WHITE PINE COUNTY
YUCCA MOUNTAIN IMPACT REPORT

The report in this appendix may contain references to potential mitigation or compensation related to the impacts that are identified. ***It is the State of Nevada's firmly held position that no amount of mitigation or compensation will make Yucca Mountain or the related transportation of spent fuel and high-level radioactive waste acceptable to the State, and that Nevada is not seeking and will not negotiate for any type or amount of mitigation or compensation.*** Any discussion of mitigation or compensation contained in individual AULG reports is extraneous to the purpose of the State Yucca Mountain Impact Report, which is intended solely to present a comprehensive portrayal of the range of impacts associated with the federal repository program.

The magnitude of impacts statewide and the nature of those impacts lead to but one conclusion: ***The only way to protect Nevada – and the nation – from the massive, negative effects of this program is to abandon the Yucca Mountain project altogether, something Nevada contends should have occurred years ago.***

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Executive Summary

The Nuclear Waste Policy Act of 1982 created a program designed for the management and disposal of high-level nuclear waste and spent nuclear fuel. In 1987, Congress amended the act leaving Yucca Mountain as the sole area to study for the development of a nuclear waste repository. If recommended by the Secretary of Energy, nominated by the President to the Congress and authorized for construction and operation by the Congress, the Yucca Mountain repository system will have been unilaterally imposed on the residents of Nevada along with its attendant concentration of risk. While arguably necessary, the program has long since lost any concept of fairness or equity with respect to the residents of Nevada. All other states and the U.S. government, who have benefited from the creation of this waste, will have all associated risk irrevocably transferred to the State of Nevada and its residents. In this regard, the Yucca Mountain Repository program represents a unique and unprecedented unilateral transfer of risk.

Within Nevada, the necessity to protect the State's gaming-based tourist economy will result in shipments of spent nuclear fuel and other high-level radioactive waste moving through rural locations such as White Pine County. Very simply, the largest concentration of long-lived extraordinarily dangerous high level nuclear waste in recorded history will be transported through rural Nevada and stored in perpetuity at Yucca Mountain, presuming the site is found suitable.

The Yucca Mountain repository system represents an unwanted industrial activity. The allocation of Nevada's natural, social, fiscal and economic resources required to support the location and operation of the repository system represents an opportunity cost as these same resources will be unavailable for allocation in support of other desired industrial

activities. As a consequence, White Pine County views any repository system related impact, regardless of scale, to require mitigation. There are unique local conditions and resultant impacts specific to White Pine County, Nevada, which require full consideration as an integral part of any decision to recommend Yucca Mountain as a safe and enduring repository.

This report has been developed to help White Pine County understand the full range of impacts and risks that may be imposed upon it. The goal is to identify mitigation and compensation measures that will reduce the burden if White Pine County is selected as part of a transport route to bring the high-level nuclear waste to Yucca Mountain.

This report has been submitted directly to the Secretary of Energy and White Pine County expects the Secretary to consider the findings in formulating a recommendation to the President. In addition, White Pine County expects the Secretary of Energy to submit this report, pursuant to Section 114(a)(1)(G) of the Act, to the President.

Since 1992, when White Pine County received status of Affected Unit of Local Government, the County's Nuclear Waste Project Office has commissioned a series of independent studies from respected researchers at technical consulting firms as well as academic institutions. The independent studies were designed to inform the residents of White Pine County on the range of impacts that might be expected if the State of Nevada designates a legal-weight truck route through White Pine County. NWPO staff, White Pine County Nuclear Waste Advisory Board members and the White Pine County Commission have supervised the conduct of several studies documenting repository system implications for White Pine County. Topics addressed within these studies include economic/demographic baseline conditions, emergency response, economic/demographic projections, transportation risk assessment, and environmental impacts, among others. These studies, as well as additional relevant reports on risk, stigma, and transport risks are the basis for this report.

The findings indicate that the impacts for White Pine County are highest in the areas of emergency management, highway accident risk, radiation exposure risk, and from stigma that may reduce the desirability of White Pine County as a place to live and as a destination for tourists. The identified impacts are summarized in ES-Table 1: Summary of Impacts to White Pine County from the Yucca Mountain Repository System. This assessment considered impacts from all phases of the repository, including site characterization, transportation system construction, transportation system operation, repository construction, and repository operation.

In considering mitigation measures to reduce the impacts of the Yucca Mountain Repository System on White Pine County, Council for Environmental Quality (CEQ) management techniques were utilized as the framework. These are defined as follows:

- **Avoiding** the impact by not taking certain action or parts of an action.
- **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation.
- **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment.
- **Reducing** or **eliminating** the impact over time by preservation and maintenance during the lifetime of the action.
- **Compensation** for the impact by replacing or providing substitute resources or environments.

Table ES-2 summarizes the options to mitigate impacts on White Pine County from the Yucca Mountain Repository System. The purpose is to highlight the range of techniques that would serve, where possible, to mitigate impacts in White Pine County if the State of Nevada designates a legal-weight truck route through the County and the City of Ely. Mitigation would require specific action on the part of DOE and/or DOE contractors in order to avoid, minimize, or reduce impacts and risks.

The range of impacts that may be imposed on White Pine County are not all amenable to monetary compensation. However, monetary compensation is necessary for impacts that cannot be avoided, minimized, rectified, reduced or eliminated. Table ES-3: Summary of Estimated Mitigation Costs for White Pine County, outlines the estimated costs of mitigation where estimation of those costs is possible.

Within the Draft Environmental Impact Statement (DEIS) for the Yucca Mountain Repository, the DOE has provided only cursory analysis of the risks inherent in transportation of quantities of highly radioactive spent nuclear reactor fuel and high level waste on an unprecedented nationwide scale over a very long period of time. The limited transportation analysis performed for the DEIS was often based on grossly outdated or simplified demographic and physical data, even though up to date information of this type was readily available. A rationale for this approach is very difficult to understand, but has the effect of trivializing or grossly underestimating the real risks associated with transportation of high level waste.

Further, the DOE has, to date, completely ignored socioeconomic and stigma based effects of the repository program on the economy and society of the residents of White Pine County. Many people living in White Pine County have direct personal experience with the societal effects of radiological exposure as "downwinders" from Nevada Test Site atmospheric testing of nuclear weapons. To represent through silence that there are no socioeconomic or societal effects from a program that has the potential to subject citizens and the environment to exposure from radioactive waste is difficult for current residents to accept.

The result is that the DOE has so far represented to the Congress, the Administration, the State of Nevada, and affected units of local government that the overall risk implicit in the transportation to and storage in perpetuity of high level nuclear waste at Yucca Mountain represents minimal and statistically acceptable risk and is completely manageable. We believe this conclusion is disingenuous and based on flawed, incomplete

analysis and/or simply failure to consider certain impacts of the program. Consequently, we strongly disagree with the DOE's findings thus far.

Rather, we feel that there is significant risk of unanticipated consequences inherent in the Yucca Mountain Repository Program. When viewed in totality, the risks in an overall sense appear unmitigable through any reasonable means. It will be very difficult for the nation to transfer its nuclear waste risk to Nevada without diminishing the health, safety, and welfare of the states' residents and visitors. It is our view that these impacts can only be fully mitigated by not going forward with the Yucca Mountain Repository Program. That is our fundamental conclusion.

We reluctantly acknowledge, however, based on the historical lack of fairness, equity, and incomplete science that has regrettably characterized the Yucca Mountain Program over the last decade, that the program may well go ahead. Should this be the case, we believe that it would be both irresponsible and ethically wrong for the Administration and Congress to fail to provide, to the extent practicable, mitigation of impacts and to the residents of Nevada, an equitable share of the national benefit that proponents of the project claim will result.

As indicated in Section 3.3 (Scenario Impacts), transportation incident/accident related impacts resulting from the presence of the Yucca Mountain Repository are both wide-reaching and potentially devastating to the residents of White Pine County, its economy and society.

They are well beyond anything identified by the DOE in its Yucca Mountain DEIS. Regrettably, we will not have sufficient opportunity under the DOE's current schedule to review the final EIS, prior to issuance of this report to determine if their final assessment of impacts approaches those we have identified. Further, we will not know with certainty until a much later time frame as to whether spent nuclear fuel and high level waste destined for the Yucca Mountain Repository will in actuality be transported through White Pine County on legal weight trucks.

Our conclusion that spent nuclear fuel and high level waste should not be transported through White Pine County on legal weight trucks due to the potential for catastrophic and largely unmitigable impact remains firm and resolute. We also view the presence of the Yucca Mountain Repository as having substantial negative impact on White Pine County.

Should circumstances and the will of the Administration and the Congress result in imposition of these potential impacts on the residents of White Pine County, we feel that all means available to mitigate impacts of the Yucca Mountain Repository Program should be provided without reservation to White Pine County. In addition, we recommend that Nevadans be provided monetary and other benefits equivalent to an equitable share of the benefit provided by the repository system to the Nation.

Table ES-1: Summary of Impacts to White Pine County from the Yucca Mountain Repository System

Impact Area	Site Characterization	Transportation System Construction	Transportation System Operation	Repository Construction	Repository Operation
Radiation Exposure	• No impacts anticipated	• No impacts anticipated	• Radiation exposure to transportation operators • Radiation exposure to citizens in close proximity to the transportation corridors and rest stops • Cumulative impacts from NTS, LLRW, and Yucca Mountain.	• No impacts anticipated	• In the event there is a release from Yucca Mountain, White Pine Co. is downwind
Employment	• Limited impacts due to repository oversight	• Limited impacts due to repository oversight • Impacts due to servicing transportation system construction operations	• Stigma induced job loss • Transportation service employment • Limited employment due to repository oversight	• Possible if White Pine County residents leave to seek jobs at Yucca Mtn. • Indirect employment due to purchases of goods and material from White Pine County • Limited impacts due to repository oversight	• Possible indirect employment due to the purchase of goods and material from White Pine County • Continued employment for oversight functions
Income	• Limited due to repository oversight	• Limited income due to repository oversight • Income due to servicing transportation system construction operations	• Limited direct and indirect income from servicing transportation operators • Transportation service income • Stigma induced income loss	• Indirect income depends on the degree to which White Pine Co. resources and goods are utilized	• Indirect income depends on the degree to which White Pine Co. resources and goods are utilized
Population	• No impacts anticipated	• No impacts anticipated	•Stigma induced out-migration • Transportation Service Population	• No impacts anticipated	• No impacts anticipated

Table ES-1: Page 2

Impact Area	Site Characterization	Transportation System Construction	Transportation System Operation	Repository Construction	Repository Operation
Emergency Management	• No impacts anticipated	• Industrial accidents	• Additional trucks and vehicles will result in additional accidents • Possible incident involving radiation release to the environment and contamination	• No impacts anticipated	• Downwind response to atmospheric release
Emergency Medical	• No impacts anticipated	• Industrial accidents	• Transportation accidents due to additional trucks on the road • Potential incident involving radiation contamination	• No impacts anticipated	• Downwind response to atmospheric release
Local Oversight	• Repository oversight functions	• Repository oversight functions	• Repository oversight functions	• Repository oversight functions	• Repository oversight functions
Local Government Finance	• Limited, due to repository oversight functions	• Purchase of local goods and services	• Possible if stigma reduces the population • Purchase of local goods and services • Stigma induced loss of revenue	• Possible if stigma reduces the population • Purchase of local goods and services • Stigma induced loss of revenue	• Possible if stigma reduces the population • Purchase of local goods and services • Stigma induced loss of revenue

Table ES-1: Page 3

Impact Area	Site Characterization	Transportation System Construction	Transportation System Operation	Repository Construction	Repository Operation
Highway Transportation Accident Risk	• No impacts anticipated	• Accidents involving material transport • Additional accident risk due to construction activities	• Significant risk of highway accidents with increased trucks and large, slow-moving trucks	• Accidents involving material transport	• No impacts anticipated
Tourism	• No impacts anticipated	• Construction delay induced loss in visitation	• Possible reductions in tourism if stigma causes tourists to avoid White Pine County due to the close proximity of the transport of high-level nuclear waste	• No impacts anticipated	• Stigma induced reductions in visitation to Nevada and White Pine County
Economic Development	• Stigma effects may begin to impact decisions to relocate in White Pine County	• Stigma effects may begin to impact decisions to relocate in White Pine County	• Stigma effects may begin to impact decisions to relocate in White Pine County	• Stigma effects may begin to impact decisions to relocate in White Pine County	• Stigma effects may begin to impact decisions to relocate in White Pine County
Real Property	• Devaluation of property in White Pine County due to stigma effect • Possible greater loss in property value of locations near the transportation corridor such as Ely and McGill	• Devaluation of property in White Pine County due to stigma effect • Possible greater loss in property value of locations near the transportation corridor such as Ely and McGill	• Devaluation of property in White Pine County due to stigma effect • Possible greater loss in property value of locations near the transportation corridor such as Ely and McGill	• Devaluation of property in White Pine County due to stigma effect • Possible greater loss in property value of locations near the transportation corridor such as Ely and McGill	• Devaluation of property in White Pine County due to stigma effect • Possible greater loss in property value of locations near the transportation corridor such as Ely and McGill

Table ES-2: Summary of Options to Mitigate Impacts to White Pine County of the Yucca Mountain Repository System

While monitoring is not considered an acceptable mitigation strategy under NEPA guidelines or from the perspective of White Pine County and the City of Ely, the unique characteristics of the Yucca Mountain repository and the potential stigma effects confound advance analysis of all potential impacts. Therefore, White Pine County is requesting that DOE implement comprehensive monitoring programs (or fund White Pine County to implement monitoring programs) of environmental and socioeconomic changes within the County as a result of the repository. In order for the monitoring program to serve as a mitigation measure, DOE must commit to necessary actions to mitigate impacts when (or if) they are detected.

