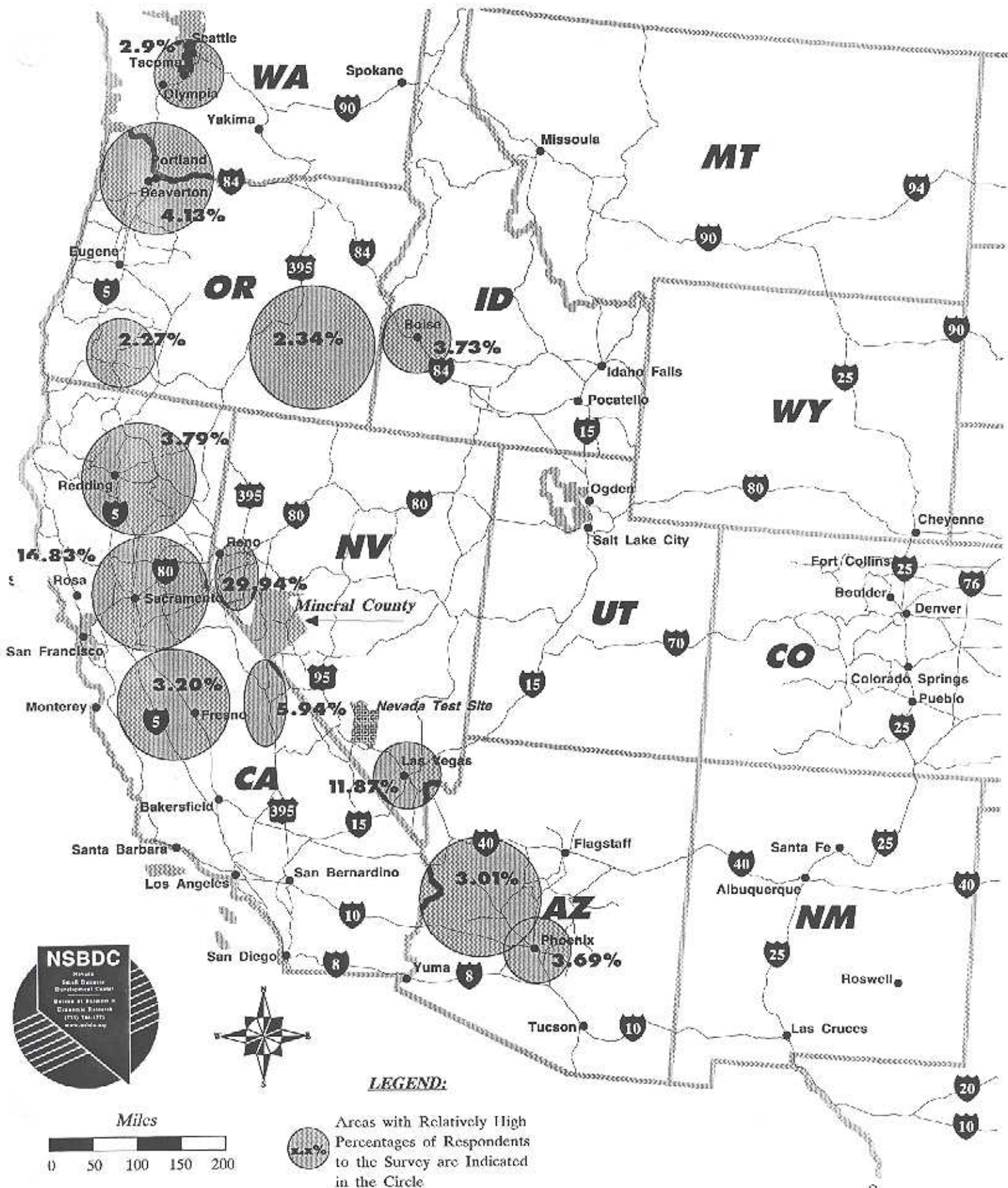


Figure 2-2
Visitor Origins and Transportation Routes



There is less certainty about routes used by those in Oregon and Washington to access Mineral County.