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Radiation Exposure	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Use strategies to reduce stops during transport and insure that stops are in non-populated areas • DOE should improve the safety of the shipping containers to minimize the likelihood of a release into the environment in the event of a transport accident • Consider the rail only option as a means of reducing radiation exposure • Build a by-pass highway around the communities of Ely and McGill	• Develop decontamination plan and fund implementation through trust fund for human and environmental exposure to radiation	• If unacceptable levels of radiation are detected in the County, implement changes in practices to reduce levels	• Fund White Pine County for staffing and equipment to implement independent monitoring and oversight of radiation levels. • Fund doctors and medical staff in White Pine County for training to identify and treat radiation sickness • Establish advance commitment to provide compensation for White Pine County in the event that heightened radiation levels are detected, due to normal activities or in the event of an accident that results in a breach of containment

Table ES-2: Page 2

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Employment	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada		• Overcome stigma through public information and regional marketing strategy • Establish trust fund to enable immediate implementation of marketing/education strategy	• On-going public information • On-going regional marketing strategy	(The goal is to maximize job opportunities) • Locate ancillary office functions in White Pine County • DOE should commit to local procurement policies within the State of Nevada and White Pine County
Income	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada		• Overcome stigma through public information and regional marketing strategy • Establish trust fund to enable immediate implementation of marketing/education strategy	• On-going public information • On-going regional marketing strategy	(The goal is to maximize local income benefits) • DOE should establish procurement policy that would increase purchases of goods and services from White Pine County • Locate ancillary office functions in White Pine County
Population		• Area quality of life initiatives • Risk communication and public education			

Table ES-2: Page 3

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Emergency Management	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Cross training and reciprocal agreements with other impacted communities and DOE • Adhere to strict safety standards and operating procedures • Minimize the time for supporting personnel and equipment to arrive at the scene of an accident • Provide guidance and insure that community has the appropriate level of training and equipment • Clarify responsibilities in response procedures between federal, state, and local governments • Locate critical or difficult to move equipment in White Pine County to reduce response times. • To the degree that DOE takes responsibility for emergency management for all incidents involving the nuclear waste casks this will reduce the overall impact on White Pine County	• Establish equipment decontamination replacement strategy • Establish emergency response/medical supply replacement strategy • Establish trust fund to allow immediate decontamination and/or replacement of equipment and supplies	• DOE to implement a continual evaluation (external audit) of the transport safety procedures and establish improved safety protocols as the need is identified	• Funding to purchase additional baseline equipment and equipment for radiological incident • Funding for additional staff for increased non-radiological and radiological incidents • Funding for continuing training in emergency management of radioactive material • Contingency for grants to reimburse the County for costs incurred during any incident related to repository activity. • Funding to develop and publicize an evacuation plan for the communities. • Funding to acquire and operate emergency notification system •Funds to upgrade emergency communication equipment and ensure that different departments have capability to communicate with each other

Table ES-2: Page 4

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Emergency Medical	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Cross training and reciprocal agreements with other impacted areas and DOE • Develop a standard of competency for radiological medical treatment and ensure that staff meet the minimum requirements • Transport of spent nuclear fuel and high-level waste along routes that avoid White Pine County	• Establish equipment decontamination and supply replacement strategy • Set up trust fund to allow immediate implementation of decontamination/resupply strategy		• Funding to purchase additional equipment and hire additional staff • Contingency for grants to reimburse the County for costs incurred during any incident related to repository activity. • On going radiological training for medical staff • Funds to modify hospital to provide capability for quarantine • Funds to develop an evacuation plan for the hospital and educate staff
Local Oversight	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• DOE to provide information and maintain good communication with the local oversight staff • Strong independent state/NRC oversight • Provide for continued local oversight evaluation	• Provide for continued local oversight evaluation	• Provide for continued local oversight evaluation	• Funding for independent local oversight and monitoring during site characterization, construction, emplacement, and pre-closure activity
Local Government Finance	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada • Fully fund all fiscal impacts in advance	• Minimize stigma • Reduce lag-time between impact detection and mitigation implementation	• Develop and implement regional marketing program • Budget supplements for unanticipated expenses	• Develop and implement regional marketing program	• Grants to local govts. if repository impacts require additional staff • Compensate local governments for capital outlays if stigma-induced effects reduce population • Payments sufficient to cover all possible recurring impacts (PETT)

Table ES-2: Page 5

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Highway Transportation Accident Risk	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Special lanes for trucks • lead and follow cars • special warning lights and signs • Elimination of at grade railroad crossings on public roads and highways • Special signage on private railroad crossings • Restrictions on truck movements in inclement weather and over Murry Summit • DOE should evaluate the safety characteristics of the two-lane roads that may be utilized • DOE should fund and staff a weather monitoring and communicatin system to advise transport operators and County staff • Lane separation on Murry Summit • Build a by-pass highway around Ely and McGill • Enhanced winter road condition maintenance	• Local control and management participation in accident assessments • Highway upgrades and enhanced maintenance	• Monitor for accidents and adjust safety procedures to eliminate additional risk • DOE to implement a continual evaluation (external audit) of the transport safety procedures and to modify protocols as the need is identified	• Funding for the County to cover costs of any safety mechanisms that DOE does not implement directly • Contingency for grants to reimburse the County for costs incurred during any incident related to repository activity.

Table ES-2: Page 6

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Tourism	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Maintain impeccable safety record for the repository system • Develop and implement risk communication plan • Develop and implement on-going regional marketing strategy • Area quality of life initiatives	• Maintain impeccable safety record at the repository and the intermodal facility • Enhanced risk communication • Enhanced regional marketing initiatives • Area quality of life initiatives	• Maintain impeccable safety record for the repository system • Sustained education and risk communication campaign • Sustained regional marketing initiatives • Area quality of life initiatives	• Grants to White Pine County to fund advertisements and to enhance marketing plans • A contingency agreement to compensate White Pine County in the event that tourism is affected due to the repository system
Economic Development	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• DOE policy that favors White Pine County for purchase of minerals and finished products • Establish satellite offices for the repository in White Pine County • Maintain impeccable safety record at the repository and the intermodal facility • Develop and implement risk communication plan • Develop and implement on-going regional marketing strategy	• Maintain impeccable safety record at the repository and the intermodal facility • Maintain impeccable safety record at the repository and the intermodal facility • Enhanced risk communication • Enhanced regional marketing initiatives	• Maintain impeccable safety record at the repository and the intermodal facility • Sustained education and risk communication campaign • Sustained regional marketing initiatives	• A contingency agreement to compensate White Pine County if businesses that were planning on locating in the County reverse their decision based on the repository system • A contingency agreement to compensate White Pine County if immigrants that were planning on locating in the County reverse their decision based on the repository system

Table ES-2: Page 7

Impact Area	Avoid	Minimize	Rectify	Reduce/Eliminate Over Time	Compensate
Real Property	• Do not construct and operate interim storage or permanent radioactive waste disposal capability in Nevada	• Maintain impeccable safety record for the repository system • Develop and implement risk communication plan • Develop and implement regional marketing plan • Develop and implement property enhancement plan • DOE investments in community assets	• Maintain impeccable safety record at the repository and the intermodal facility • Develop and implement property enhancement plan • DOE investment in community assets	• Maintain impeccable safety record at the repository and the intermodal facility • Develop and implement property enhancement plan • DOE investments in community assets	• Establish pre-project property value data-base and monitor for changes in property values along the transport corridor • Compensation for property owners along transportation routes and throughout the community if property values decline due to repository system

Table ES-3: Summary of Estimated Mitigation Costs for White Pine County

Impact Area	Mitigation Measures	Cost Basis	Initial Investment	Annual Replacement/ Maintenance
Radiation Exposure	5 radiation monitoring stations in White Pine County	Estimate	$ 100,000	$ 20,000
	Staff costs to monitor radiation levels in White Pine County (one position)	Estimate	$ 100,000	$ 80,000
Employment	Job training for area residents	Estimate	$ 50,000	$ 50,000
	Job Fairs for area residents	Estimate	$ 10,000	$ 5,000
Income	Compensate for lost income	Estimate	$ 1,500,000	$ 500,000
	Monitor income levels	Estimate	$ 100,000	$ 80,000
Population	Risk communication	Estimate	$ 100,000	$ 80,000
	Quality of life initiatives	Estimate	$ 10,000,000	$ 1,000,000
Emergency Management	Costs for emergency equipment to handle a radiological event, additional staff, and training for emergency management personnel	RMA Research and Consulting Services Life Cycle Cost Analysis White Pine County Emergency Response. Final Draft September, 2000	$ 600,000	$ 600,000
	Cost of six public address systems for communication and evacuation	Estimate	$ 120,000	$ 24,000
	Cost to educate the public about the evacuation system, preparedness and routes	Estimate	$ 100,000	$ 80,000
Emergency Medical	costs for equipment and supplies for a radiological event	Medical cabinet on wheels and supplies	$ 5,000	$ 500
	Cost for training six staff for a radiological event	Estimate	$ 30,000	$ 5,000
	Costs for two additional medical staff	Estimate	$ 200,000	$ 200,000
	Costs to modify hospital to provide a quarantine area for a radiological patient	Estimate	$ 800,000	$ 200,000

Table ES-3: Page 2

Impact Area	Mitigation Measures	Cost Basis	Initial Investment	Annual Replacement/ Maintenance
Local Oversight	Costs of continued oversight	Based on most recent year of funding	$ 215,000	$ 215,000
Local Government Finance	Costs to monitor impacts on local government	Estimate	$ 150,000	$ 80,000
Highway Accident Risk	Costs of additional safety mechanisms that DOE does not implement	Estimate	$ 500,000	$ 100,000
	Upgrade County snow-removal equipment to improve road safety for trucks	Estimate	$ 500,000	$ 100,000
Tourism	Costs to enhance and implement marketing plans to mitigate the effects of stigma	Estimate	$ 500,000	$ 150,000
Economic Development	Costs to enhance and implement marketing plans to mitigate the effects of stigma	Estimate	$ 500,000	$ 150,000
Real Property	Funds to establish a data-base on property values along transport corridor and monitor	Estimate	$ 200,000	$ 80,000
	Trust fund of at least 20% of assessed valuation of White Pine County property	Assessed Value of White Pine County: $129,338,788	$ 25,867,757	N/A
	Trust fund of at least 20% of assessed valuation of City of Ely property	Assessed Value of the City of Ely: $44,063,631	$ 8,812,726	N/A
	Trust fund of at least 20% of assessed valuation of the town of McGill property	Assessed Value of the Town of McGill: $5,276,943	$ 1,055,388	N/A
	Trust fund of at least 20% of assessed valuation of the town of Lund property	Assessed Value of the Town of Lund: $1,345,127	$ 269,025	N/A

DOE Yucca Mountain Repository Program

Impact Report for White Pine County, Nevada

1.0 Basis for White Pine County Impact Report

1.1 Why this Report has Been Prepared

This assessment of impacts and identification of feasible mitigation options has been prepared to:

(1) Ensure that when developing and making a recommendation to the President regarding Yucca Mountain, the Secretary of Energy understands the nature of and methods to mitigate impacts of the Yucca Mountain repository system upon the residents, visitors, environment and economy of White Pine County;

(2) Ensure that when developing a nomination and nominating the Yucca Mountain site to the Congress as this Nation's first deep-geologic repository for spent nuclear fuel and other high-level radioactive waste, the President understands the nature of and methods to mitigate impacts of the Yucca Mountain repository system upon the residents, visitors, environment and economy of White Pine County;

(3) Ensure that when considering whether to authorize development of the Yucca Mountain repository system consistent with the President's nomination of the site, the Congress understands the nature of and methods to mitigate impacts of the Yucca Mountain repository system upon the residents, visitors, environment and economy of White Pine County.

(4) Ensure that when preparing its impact report to the Secretary of Energy, the State of Nevada understands the nature of and methods to mitigate impacts of the

Yucca Mountain repository system upon the residents, visitors, environment and economy of White Pine County;

(5) Ensure that when the Nevada Legislature is considering providing input and its response to the Secretary of Energy's recommendation of the Yucca Mountain site as this Nation's first deep-geologic repository for spent nuclear fuel and other high-level radioactive waste, the Legislature understands the nature of and methods to mitigate impacts of the Yucca Mountain repository system upon the residents, visitors, environment and economy of White Pine County.

The Nuclear Waste Policy Act of 1982, as amended in 1987, provides for the State of Nevada to prepare and submit to the Secretary of Energy an impact report. Section 114(a)(1) (H) of the Act states, "... Together with any recommendation of a site under this subparagraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

...(G) such other information as the Secretary considers appropriate and,
...(H) any impact report submitted under section 116(c)(2)(B) [U.S.C. 10136(c)(2)(B) by the State of Nevada.