RV Travelers

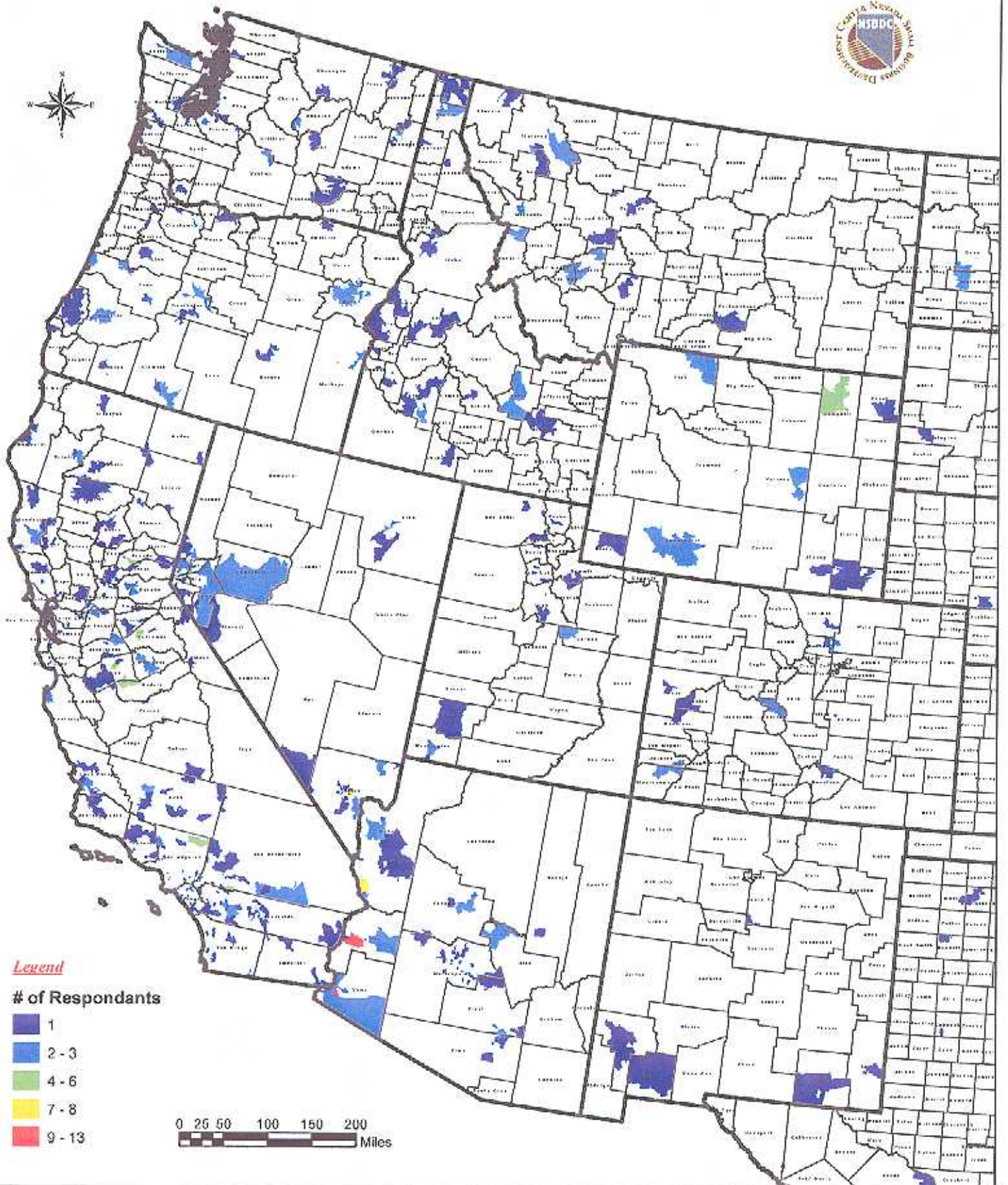
Figure 2-3 also shows the origins of RV travelers to Mineral County. In many ways the origins of RV travelers mirror those of the overnight hotel/motel user spending several hours on routes that will be used for nuclear waste shipments to Yucca Mountain. The information contained in Figure 2-3 very likely represents the place of origin and routes used by out-of-state recreation vehicle park users. Principal markets for RV park users include the Pacific Northwest, California, Arizona, Nevada, and Utah and Colorado. Canadian users include those from British Columbia and Alberta. California RV park users are primarily from the Los Angeles area and the Sacramento Valley. Surprisingly Nevada only accounts for about 10 percent of the RV park users.