There are unique local conditions and resultant impacts specific to White Pine County, Nevada, which we believe require full consideration as an integral part of any decision to recommend Yucca Mountain as a safe and enduring repository. As a consequence, this report has been submitted directly to the Secretary of Energy and is expected to be considered by the Secretary in formulating a recommendation to the President. In addition, White Pine County expects the Secretary of Energy to submit this report, pursuant to Section 114(a)(1)(G) of the Act, to the President.

1.2 Impacts Result from Unwanted Project

Neither the State of Nevada nor White Pine County and its residents have endorsed characterization or development of Yucca Mountain as the sole deep geologic repository for the Nation's high-level and spent nuclear waste, hereafter referred to as "high level waste." White Pine County does not advocate the transportation of spent nuclear fuel or other high-level radioactive waste over highway or rail lines through the County. To the contrary, there remains firm and widespread opposition to this program.

If recommended by the Secretary of Energy, nominated by the President to the Congress and authorized for construction and operation by the Congress, the Yucca Mountain repository system will have been unilaterally imposed up on the residents of Nevada along with its attendant concentration of risk. While arguably necessary, the program has long since lost any concept of fairness or equity with respect to the residents of Nevada.

Within Nevada, the necessity to protect the State's gaming-based tourist economy will result in shipments of spent nuclear fuel and other high-level radioactive waste moving through rural locations such as White Pine County. Very simply, the largest concentration of long-lived extraordinarily dangerous high level waste in recorded history will be transported through rural Nevada and stored in perpetuity at Yucca Mountain, presuming the site is found suitable.

The Yucca Mountain repository system represents an unwanted industrial activity. The allocation of Nevada's natural, social, fiscal and economic resources required to support the location and operation of the repository system represents an opportunity cost as these same resources will be unavailable for allocation in support of other desired industrial activities. As a consequence, White Pine County views any repository system related impact, regardless of scale, to require mitigation.

1.3 White Pine County Status as an Affected Unit of Local Government

White Pine County is one of ten units of local government which have been designated by the Secretary of Energy as "affected" pursuant to the Nuclear Waste Policy Act, as

amended. Pursuant to Section 116(c) of the Nuclear Waste Policy Act, as amended, the County has prepared and is submitting this impact report for consideration by the Secretary of Energy in deciding whether, and on what basis, to recommend Yucca Mountain to the President as the site of the Nation's first deep-geologic repository.

White Pine County has conducted a productive repository oversight program during the past nine years. The White Pine County Nuclear Waste Project Office (NWPO) has responsibility for design and implementation of oversight activities, which have provided information to residents as well as provided insights on potential repository system impacts. The fifteen member Nuclear Waste Advisory Board has provided the County program with guidance. County elected officials and Committee members have toured DOE and private utility nuclear facilities. These tours have afforded County representatives with a valuable perspective on nuclear facility implications for other communities.

1.4 Local Initiatives Supporting Preparation of this Report

1.4.1 White Pine County Sponsored Research

NWPO staff and Committee members have supervised the conduct of several studies documenting repository system implications for White Pine County. Topics addressed within these studies include economic/demographic baseline conditions, emergency response, economic/demographic projections, transportation risk assessment, and environmental impacts, among others. In addition, the County has funded development of digital databases including assessor plat coverage's for key communities and 1:100,000 United States Geological Survey maps comprising topography, water features, roads and utilities, boundaries and public land survey layers.

The studies and databases developed by the County have resulted from the collective efforts of experienced researchers representing both academic and private institutions. These various studies and data serve to underpin the identification and evaluation of impacts presented within this report.

Given the unwanted nature of the project, resultant impacts and the need to mitigate system effects, the County encourages the Secretary of Energy to consider the input received from affected parties as a means to better determine the feasibility of proceeding with the Yucca Mountain repository system. White Pine County further recommends that the costs of mitigating impacts associated with the project be considered when determining if, and on what basis, the Yucca Mountain repository system should be developed and operated.

1.4.2 Input to DOE NEPA Compliance Activities

White Pine County has been an active participant in the National Environmental Policy Act compliance initiatives undertaken by DOE. White Pine County's NWPO is experienced with DOE NEPA compliance activities having provided extensive input to DOE on the scope of the Sitewide EIS for the Nevada Test Site (NTS); the Multi-Purpose Canister (MPC) EIS; the Draft Yucca Mountain EIS and the Supplemental Draft Yucca Mountain EIS. None of these NEPA compliance activities adequately address transportation of spent nuclear fuel, other high-level radioactive wastes, and/or low-level radioactive wastes. In each case, comments submitted by the County reflect concern that DOE activities be conducted in a manner which enhances the health, safety and welfare of area residents. In each case, DOE has largely ignored the issues raised by White Pine County. As a consequence, the Draft EIS for the Yucca Mountain Project fails to address many key impact issues of importance to White Pine County. County officials have been assured by DOE OCRWM leadership that limitations in the scope of impacts addressed in the Draft and Final Yucca Mountain EIS will not limit the Secretary of Energy's consideration of impacts identified by affected units of local government in impact reports such as this document represents.

2.0 White Pine County in Perspective

The identification of impacts to White Pine County resulting from the Yucca Mountain repository system is unique for conditions which characterize the County. Similarly, mitigation measures which may be appropriate to manage repository system effects in the County may differ from those feasible or acceptable in other locales. It is imperative then that unique conditions which render White Pine County a distinctive place be considered in evaluating impacts and means to mitigate effects.

2.1 Location and Physiography

White Pine County is a large rural county located in east central Nevada. It has a typical basin and range topography, common to the Great Basin. Its valleys, at 5,000 to 7,000 feet in elevation are divided by north-south mountain ranges with peaks up to 13,000 feet. Average annual precipitation ranges from 5 to 8 inches in the valleys to 12 to 22 inches in the high mountains. The mean snowfall in the Ely urban area (the principal population center in the County) is 49.4 inches with January and February bringing approximately 9.5 inches each month. The annual mean temperature in this same area is 48.5 degrees and a July mean of 72.3 degrees. Temperature extremes of up to 30 degrees below zero occur in the winter months and 85 to 90 degrees in the summer are experienced. Air inversions occur occasionally in the closed valleys of the County, which causes smoke to lay close to the valley floor. In addition the valleys are subject to fog conditions. Figure 1 illustrates White Pine County's location relative to Yucca Mountain and the regional highway network serving the site.

Ely, the principal city and county seat, serves a large geographic area including local and transient populations with essential services including medical, emergency, law enforcement, fuel, food, retail, and hospitality. The nearest alternative availability of these types of services is often two hundred miles distant.

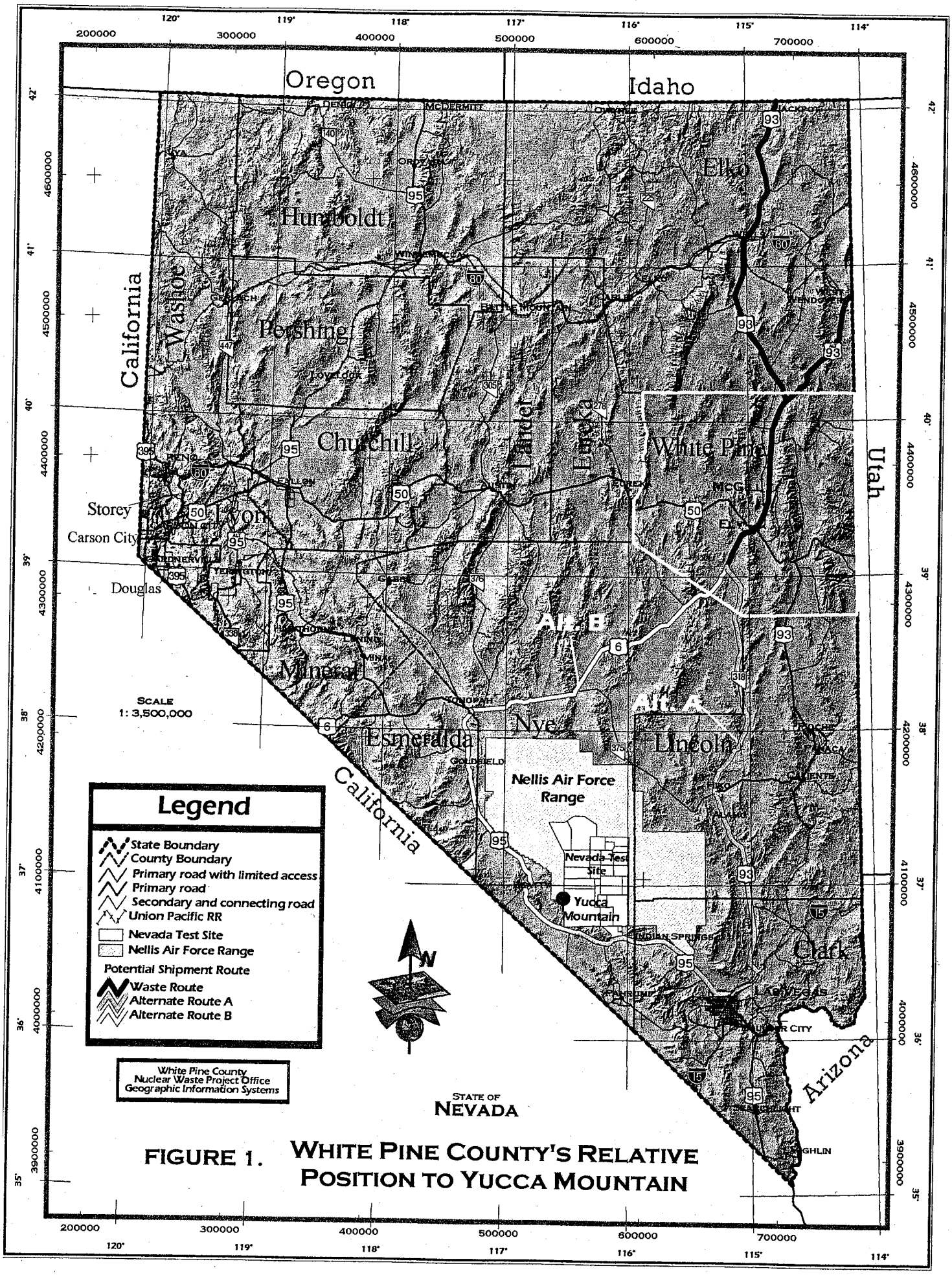

FIGURE 1. WHITE PINE COUNTY'S RELATIVE POSITION TO YUCCA MOUNTAIN

2.2 Economy

Historically, White Pine County's economy has depended upon agriculture and mining. Agriculture, principally cattle, sheep and hay production, has provided a fairly stable component to the County economy. The County's abundant groundwater resources, arable land base, and productive range lands have encouraged an extensive agricultural sector in the area economy.

Periods of boom and bust have characterized the mining industry in White Pine County. Both dramatic periods of economic expansion and contraction have been attributed to the mining industry in the County. Extensive mineral resources are located in the County. Market forces, of which little local influence is possible, have tended to drive the growth and decline of the mining industry in White Pine County. More recently, federally imposed environmental initiatives combined with depressed metal prices, in particular gold and copper, have served to depress and largely eliminate these industries. Today the mining industry in the County is severely depressed resulting in a stagnant local economy.

More recently, tourism has begun to emerge as a significant component of the White Pine economy. Great Basin National Park located in the eastern portion of the County and Cave Lake State Park are key natural features drawing tourists to the County. These areas, with abundant wildlife and miles of fishable streams, encourage those in search of pristine outdoor recreation to travel to the area. In the vicinity of Ely, the Nevada Northern Railroad, hotel casinos and historic community features serve to attract visitors to White Pine County. Records kept by the White Pine Chamber of Commerce suggest that visitation to the County is growing and the area is attracting visitors from around the world.

White Pine County has developed an industrial park and is actively engaged in efforts to attract new industry to the area. The State of Nevada operates important facilities in the County including a maximum security prison and a community college.

2.3 Population

The County-wide population is approximately 10,650 (Nevada State Demographer, 2001), concentrated in and around the City of Ely. Largely due to a downturn in the mining industry, the Nevada State Demographer estimates that by the year 2010, White Pine County's population may decline to 8,375 persons. Growth of the County will likely depend on the success of efforts to expand and diversify the local economy, including tourism. White Pine County is only 4 hours drive from Las Vegas with a population rapidly approaching 2 million persons. Because of its natural beauty, White Pine County is becoming an ever-more popular choice for Las Vegas residents to recreate. In addition, the County is seeing more and more residents of Clark County elect to purchase second homes in the Ely area. As the Las Vegas metropolitan area continues to grow, demand to visit and relocate to White Pine County will also grow.

2.4 Transportation

White Pine County is traversed north to south by US 93/6. This is a two-lane highway which passes directly through Ely. US 50, the "Loneliest Road in America," passes through the County east to west and likewise directly through Ely. In this regard, Ely is a gathering place for transient and locals, well isolated from other population centers.

US 93/6 has been designated by the Nevada Department of Transportation as an "alternative route" permissible for interstate trucking including all classes of hazardous materials except route controlled high level radioactive shipments. Consequently, US 93/6 is experiencing an increasing amount of heavy truck traffic including substantial numbers of HAZMAT shipments. Currently, a substantial percentage of low level radioactive waste destined for the Nevada Test Site utilizes US 93/6.