Principal RV markets are a percentage of the total are as follows:

Washington	6.0%
Oregon	5.7%
Canada	4.7%
California	30.1%
Nevada	9.8%
Arizona	12.3%
Utah	2.2%
Colorado	2.2%
Montana	2.5%
Idaho	3.1%
Texas	4.37%

Although the origins of RV park users are different than overnight hotel visitors, they are likely to use the same routes as Yucca Mountain shipments. Because many RV park users are probably snowbirds traveling to the southwest in the Fall and the northern regions in the Spring they eventually use many of the same routes that may be used by nuclear waste truck shipments.

Figure 2-3
Origins of Travelers to Mineral County



Legend

of Respondants

- 1
- 2-3
- 4-6
- 7-8
- 9-13

0 25 50 100 150 200
Miles

2.3 Other Visitor Characteristics

Other visitor characteristics including average size of party and length of stay. The average party size is 1.82 persons per stay. This number could be smaller than actual due to inaccurate reporting on hotel registration. Using 1.82 multiplied by the number of rooms and the average occupancy levels provides an estimate of the number of travelers using local motels. Nearly all the RV park users were retired or expected to retire within five years. The vast majority of park users are between the ages of 60 and 75 years old.

The length of stay averages just over one night. As the Hawthorne area and Mineral County improve efforts to attract and hold tourists, the length of stay could increase. Those efforts could be offset as risk perception and stigma affects work against local efforts to attract and maintain tourists to the Hawthorne area. The level of economic impact is described in Section 3.0.

3.0 REDUCED VISITOR VOLUME AND ECONOMIC IMPACTS

Risk induced behavior can occur locally as a result of Yucca Mountain shipments through Mineral County. In addition to loss of economic activity, there are a host of state and local taxes generated in Mineral County that can be adversely impacted in the event of risk-induced behavior by visitors. The loss of local visitation is primarily measured in terms of overnight visitors staying at local motels in the Hawthorne area. Only a limited amount of data was available for outdoor recreation users. Using current estimates of user activity and associated expenditures, total visitation value to Mineral County over a 38 year shipment scenario is close to \$3.0 billion. This future projection does not account for any new growth in the visitor/tourism sector. It is possible overtime for more development to occur and increase the overall economic contribution to Mineral County.

Total visitation and expenditures by type of visitor are shown in Table 3-1. Expenditure estimates in Table 3-1 were made by reviewing expenditures by tourists in the Reno/Sparks area for similar categories. The number of visitor days in Table 3-1 only includes visitors from outside the area and does not include local use or related economic activity.

Table 3-1
Total Visitation and Per Capita Day Expenditures
Mineral County: 2001

	Travelers	Special Event Visitors	R.V. Parks	Recreation Users
Visitor Days	110,836	30,200	38,324	12,600
Expenditures:				
Gaming	\$25	\$100	\$25	\$25
Food/Drinks	\$25	\$36	\$25	\$25
Shows/Ent.	\$ 2	\$2	\$2	\$2
Shopping/gifts	\$5	\$5	\$30	\$30
Sightseeing	\$ 1	\$1	\$1	\$1
Recreation	\$ 1	\$1	\$1	\$1
Lodging	\$20	\$20	\$6	\$6
Fuel	\$5	\$5	\$5	\$5

It is difficult to determine if visitation will decline due to Yucca Mountain shipments through the area. Risk induced behavior is difficult to predict whether or not it will occur and to what extent it may result in declines of local economic activity. As discussed in Section 1.0 and 2.0, tourists coming to Mineral County will be exposed to shipments passing through the area as well as on highway routes. It is very likely that most visitors will be aware of Yucca Mountain shipments.