The U.S. 93/6 corridor route through Elko, White Pine, and Nye Counties is two lane with minimal availability of pullout areas, rest stops, or service facilities. There are no designated safe haven areas. Most of the US 93/6 route traverses very sparsely populated high desert and mountainous terrain, all of which is above 5000' MSL. Road conditions in the winter normally include snow and ice, particularly in the mountain passes.

While the route through the County is largely rural and isolated, it ironically includes a section known as the McGill/Ely Corridor. The high concentration of residences, businesses, and schools in very close proximity to US 93/6 along this corridor is of major concern regarding risk associated with transportation of high level nuclear waste. Characteristics of this corridor, including density and land-uses, are similar to the characteristics of the potential route for high-level nuclear waste near Las Vegas that planners have indicated they want to avoid. The distances between commercial and residential uses and the actual roadway may be less than the distance between the highway and commercial/residential functions in the Las Vegas corridor.

2.5 Relationship to the Yucca Mountain Repository System

There can be substantial impacts on White Pine County, its residents, society and local economy resulting from the Yucca Mountain repository system if constructed and made operational. A primary concern is centered on extensive and long-term transportation of spent nuclear fuel and other high-level waste by legal weight truck through the County on US 93/6. As many as 90,000 shipments of high level waste could move through White Pine County over a 30-year period as a result of the Yucca Mountain repository system.

DOE did not include this route as an analyzed alternative in the DEIS. Should this route not be selected for use, there would likely be no quantifiable impacts to White Pine County resulting from Yucca Mountain destined high level waste transportation. Because it is possible, if not likely, that the Governor of Nevada will designate U.S. 93/6 through White Pine County as Nevada's preferred route for spent nuclear fuel shipments (as the state has done for LLW shipments), the County would be impacted.

Several contemporary events lead to concern on our part that high level nuclear waste may well be transported through White Pine County on legal weight trucks destined for the Yucca Mountain Repository. Substantial low level waste is currently transported by legal weight truck through White Pine County on US 93/6 destined for the Nevada Test Site. It is now, according to the DOE, the preferred northern route particularly in non-

winter months. It is believed that an underlying reason for this routing is the substantial and pervasive resistance on the part of Clark County and local municipalities to transporting radioactive waste of any type through the Las Vegas Valley. The DOE has apparently acquiesced to this very substantial pressure and advised its shippers to use the US 93/6 northern route. This situation has been recently exacerbated by the recent spectacular crash of a gasoline tanker on US 95 within the Las Vegas Valley, which has served to heighten concerns over the advisability of transportation any radioactive waste through this increasingly congested area.

The City of North Las Vegas recently completed a study to independently assess the risk of transportation of high-level waste on the proposed North Las Vegas beltway using current and projected demographic and planning data. This route was also analyzed in the DEIS but used static 1990 demographic data and assumed the area was and would remain rural in nature. The conclusions of the City of North Las Vegas study indicated that the risk of a catastrophic accident resulting in release of radionuclides was dramatically higher than concluded in the DEIS and that the results of release on human health was likewise dramatically higher. The study also analyzed cleanup, remediation and disruption impacts and cost, which were enormous. The DEIS did not consider or analyze these impacts. White Pine County is of the opinion that the North Las Vegas report will put future pressure on the DOE to not ship any spent nuclear fuel and other high-level radioactive waste through the Las Vegas Valley. The DEIS (U.S. DOE, 1999b, Table J-48) estimates the risk of transporting spent nuclear fuel and high-level radioactive waste through White Pine County to be greater than the risks of shipping the waste through Las Vegas. Further fueling White Pine County's concerns that the designation of rural routes that avoid passing though Las Vegas is occurring in an atmosphere of political, rather than scientific influence, is a U.S. Congress (2000) committee report which states:

> "The Department needs to take a more aggressive approach in educating the public and working with state and local governments to develop safe transportation routes to the repository. One of the first steps should be to

work with the State of Nevada to specify the transportation modes and routes that will avoid the Las Vegas metropolitan area."

White Pine County believes that strong mandates, such as this from Congress, substantiate their concern that a rural route impacting the County and its residents is very possible.

Since there are analogous conditions in the McGill/Ely corridor in White Pine County to the North Las Vegas Beltway, the County is further concerned that the likelihood and consequences of transportation of high-level waste in White Pine County may approach those identified in the City of North Las Vegas study. While again recognizing that DOE's plans do not currently prescribe shipment of high level waste through White Pine County, the above events lead to the conclusion that the County is well justified to assess and identify transportation-related impacts, both incident and incident-free, and mitigation to the extent practicable for White Pine County.

Although DOE may argue that a Governor's route designation shifts the burden for taking responsibility for creating transportation related impacts and implementation of needed mitigation to the State of Nevada, the County admonishes the Secretary of Energy to reject this argument and retain responsibility for transportation impacts to White Pine County. Indeed, were DOE not proposing the Yucca Mountain project, the Governor would not be required to designate a State preferred routing alternative.

Beyond transportation issues, White Pine County is "downwind" from the proposed repository at Yucca Mountain. The County is concerned with socioeconomic and stigma related impacts resulting from the presence of the Yucca Mountain repository system. The previously referenced level of uncertainty present in the scientific work undertaken thus far in the Total System Performance Assessment and independently, raises concern as to the ability of the repository to reliably contain radionuclides for its 10,000 year projected life span. The Nuclear Waste Technical Review Board has voiced similar

concerns in numerous meetings and in correspondence to the Secretary of Energy and the Congress.

Of primary concern is atmospheric release of radionuclides originating from igneous activity, resulting in a radioactive plume that could both contaminate and cause radiation exposure to individuals over a wide geographic area. A second, though important, effect would be socioeconomic disruption and long term stigma effects on local economies, such as White Pine County. Substantial economic effects on tourism and the ability of White Pine County to attract and retain businesses and to maintain its traditional agriculture base could result.

Of further concern is groundwater contamination. While it is not likely that the ground water in White Pine County would be affected, contamination in Nye and possibly Clark Counties could cause stigma related effects on tourists passing through White Pine County to and from southern Nevada. Local government finances in Nevada involve distribution to rural areas of tax revenues derived in the State's metropolitan areas. Any stigma-induced downturn in the economy of the Las Vegas metropolitan area could have direct consequences upon the fiscal health of White Pine County. The Las Vegas Valley Water District has filed for groundwater rights in White Pine County. Degradation of southern Nevada water supplies could increase demand by Las Vegas for White Pine County water.

3.0 Types of Effects Considered

Construction and operation of the Yucca Mountain repository system will result in a variety of environmental consequences, with potential implications for White Pine County. The discussion of impacts which follows seeks to identify the environmental, social, economic and fiscal consequences of alternatives being considered for implementation of the Yucca Mountain repository system in Nevada. Of particular concern are adverse effects which cannot be avoided, the relationship between short-term uses of the environment, the maintenance and enhancement of long-term productivity of natural resources and irreversible or irretrievable commitments of resources.

3.1 Timing of Impacts

White Pine County is concerned that the Secretary of Energy may not adequately consider the temporal aspects of impacts resulting from the repository system in Nevada. This impact report considers impacts from the following phases of the project: site characterization, transportation system construction, repository construction, transportation system operation, and repository operation.

During each phase of the repository program, a variety of types of effects upon White Pine County are possible. A description of the types of effects considered in subsequent sections to this report follows.

3.2 Nature of Impacts

3.2.1 Direct

The consideration of repository system impacts includes effects that are caused by the development and operation of the repository system and occur at the same time and place. These "direct" effects are directly attributable to implementation by DOE of the proposed action and any alternatives thereto.

3.2.2 Indirect

This impact report considers effects which are caused by DOE implementation of repository system preferred action or alternatives thereto but are later in time or further removed in distance from the direct effects, yet are reasonably foreseeable. Indirect effects include those that are growth inducing or inhibiting or otherwise related to changes in land use patterns, population density, or growth rate.

3.2.3 Cumulative Effects

In considering whether to recommend the Yucca Mountain site to the President, the Secretary of Energy must consider the cumulative consequences to Nevada and White Pine County of repository system development and operation. Cumulative effects result from incremental impact of the proposed action or alternatives when added to other past, present and reasonably foreseeable future actions, regardless of which agency or person undertakes them. Cumulative effects can result from individually minor, but collectively significant, actions taking place over time. In the case of White Pine County, the Secretary of Energy must consider the cumulative effects of existing low-level radioactive waste shipments added to future shipments of spent nuclear fuel and other high-level radioactive waste being shipped through the County.

3.2.4 Conflicts with Plans

In determining the feasibility of proceeding with the Yucca Mountain Project and on what basis and for what cost the repository system will be established and operated, the Secretary of Energy must consider the extent to which the project conflicts with other federal, state, local and tribal plans, policies or controls. This impact report focuses upon conflicts between local government plans in White Pine County. According to NEPA the term "land use plan" includes all types of formally adopted documents for land use planning, zoning and related regulatory requirements, including formally proposed plans. The term "policy" includes formally adopted statements of land use policy as embodied in laws or regulations, including formally proposed policies. The following sections of this report consider the extent and implications of conflicts between DOE proposed

action and alternatives for implementation of the repository system and plans, policies and regulations adopted by local government in White Pine County.

3.2.5 Unavoidable

Of particular concern to White Pine County will be those effects of the Yucca Mountain repository system which cannot be avoided. The recognition by the Secretary of Energy of the need to mitigate all unavoidable impacts is imperative. This report seeks to identify unavoidable effects such that formulation of a recommendation by the Secretary of Energy regarding Yucca Mountain is fully informed by the knowledge of effects. White Pine County is very concerned that an uninformed recommendation to proceed with Yucca Mountain may result in unanticipated and/or unmitigated effects in the County.

3.3 Impact Scenarios

The following impact scenarios have been used to characterize impacts of possible Department of Energy action to transport spent nuclear fuel through White Pine County. Analyses of scenario impacts are incorporated into subsequent sections of this impact report.

Scenarios used in this report are considered credible. To address the full range of possible impacts, the scenarios reflect what might be considered "worst case" situations and outcomes. In formulating the following scenarios, White Pine County has considered both transportation and repository operation related initiating events (i.e. truck accident, volcanism). As a means to understand the potential for indirect effects, outcomes for each initiating event have been identified.

Scenario #1

On June 27, approximately 1/2 mile south of Ely on U.S. Highway 6, a truck transporting spent nuclear fuel (SNF) collides with a truck transporting gasoline (initiating event). The resulting fire burns for nearly three hours, during which time the seals on the SNF shipping cask fail resulting in small amounts of radiation to escape into the accessible environment. An afternoon thunderstorm moves into the area accompanied with high

winds. Rainfall promotes deposition of radionuclides into the Murry Canyon watershed serving the City of Ely. The Murry Canyon area of Ely is evacuated for two days until monitoring can establish that a health hazard from radiation exposure does not exist. Pregnant women and small children are encouraged to remain away from the area for two additional days. The fire also spreads into the adjacent Humboldt-Toiyabe National Forest and burns for several days.

The accident is widely reported in national print and television news media. Due largely to the lack of accurate information immediately following the accident, press accounts of the severity of radiation releases and exposure risk are greatly exaggerated. Conflicting accounts of the accident and risk by government officials only serve to heighten media amplification of reported risk. Local, regional and national perceptions of the immediate and long-term risks resulting from the accident are all quite high.

Within 8 hours following the accident, operators of hotels and motels in White Pine County begin to receive mass cancellations. Heading into the busy Fourth of July weekend, reserved rooms have fallen from nearly 80 percent occupancy to just under 40 percent occupancy. Cancellations extend to nearly four weeks out with occupancy rates at that time reduced from a pre-accident level of 72 percent to 40 percent.

As a consequence of the accident and media amplification of risk, visitation to White Pine County during the following four weeks is off by an estimated 30 to 40 percent. The number of room nights sold during the four week impact period declines from 13,920 (80 percent occupancy, estimated 580 rooms in Ely area) to 6,960 (40 percent occupancy). (City of Ely, 1999) Room night revenue loss is estimated at $243,600 (at $35 /night excluding tax). Room tax revenues lost during the four-week period total $19,488 (at 8 percent of room rate).

A sixty percent reduction in direct visitor spending ($100/day) for a period of four weeks totals $1,392,000 (13,920 lost visitor days @$100/day, excluding lodging). Lost visitor spending ($100/day) is distributed as follows: fuel $35; meals $35; retail goods (taxable)

$15; retail goods (non-taxable) $15. Lost fuel sales approximate $487,200. Lost fuel tax revenues are estimated at $10,534 (263,351 gallons at $1.85/gal. using $.04/gal. tax rate). Other taxable sales (meals and retail goods) lost are estimated at $696,000 with lost sales tax revenue of $50,460 (at 7.25 percent sales tax rate).

Using Yucca Mountain repository oversight funds, White Pine County commissioned the University of Nevada, Reno Center for Economic Development (UNR-CED) (2000) to develop an economic/demographic impact model for the County. Application of the model to the direct loss of visitor spending ($1,392,000) suggests that total direct and indirect economic impacts would approach $3.2 million. The UNR-CED model further predicts an estimated 48 jobs would be lost due to the economic impact resulting from the downturn in the local economy.

In addition to tourism impacts, demand for real estate in the area (particularly from second-home buyers) declines dramatically. Values of these properties fall between 15-20 percent.

Scenario #2

A volcanic eruption occurs beneath the Yucca Mountain repository site (initiating event). The containment capability of one or more waste canisters is compromised resulting in radionuclides being transported in the ash plume. The plume rises nearly 15,000 feet into the atmosphere and is carried by prevailing winds to the northeast at 20 miles per hour. Preston, Lund, Ely and McGill are located in the downwind path of the ash plume. Atmospheric monitoring confirms the radiation content of the plume and downwind communities are advised to take emergency precautions. Within eight hours ash is settling in Preston/Lund. An hour later ash begins to fall in Ely and McGill. Monitoring detects low levels of radiation in the ash.

Several thousand White Pine County residents have heeded the instructions of authorities and have evacuated to the north (Elko) and northwest (Eureka). Several thousand have remained in the area and are now confined to their homes.

Scenario #3

In mid-afternoon, a double trailer tanker containing 10,000 gallons of gasoline heading down Murry Canyon on US 6 at 55 MPH in a light winter snowstorm looses control, with the rear trailer jackknifing into the uphill lane. A legal weight truck/trailer carrying a certified canister containing high-level waste in the form of spent nuclear fuel rods traveling at 55 MPH in the uphill lane collides with the jackknifed trailer (initiating event).

The vehicles interlock and both trucks and their trailers careen off the highway and smash forty feet vertically into Murry Creek. While the spent nuclear fuel shipping casks survives the initial crash unbreached, the resultant drop with one gasoline trailer landing on top of the cask causes it to flatten appreciably and results in a fracture of the cask seals. The impact limiters are of no help since the majority of force is vertical. Both gasoline trailers explode in a large fireball, with the breached shipping cask completely engulfed in the fire due to its final position in the bottom of a narrow creek bed.

A 30 mph wind is blowing steadily down Murry Canyon toward Ely with intermittent snow falling. A small stream of water flows down Murry Creek toward Ely. The White Pine County Sheriff's Department, the Ely Fire Department, the Nevada Highway Patrol, and County Volunteer emergency medical technicians (EMT) are notified within five minutes of the collision by a passing motorist and take 10 minutes to arrive on the scene.

By now the fire is a raging inferno emitting dense clouds of smoke that blow directly down the canyon, reducing visibility for emergency response crews. It is not possible to approach closer than 100 meters of the blaze due to the intensive heat and smoke. The large amount of gasoline, burning unsuppressed in a narrowly confined canyon with a large supply of oxygen from the wind reaches a core temperature of 2000° F (Caldecott Tunnel Fire on Highway 24, east of San Francisco, CA – 1987) and stabilizes there.

Shortly after arrival of local emergency response crews, the White Pine County Sheriff's Department receives notification from the nuclear waste shippers monitoring facility that something is amiss with one of their trucks near Ely. The Sheriff's Office dispatcher immediately notifies the onsite emergency response team that one of the trucks involved in the fiery collision was likely carrying high level nuclear waste and to evacuate the area immediately.

The Sheriff's Department, as per emergency response procedures, notifies the DOE in Las Vegas 250 miles away. It will take them at least 4 hours to arrive onsite, possibly longer due to the inclement weather, which has forced closure of the small county airport.

The nearest large scale petroleum fire fighting capabilities are at Nellis AFB in Las Vegas, also at least 4 hours away. Ely has no such capabilities. It is decided to let the fire burn out. The fire burns and emergency crews are immediately evacuated back down the canyon to Ely because of the potential radiation hazard.

Approximately one hour after the collision, EMT staff begin to get indications of atmospheric radioactivity. The dose and count rate is small, but begins to increase rapidly. Officials are notified and the evacuation sirens sound.

The fire eventually burns out at around midnight. DOE radiation monitoring and control teams have arrived, but still cannot approach the accident scene due to the intense residual heat. Atmospheric radiation levels have decreased downwind, but nobody knows how high they were since local EMT staff have long since evacuated.

Special DOE radiation teams have entered Ely and begun assessment. The news is not good. The radionuclides from the spent fuel rods have became volatile in the intense and long duration heat of the fire and were dispersed in quantity directly into the wind and into the streambed. Most of Ely is sufficiently contaminated to preclude reoccupation anytime in the near future. McGill, further away is also contaminated, but can probably

be reoccupied within several weeks. Worse yet, radionuclides have been found in Murry Spring, which was up to now Ely's water supply source.

4.0 Characterization of Impacts

4.1 Radiation Exposure

White Pine County is located downwind of the Nevada Test Site (NTS). Residents of the County have historically been exposed to radioisotopes deposited in the area following above and below-ground nuclear weapons tests at NTS. There were more than 100 above ground, and more then 700 below ground bomb tests between 1951 and 1992. Containment failure during underground testing was not uncommon and bomb test schedules were routinely adjusted so the tests occurred when the wind was directed east or northeast. The objective was to direct the plume of radioactivity toward low population areas and to minimize the aggregate dose received by the population in the test site region. Throughout the Department of Energy's (DOE) weapons testing program at NTS, much of White Pine County, including Ely, was designated as an "Offsite Uncontrollable Area," meaning that in the event of an unanticipated atmospheric venting of radionuclides, communities within this area could not be effectively evacuated to ensure protection from exposure. Because evacuation was not possible DOE tried to limit exposure to persons living in these regions by postponing bomb tests if exposure was anticipated to be higher then 170 millirems (U.S. DOE, 2001a).

The result of the weapons testing at NTS is that residents of White Pine County and the City of Ely have already been exposed to greater radiation risk then most of the communities throughout the country that will be impacted by the transport of the nuclear waste. Therefore, the radiological impacts of Yucca Mountain cannot be evaluated alone, but should be assessed in a manner that includes the cumulative effects of long-term exposure to radiation risk (Goble, 1994). Latent and genetic disorders are a possible consequence of Yucca Mountain related exposure. Although monitoring has not detected ongoing releases to the environment related to NTS, DOE has made quantitative estimates of offsite doses from releases from past weapons testing activities at NTS (U.S. DOE, 1999a, p. 3-83). This data would give DOE a good base to begin a complete assessment of the cumulative past, present and future exposure that White Pine County residents might experience.

The transportation of nuclear waste through White Pine County and the City of Ely will be attended by a certain degree of risk of exposure, even under incident-free operation. Radiological exposure can be expected for truck drivers, workers at truck rest stops, residents with homes close to the transport corridors, and other citizens that come within close proximity of the trucks carrying the casks. Studies of incident-free radiation exposure indicate an exposure zone of 800 meters (.5 mile) on either side of the transport corridor (U.S. DOE, 1999a). Approximately half of the population of White Pine County lives in the U.S. Highway 93 corridor (21 miles) between McGill and Ely, within this .5 mile exposure zone. In addition, many of the motels in the Ely area are located adjacent to the highway, effectively increasing the population of the corridor that could be exposed to radiation from the transport of high-level nuclear waste through the City. There are three elementary schools, one middle school, and one high school within .5 miles of the highway. These schools have a combined enrollment of approximately 1,450 children. The location of many residential and commercial establishments within this corridor is much closer than the default assumed in the RADTRAN analysis used in the Yucca Mountain DEIS (Research and Consulting Services, Inc., 2000).

The results of a White Pine County sponsored study comparing transportation risks in the County with nationwide risk studies conducted by DOE indicate that incident-free risks in White Pine County were slightly greater for rural segments than those for the nation as a whole, but lower for suburban and urban segments. This variation is directly related to the differences in the fraction of travel through rural versus suburban or urban zones. White Pine County is 95 percent rural compared to the DOE nationwide study of 83.7 percent (Parentela, et al, 1996, p. 28).

Truck drivers will need to rest, refuel their vehicles, and have meals as they travel along the route through Nevada. Unless DOE designates otherwise, some truck drivers hauling the high-level nuclear waste may choose Ely as the best location for these functions. This will serve to increase the risk of radiation exposure for both residents and visitors in Ely, under incident-free conditions.

The DEIS analysis of radiological risks to populations and estimates of consequences of maximum reasonably foreseeable accidents did not explicitly address local, difficult-to-evacuate populations such as those in prisons, hospitals, nursing homes, or schools (U.S. DOE, 1999b, p. J-60).

A study commissioned by White Pine County to assess the radiological risk to residents in the event of a severe accident which results in the breach of a containment cask finds the risk substantially greater then the risks outlined in DOE's DEIS (Radioactive Waste Management Associates, 2001). This analysis assumed an accident at the base of Murry Summit on U.S. 93 (.6 mile from the populated area of Ely), where the road conditions are steep enough to generate a severe accident. The analysis further accounted for location specific conditions to estimate exposure risk to the population and the community water system. This included, evacuation procedures and routes and local meteorological conditions for plume dispersion of the radioactivity. This study found that such an accident would result in a latent cancer risk to the local population of between 30 to 300 fatalities. Accident related radiation exposure would also cause genetic effects, such as birth defects and other non-cancerous diseases, which were not calculated for this report. The study found that a populated area of 4.5 km^2 would be contaminated, as well as a 70 km downwind area of approximately 220 km^2. Although the study did not evaluate costs of clean-up, and losses due lost business and property devaluation, the study found that the whole town would have to be decontaminated, including buildings, streets, grass, etc. Further, this study found that the Ely water supply would be contaminated in concentrations high enough to require that the community utilize an alternative water supply.

Radiological risks to the residents of White Pine County, both from incident-free exposure and in the event of a severe accident are likely to be higher than outlined in DOE's DEIS. DOE needs to make a realistic assessment of the risks to communities bisected by transport routes for the spent nuclear fuel and provide appropriate mitigation efforts to reduce the risk and provide compensation for otherwise unmitigable effects.

4.2 Socioeconomic

4.2.1 Employment

Because U.S 93, within White Pine County, is not, unless designated by Nevada's Governor, a U.S. Department of Transportation eligible route for legal-weight trucks carrying high-level nuclear waste to Yucca Mountain, the DEIS does not analyze the employment impacts that might accrue to the area if it did become a designated route. However, if the transport of high-level nuclear waste does pass through White Pine County, DOE will need to conduct a full socioeconomic and environmental impact assessment of the area. If White Pine County becomes a route for legal-weight trucks, employment benefits are anticipated to be negligible, but not zero.

DOE does not anticipate that any activities associated with the construction or operation of the repository will impact the County. However, White Pine County believes there may be employment impacts due to transportation, material, and manpower needs associated with construction and operation of the Yucca Mountain repository.

If White Pine County or the City of Ely experience out-migration due to stigma effects of being located on a transport corridor for high-level nuclear waste, reduced property values, and/or loss of potential new residents may result and there will be a negative impact on employment.

Conversely, if DOE were to locate an ancillary function to the Yucca Mountain repository, such as a Global Positioning System (GPS) based transportation tracking facility (TRANSCOM) in Ely, the City and County might experience positive employment benefits from the repository. Similarly, DOE could locate a facility that manufactures materials for the repository in White Pine County, generating a positive employment effect.

There are currently three full time equivalent employees at the White Pine Nuclear Waste Project Office (NWPO), which are supported under DOE funding. There are two full-time employees—the Director of the Office and an Administrative Assistant. In addition, there are two part time student-interns that maintain the GIS database and coordinate efforts between Lincoln County and White Pine County.

Unemployment fluctuates in White Pine County, as indicated in Table 4.1

Table 4.1 Unemployment in White Pine County 1995-2000

Year	Unemployment
2000	3.9%
1999	3.8%
1998	5.8%
1997	5.8%
1996	8.0%
1995	6.4%

Source: Nevada State Labor Market Information web site:
http://detr.state.nv.us/lmi/lmi_lfrc.htm#PDF Format

White Pine County will need to monitor the full range of potential stigma related impacts if high-level nuclear waste is transported through the area. This would include a downturn in the local economy that might raise the unemployment level.

4.2.2 Income

Under current DOE scenarios evaluated in the DEIS there are no income impacts for White Pine County and the City of Ely. There may, however, be limited income impacts based on potential changes in employment (see above). One source of potential positive income would be if there are natural resources in White Pine County that DOE could purchase for construction and/or operation of the Yucca Mountain facility. At this time DOE has not specifically identified any resources in White Pine County that might be utilized.

DOE funded Yucca Mountain repository oversight activity has provided limited additional income within the County. However, the use of these funds is carefully limited pursuant to the Nuclear Waste Policy Act, as amended.

4.2.3 Population

There are no DOE scenarios of the Yucca Mountain repository that anticipate an impact (positive or negative) on the population of White Pine County or the City of Ely.

Past, current, and future projections of White Pine County population are shown in Table 4.2.

Table 4.2 Population for White Pine County 1990-2010

Region	1990	2000	2010*
White Pine County	9,410	10,650	8,375
City of Ely	-------	5,118	-------
City of McGill	-------	1,374	-------

Source: Nevada State Demographer web site. http://www.nsbdc.org/demographer.

There are, however, two scenarios, not identified by DOE that might result in a negative impact on population. First, employment opportunities at the repository might encourage an outflow of residents as they seek employment closer to the site. Second, if there are stigma-related effects, some residents may choose to leave and other potential new residents may decide to look elsewhere for a community that is not associated with the transport of high-level nuclear waste. Figures 2, 3, 4 and 5 depict the proximity of the Ely, McGill and the Preston/Lund community areas to the potential highway transportation routes through White Pine County. As shown on the maps, the majority of the urbanized area in each community is within the 800 meter corridor utilized in the RADTRAN transportation risk model as the assumed radiological exposure zone. Table 4.3 indicates that along the Ely-McGill and Preston-Lund highway corridors, agriculture, an activity highly sensitive to stigma, is the predominant land use (approx. 800 acres) within the 800 meter risk zone.