Research prepared by the State of Nevada suggests that a 10 percent decline in visitation could occur. Using this figure, simulated losses in economic activity can be determined over the course of the shipping campaign.

Table 3-2 shows the economic impact associated with a 10 percent decline in visitor volume each year over the course of the shipping campaign through Mineral County. As a result, \$277 million over a 38-year shipping campaign could reduce total economic activity in Mineral County. Total labor income could be reduced by nearly \$81 million and state and local taxes generated locally could be reduced by \$10.3 million over the shipping campaign or an average of approximately \$271,000 a year.

Table 3-2
10 Percent Loss of Visitors Volume
Economic Impacts to Mineral County
During the Shipment Campaign in \$Millions

	2010-2033	2010-2048
Total Industry Impact	-\$93.3 million	-\$195.8 million
Labor Income	-\$38.9 million	-\$ 81.6 million
Employment (Loss)	70-137 jobs	70-212 jobs
Total Economic Impact	-\$132.2 million	-\$277.4 million
State/Local Taxes	-\$4.9 million	-\$10.3 million

Total industry impact is the direct, indirect and induced reductions in spending that would occur in Mineral County. In addition to the spending, labor income earned by Mineral County residents could be reduced substantially as well. If Mineral County were to suffer even greater losses in visitor volume such as 20 percent or more, the results in Table 3-2 could more than double.

Risk induced behavior could also affect the desirability of the area for current and future residents. No attempts were made to quantify this impact for Mineral County. However, the State of Nevada attempted to address this issue in its *Yucca Mountain Socioeconomic Project, An Interim Report, The State of Nevada Socioeconomic Studies, 1989*. The analysis in Chapter 2 of the report indicated that the repository could have “special impacts” (i.e those resulting from the hazardous characteristics of radioactive waste) on the Nevada economy. More over, the studies indicate that populations important to Nevada’s economic well-being may be highly sensitive to the radioactive characteristics of the repository, and that the attractiveness of the state as a place to visit, move to, or invest could be reduced. The same can be said for Mineral County.

4.0 FINDINGS

The analysis in this report focuses on the likely highway shipping routes to Yucca Mountain and the affect it may have on Mineral County and its tourism visitor markets. In summary the findings in this study indicate:

- Travelers and visitors to Mineral County will encounter truck shipments during their visit and enroute to the area.
- Important access routes to Mineral County may also be used for Yucca Mountain shipments. Figure 2-3 identifies key visitor markets, major travel routes, and preferred and restricted routes. Transportation routes that will be used for Yucca Mountain shipments serve some of the primary markets for overnight hotel visitors.
- The greatest number of overnight hotel visitors comes from California's central valley, the Reno/Sparks area, and southern Nevada.
- The vast majority of overnight hotel visitors to Mineral County have a place or residence that is no more than a 5-hour drive. Travelers passing through the area reside in locations that are more than a 5-hour drive and account for a small proportion of hotel/motel visitors.
- RV park users are somewhat different than overnight motel visitors in terms of their place of origin. The Pacific Northwest and Southwest along with California comprise the largest markets for RV park users in Mineral County.
- It is difficult to determine place of residence of outdoor recreation users. Survey information is not available.
- Because many visitors to Mineral County will eventually travel on route that could be used by waste shipments to Yucca Mountain, RV park users and overnight hotel visitors could ultimately change travel routes avoiding Mineral County or decide not to stop and visit the area. Such behavior could have significant fiscal and economic impacts to the region.