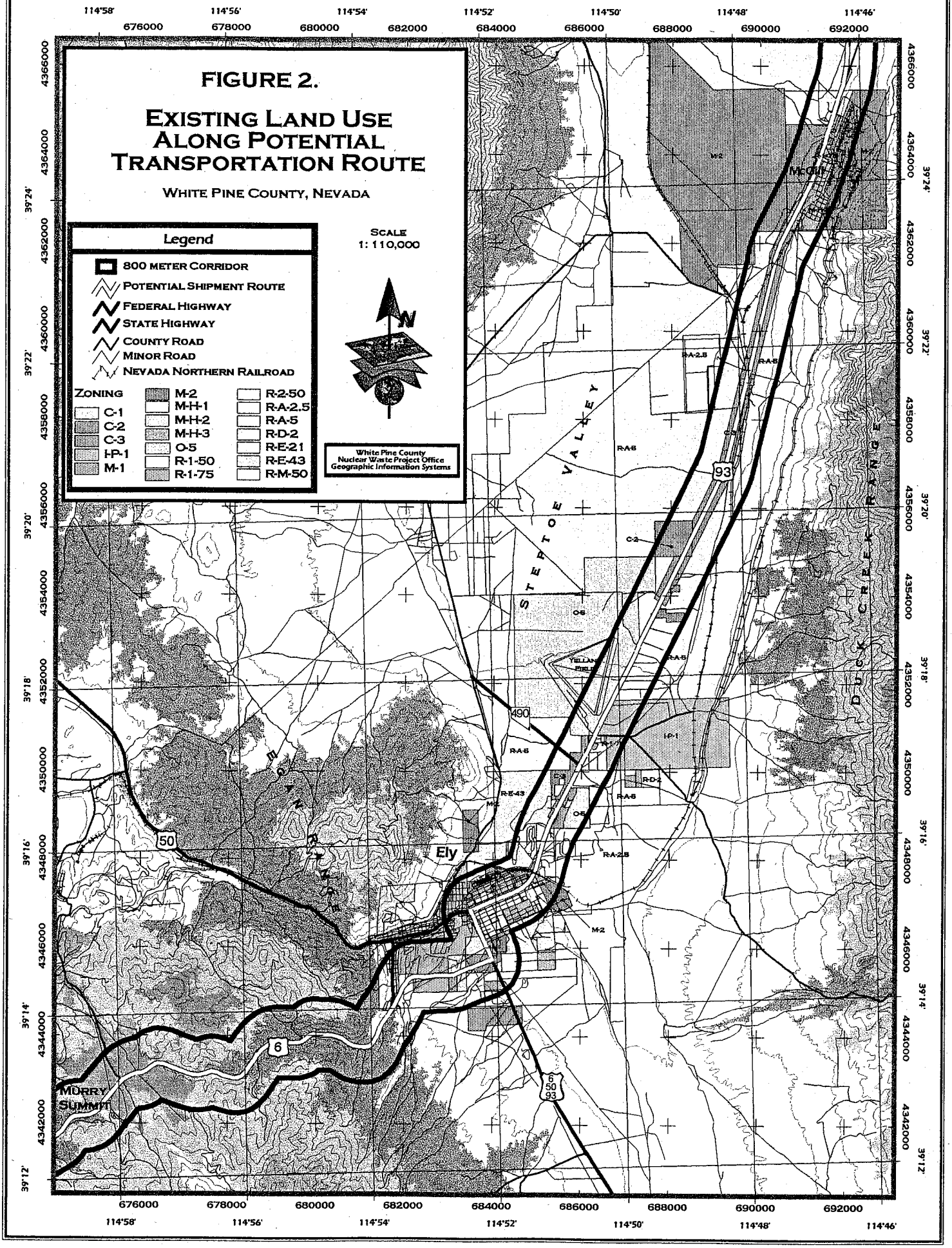
FIGURE 2.
EXISTING LAND USE ALONG POTENTIAL TRANSPORTATION ROUTE
WHITE PINE COUNTY, NEVADA
Legend
800 METER CORRIDOR
POTENTIAL SHIPMENT ROUTE
FEDERAL HIGHWAY
STATE HIGHWAY
COUNTY ROAD
MINOR ROAD
NEVADA NORTHERN RAILROAD
ZONING
C-1
C-2
C-3
I-P-1
M-1
M-2
M-H-1
M-H-2
M-H-3
O-S
R-1-50
R-1-75
R-2-50
R-A-2.5
R-A-5
R-D-2
R-E-21
R-E-43
R-M-50
SCALE
1: 110,000
N
White Pine County
Nuclear Waste Project Office
Geographic Information Systems
Ely
McGill
Murry Summit
STEPTOE VALLEY
DUCK CREEK RANGE
93
50
6
490
114°58'
114°56'
114°54'
114°52'
114°50'
114°48'
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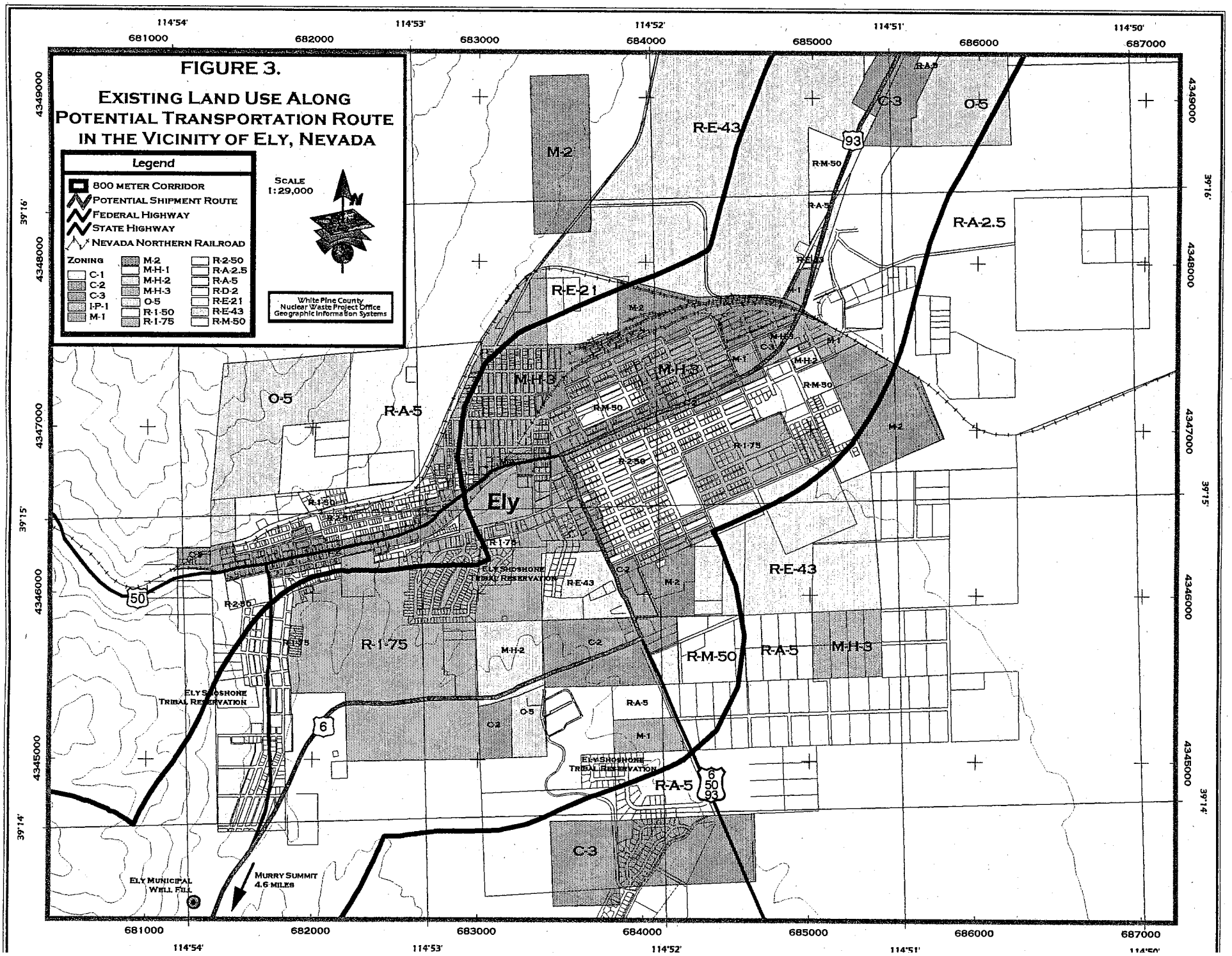
FIGURE 3.
EXISTING LAND USE ALONG POTENTIAL TRANSPORTATION ROUTE IN THE VICINITY OF ELY, NEVADA
Legend
800 METER CORRIDOR
POTENTIAL SHIPMENT ROUTE
FEDERAL HIGHWAY
STATE HIGHWAY
NEVADA NORTHERN RAILROAD
ZONING
C-1
C-2
C-3
I-P-1
M-1
M-2
M-H-1
M-H-2
M-H-3
O-5
R-1-50
R-1-75
R-2-50
R-A-2.5
R-A-5
R-D-2
R-E-21
R-E-43
R-M-50
SCALE 1:29,000
White Pine County Nuclear Waste Project Office Geographic Information Systems
Ely
ELY SHOSHONE TRIBAL RESERVATION
ELY MUNICIPAL WELL FILL
MURRY SUMMIT 4.6 MILES
114°54'
114°53'
114°52'
114°51'
114°50'
681000
682000
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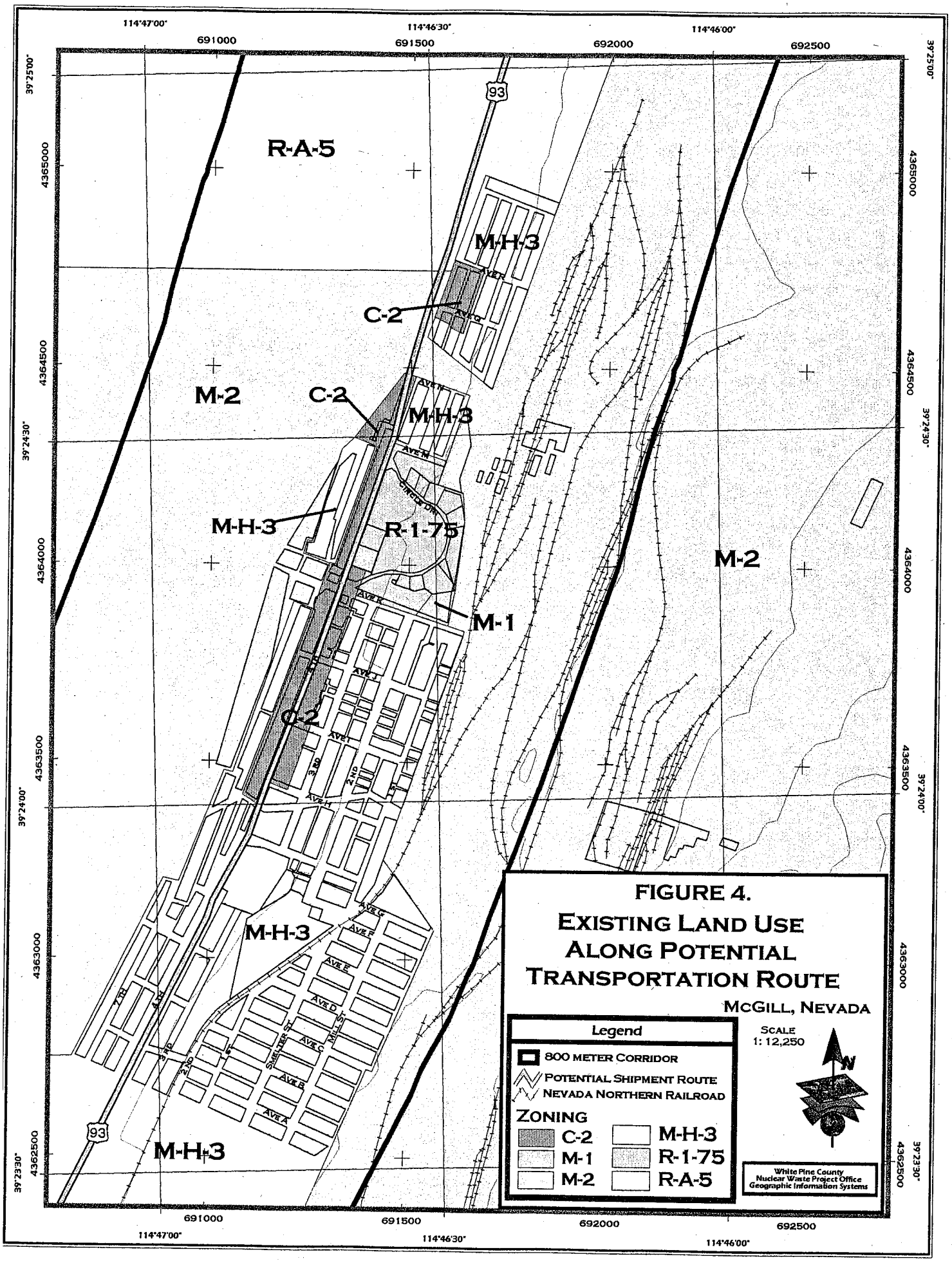
39°14'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39°23'30"
4365000
4364500
4364000
4363500
4363000
4362500
93
R-A-5
M-H-3
C-2
M-2
C-2
M-H-3
M-H-3
R-1-75
M-2
M-1
C-2
M-H-3
M-H-3
AVE N
AVE K
AVE H
AVE G
AVE F
AVE E
AVE D
AVE C
AVE B
AVE A
1ST
2ND
3RD
4TH
5TH
MAIN ST
SHELDER ST
CIRCLE DR
FIGURE 4.
EXISTING LAND USE
ALONG POTENTIAL
TRANSPORTATION ROUTE
McGILL, NEVADA
Legend
800 METER CORRIDOR
POTENTIAL SHIPMENT ROUTE
NEVADA NORTHERN RAILROAD
ZONING
C-2
M-1
M-2
M-H-3
R-1-75
R-A-5
SCALE
1: 12,250
N
White Pine County
Nuclear Waste Project Office
Geographic Information Systems

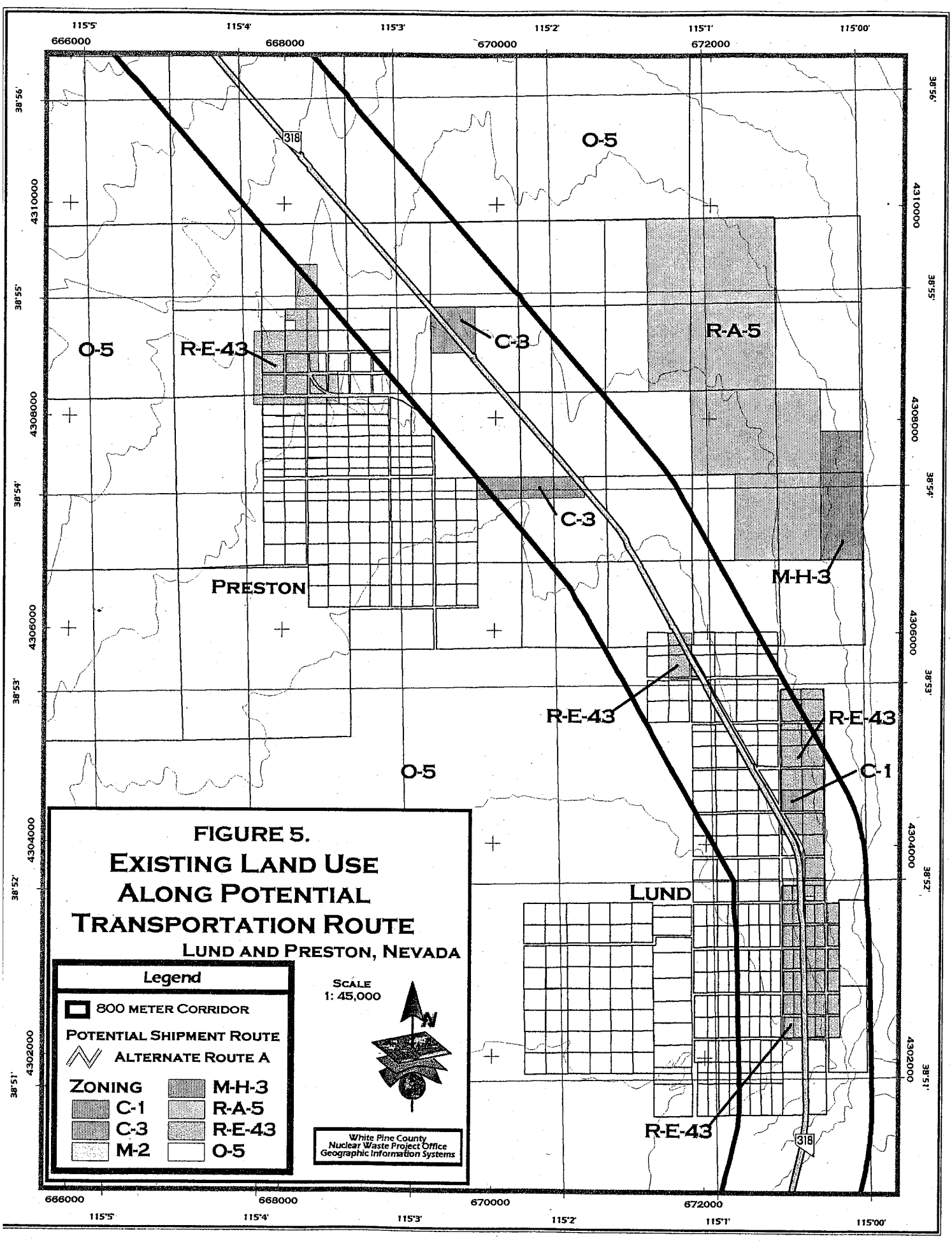


FIGURE 5.
EXISTING LAND USE ALONG POTENTIAL TRANSPORTATION ROUTE
LUND AND PRESTON, NEVADA

Table 4.3 White Pine County Zoning Within 800 Meter Risk Zone Along Highway Corridors in the Vicinity of Ely-McGill and Preston-Lund Community Areas

Zoning Designation	Zoning Description	Acreage Within 800 Meter Highway Corridor
C-1	Limited Commercial District	1.71
C-2	General Commercial District	35.41
C-3	Highway Commercial District	94.02
I-P-1	Industrial Park District	13.23
M-1	Light Manufacturing District	16.51
M-2	Heavy Manufacturing District	79.00
M-H-1	Mobile Home Park District	0.55
M-H-2	Residential Estate District	4.66
M-H-3	Residential Mobile Home District	38.14
O-5	Open Range	455.15
R-1-50	Single Family Residential District	0.00
R-1-75	Single Family Residential District	48.37
R-2-50	Two Family Residential District	23.04
R-A-2.5	Ranch Agricultural District	9.14
R-A-5	Ranch Agricultural District	335.04
R-D-2	Recreation Development, Intense Use	0.00
R-E-21	Residential Estate District	2.13
R-E-43	Residential Estate District	69.30
R-M-50	Multiple Family Residential District	12.80

4.3 Public Infrastructure and Services

4.3.1 Emergency Management

The emergency management systems in White Pine County and the City of Ely will be impacted due to the Yucca Mountain repository. Additional legal-weight trucks on the roads will place further demands on emergency management personnel (staff and volunteers) and equipment.

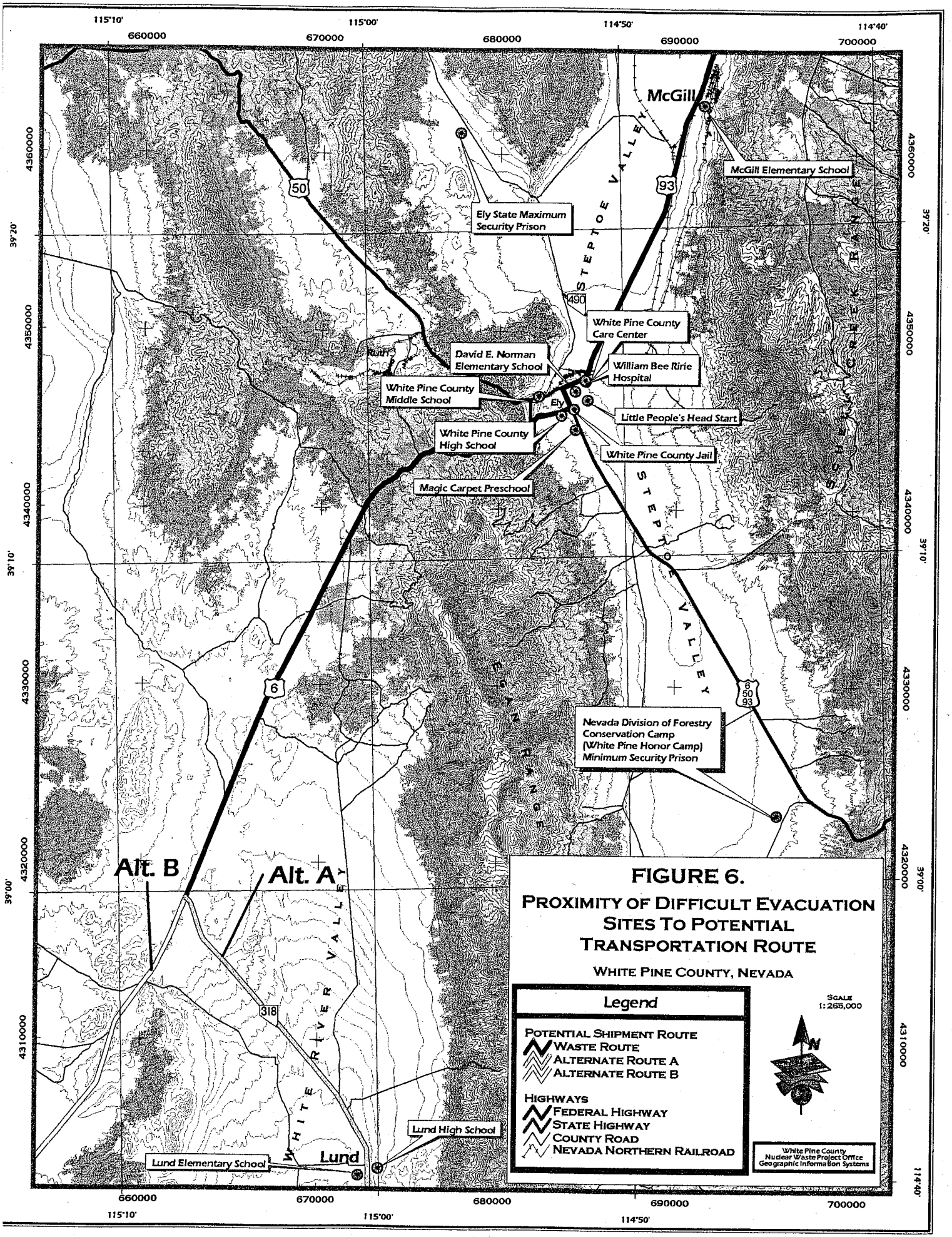
In addition to enhancing capabilities to effectively handle "normal" incidents due to repository related activity, these same emergency management systems must also be capable of responding to an accident that involves radiation contamination and/or a release of radiation into the environment. White Pine County and the City of Ely can expect that if there is a radiological incident within their jurisdictions local emergency response teams will be the first responders. It is likely that additional support may not arrive for 4 to 5 hours.

White Pine County and the City of Ely rely on volunteer and professional fire fighters and emergency medical technicians (EMT) for emergency management. At this time the professional and volunteer emergency management personnel are not adequately trained in the event of a radiological accident. The potential for untrained local first responders to be responding to emergencies involving hazardous and radiological materials may harm rather than help the community and may expose White Pine County to legal liability. This situation must be rectified before high-level nuclear waste and spent nuclear fuel canisters are transported through the County.

If there are trucks carrying high-level nuclear waste through White Pine County, there will need to be an effective evacuation plan for residents in McGill and Ely. The Sheriff's Department is the lead agency and is responsible for emergency evacuations. The Sheriff's Department does not have a written plan for evacuating the City of Ely. The White Pine County School District is responsible for providing the use of County schools as evacuation centers and to provide transportation as needed. The School

District does not have a known written plan for evacuation. In the event of an emergency requiring evacuation, the William Bee Ririe Hospital would be responsible for safely evacuating patients. A written emergency evacuation plan for the facility does not exist. The Ely Fire Department has a secondary role in the emergency evacuation of Ely. The Ely Fire Department does not have a written evacuation plan (White Pine County Repository Program, 2000b). White Pine County will need to develop an effective and coordinated evacuation plan, training programs for all relevant agencies, a method of educating the public about the plan, and a public address system for informing the public if there is an emergency that requires evacuation.

The maximum security prison located north of Ely and approximately 9 miles west of U.S. 93 will also need to develop a plan for safely evacuating inmates in the event of a radiological release in coordination with White Pine County emergency personnel. An accident could pose very serious problems for this facility. There are many difficult to evacuate locations in the vicinity of Ely. Figure 6 shows the location of numerous sites where evacuation would require advance planning.


115°10'
115°00'
114°50'
114°40'
660000
670000
680000
690000
700000
4360000
4350000
4340000
4330000
4320000
4310000
39°20'
39°10'
39°00'
McGill
McGill Elementary School
Ely State Maximum Security Prison
STEPTOE VALLEY
SCHELLBOURNE RANGE
50
93
490
White Pine County Care Center
David E. Norman Elementary School
William Bee Ririe Hospital
White Pine County Middle School
Ely
Little People's Head Start
White Pine County High School
White Pine County Jail
Magic Carpet Preschool
6
50
93
Nevada Division of Forestry Conservation Camp (White Pine Honor Camp) Minimum Security Prison
EGAN RANGE
Alt. B
Alt. A
318
WHITE RIVER VALLEY
Lund High School
Lund Elementary School
Lund
FIGURE 6.
PROXIMITY OF DIFFICULT EVACUATION SITES TO POTENTIAL TRANSPORTATION ROUTE
WHITE PINE COUNTY, NEVADA
Legend
POTENTIAL SHIPMENT ROUTE
WASTE ROUTE
ALTERNATE ROUTE A
ALTERNATE ROUTE B
HIGHWAYS
FEDERAL HIGHWAY
STATE HIGHWAY
COUNTY ROAD
NEVADA NORTHERN RAILROAD
SCALE 1:265,000
W
White Pine County Nuclear Waste Project Office Geographic Information Systems

The City of Ely does have three civil defense sirens which, if activated, would indicate to the public to tune to an emergency radio station for further instructions. However, it is not at all clear that Ely residents know the meaning of the siren. A public education campaign must be designed and implemented. The existing system is rudimentary and may not be adequate to ensure public safety if spent nuclear fuel high-level nuclear waste is transported through White Pine County.

Communication systems between the state and local agencies that would be responsible for responding in the event of an emergency are not adequate. Incompatible radio and communication equipment between emergency response agencies hinders optimal communication. If high-level nuclear waste is to be transported through White Pine County all emergency management personnel and agencies must have an effective, seamless communication system.

4.3.2 Emergency Medical

Emergency medical systems for the William Bee Ririe Hospital, located in Ely, will need to be enhanced in order to handle additional incidents. The hospital can expect additional patients due to greater numbers of legal-weight trucks on the roads, which may result in increased accidents. The hospital must have the capability to respond to this additional caseload without compromising service to the existing resident populations.

The hospital must also be capable of providing medical support in the event of an accident involving radiation contamination. Patients contaminated by radiation require special equipment and procedures to protect the rest of the hospital, staff and patients.

A radiological emergency response manual has been developed for the hospital which identifies staff training and equipment needs in order for the hospital to obtain capability to handle a radiation emergency (William Bee Ririe Hospital, 2000).

Hospital facilities may need to be modified to insure that there is an area where patients with radiation contamination can be treated without disturbing other functions at the hospital.

4.3.3 Local Oversight

In 1992 White Pine County received official status as an "Affected Unit of Local Government" under Section 116(c) of the Nuclear Waste Policy Act.

The purpose of this designation is to enable local governments that might be affected by the Yucca Mountain repository to receive funds from DOE for the following activities (Affected Units of Local Government, 2000):

- Determine potential socioeconomic, public health, safety, and other impacts.
- Develop a request for impact assistance.
- Engage in monitoring and testing.
- Receive input from the public.
- Make comments and recommendations to DOE.

In order to fulfill these functions, White Pine County created the White Pine County Nuclear Waste Project Office with the following staff:

- Director of the Office (full-time)
- Administrative Assistant (full-time)
- Two student-interns (one full-time equivalent)

These County positions have been funded by DOE and do not constitute an additional fiscal burden on the local governments. They do, however represent impacts to the County and City that are accruing long before the actual repository construction begins.

DOE funding for the White Pine County Nuclear Waste Project Office (NWPO) is indicated in Table 4.4.

Table 4.4 DOE Funding for White Pine County NWPO Oversight Activity

1991/92	$	70,000
1992/93	$	111,386
1993/94	$	200,000
1994/95	$	200,000
1995/96	$	200,000
1996/97	$	----0----
1997/98	$	----0----
1998/99	$	178,000
1999/00	$	178,000
2000/01	$	193,379
2001/02	$	213,600
Total:	$	1,544,365

Source: White Pine County Nuclear Waste Project Office. Oversight Funding by the DOE to the Affected Units of Local Government. (2001, June)

4.4 Local Government Finance

The County, City, and School District administer many services and properties including, roads, recreation facilities, a library, an airport, landfills, general government, health, schools, waste water treatment, water supply, fire, and police.

White Pine County and the City of Ely both operate in an arena where local tax revenues do not cover the costs of the basic services provided. Under these circumstances both the County and the City are dependent on intergovernmental transfers.

Population and population growth have the greatest influence on the distribution of intergovernmental disbursements. White Pine County's slower relative growth affects the County's Supplemental City/County Relief Tax (SCCRT) allocations, caps on local ad valorem rates, and receipts from state shared revenues such as motor vehicle privilege

tax, gas taxes, cigarette taxes and liquor taxes. All of these revenues are distributed on the basis of county growth in population and county growth in other revenues.

Possible restructuring of the distribution formulas from the State, and White Pine County's slow growth relative to the other counties in the state, put the County and City in a very precarious fiscal position. Even a small increase in demand on an absolute scale will constitute an additional financial strain that neither the County nor City can afford to absorb.

Beyond direct fiscal impacts, White Pine County and the City of Ely may incur indirect fiscal impacts. An example might be the heightened costs of encouraging economic development in view of possible negative public perceptions of the region due to its location on a designated highway route for the transport of high-level nuclear waste and the downwind location from the repository.

White Pine County and the City of Ely may face demands for expanded local public safety services and facilities because transport of nuclear waste causes additional fear and discomfort among citizens.

If stigma effects due to the transport of spent nuclear fuel through the County result in out-migration this will have a negative fiscal impact on White Pine County. The local tax base upon which the County depends will become smaller, which will put a heavier fiscal burden on the remaining residents in order to pay for the fixed costs of public facilities. In addition, the County will have designed all public facilities to accommodate the anticipated future population base. If the population is less then anticipated, due to stigma effects of the repository system, the remaining residents will be forced to pay higher fees and taxes to pay for facilities that are larger then they need. Some local government employees may be laid-off or have reduced work hours, due to reduced demand for local government services.

4.5 Highway Transportation Accident Risk

The highway route that DOE identified in the DEIS for legal weight trucks through the State of Nevada is the only route that would satisfy U.S. Department of Transportation regulations. Trucks using this route would enter Nevada via I-15, pass through (or around) Las Vegas, and complete the journey to the repository on U.S. Highway 95 (U.S. DOE, 1999a, p. 6-35).

However, there is strong political resistance within Nevada and the Las Vegas Valley to locating a transport route carrying high-level nuclear waste through the Las Vegas metropolitan area. The State may, at its discretion, designate an alternate preferred route. While the State has not yet officially designated an alternate route, the Nevada Department of Transportation has commissioned studies to analyze alternative routes (Ardila-Coulson, M.V., 1989). One of the routes identified in this study would pass through White Pine County, bisecting the City of Ely.

On this route, trucks would enter White Pine County from Elko County on U.S. Highway 93, travel south to Ely where they would shift to U.S. Highway 6 for the remainder of the trip to the border with Nye County. A minor variation on this route would utilize State Route 318 for approximately 20 miles at the very last leg of the route.

The likelihood of the State of Nevada designating this route if it is forced to host the high-level nuclear waste repository is high.

If this route is utilized for some or all of the legal weight truck shipments of spent nuclear fuel, White Pine County will experience increased transportation risks. These will include increased risks due to normal road accidents as well as increased risks in the event of an accident that results in the release of radiation into the environment.

The potential number of shipments of legal-weight trucks carrying high level waste (HLW) and spent nuclear fuel (SNF) is outlined in Table 4.5.

Table 4.5 Potential Number of Nuclear Waste Shipments by Legal-Weight Trucks

Waste Type	Mostly Truck Shipments	
Low-level Waste	11,944	
Yucca Mountain	Proposed	High Volume
Scenario I	26,031	54,784
Scenario II	36,275	74,194

Source: RMA Research and Consulting Services. (2000, September). Life Cycle Cost Analysis White Pine County Emergency Response. Prepared for White Pine County Nuclear Waste Project Office

If a private fuel storage (PFS) facility is developed at Skull Valley, Utah, just one hour east of the Nevada border on Interstate 80, the highway route through White Pine County could experience higher volumes of traffic (scenario II) than currently anticipated. If rail access or an intermodal facility utilizing heavy-haul trucks were used for Yucca Mountain, most or all of the shipments through White Pine County would be eliminated.

Based on truck accident statistics, out of 50,000 truck shipments several hundred accidents of varying severity will take place. Within the 21 mile corridor between McGill and Ely, based on current traffic volumes, the total number of accidents involving Yucca Mountain shipments is expected to range from 1.88 to 5.35 over the active life of the repository (Radioactive Waste Management Associates, 2001).

Nationwide transportation system characteristics are different when compared to that of White Pine County. The type of roads used for the shipments across the country will include major interstate freeways with four or more lanes. However, the potential highway route considered in White Pine County is a two-lane highway. Preliminary findings show that the magnitude and distribution of risks in White Pine County are different from the nation as a whole for highway shipments of spent nuclear fuel (Parentela, et al, 1996).

U.S. Highway 93 south to Ely from the Elko County line is approximately 64 miles in length. This is a two-lane facility with limited shoulders of four feet or less throughout

the length of the corridor. The posted speed limit is generally 70 miles per hour. U.S. Highway 6 from Ely south to the border with Nye County is approximately 39 miles in length. This segment of the highway is characterized as mostly mountainous where grades can reach 7 percent in the vicinity of Murry Summit (elevation 7,317 feet). Murry Summit is subject to winter driving restrictions and severe winter storms can result in highway closures (Research and Consulting Services, Inc, 2000). Transport personnel moving into the region may not be aware of these extremes in terrain and weather. Unfamiliarity with local driving conditions could increase accident risk.

The road conditions in White Pine County are generally good and the Nevada Department of Transportation has indicated that there are no plans for further improvements outside of normal maintenance. There are, however, areas within the County and on the potential transport route for high-level nuclear waste, where truck accidents occur with relative frequency. These include (White Pine County Repository Program, 2000d):

- US 93 from South McGill heading south to the Ely Airport (8.2 miles)
- US 93 from East Ely heading west to Ely (.8 miles)
- US 6 Ward Mountain Road heading South to SR 318 (18 miles)

Although scientific estimates of risk for an accident resulting in a release of radiation into the environment may be quite low, the risk is not zero. Area residents may perceive risks to be much greater then the scientific risk estimates. Failure on the part of federal, state and local emergency managers to implement effective hazard management techniques may exacerbate public perceptions of risk. Uncertainty of public reaction to incidents and accidents involving radioactive wastes may render local emergency response plans ineffective.

Incidents involving trucks with nuclear waste shipments will result in impacts beyond standard accidents. To the degree that television, print, and broadcast media amplifies the incident, even when there is no radiation release, the economic and fiscal

consequences can be expected to be much greater than from a similar accident without nuclear waste. The likelihood of media amplification of risk is very real.

4.6 Public Perception and Stigma

With the potential of the repository upwind from White Pine County and frequent shipments of radioactive waste passing through the area, stigmatization may affect people's perception of the quality of life possible in the County. Current residents may view the area as less attractive and this may ultimately lead to an out-migration of residents. Furthermore, retirees are usually attracted to rural areas due to the higher quality of life and personal security that they perceive to exist there. These potential retiree in-migrants may choose to locate elsewhere if they view White Pine County as having a lessor appeal or quality of life due to its downwind location from the Yucca Mountain repository and the transport of high-level nuclear waste through Ely and McGill.

According to Slovic, the public associates the greatest degree of risk with technologies that exhibit the following attributes (Intertech Consultants & Foremaster, 1992):

- Risk not voluntarily incurred
- Risk not observable
- Risk unknown to those exposed
- Effects of exposure are delayed
- Risk is new
- Risks unknown to science

All of these characteristics apply to the Yucca Mountain repository and the perceptions of the risk that the residents of White Pine County might experience.

The authors of a study on perceived risk and stigma from the repository in Nevada found that (Slovic et al, 1991):

"The possibility that intense negative imagery associated with the repository may cause significant harm to Nevada's economy can no longer be ignored by serious attempts to assess the risks and impacts of this unique facility."

Studies also indicate that people view a high level nuclear waste repository as much more noxious than a nuclear reactor (Slovic, et al, 1994).

If there is an outflow of residents and/or a reduction in in-migration due to the effects of stigma, there could be a downturn in the local economy. Reduced local income could result in less demand for goods and services and may lead to a reduction in the number of employees, and possible business closures. This might result in fewer employment opportunities. In addition, an increase in vacancy rates may occur which may lead to reduced property values and lower housing costs within the County. This could result in a decline in rents collected by landowners, yet might also lower the cost of living for area residents. Some industries, such as construction, would also be affected by a declining population base. Demand for housing and infrastructure development would decrease, resulting in more unemployment. As has been shown for other rural areas in Nevada, the ripple effect of a small reduction in population through the economy of rural counties in Nevada could be significant (Intertech Services Corporation, 1994a).

Although considered a low probability, there is a chance for a transportation accident with significant environmental and health consequences, to occur within or near the County. Such an event could produce serious economic impacts. Accident consequences might be in the form of actual physical damage from the accident or from the economic disruption from a forced evacuation of the area and/or loss of use during remediation. Business disruption may result in lost sales revenue and lost wages for employees. Depending on the length of the disruption, existing businesses may experience irreversible effects.

The Goiania event in Brazil, provides an example of how a relatively minor accident involving radioactive material could result in a chain of events affecting a geographic region much larger then that of the actual impacts, disrupting social relations throughout a community and region. It also provided a classic example of the process by which the public's perception of risks, not the actual event or risk itself, can result in a wide array of painful and costly responses." (Goble, 1994)

4.6.1 Tourism

White Pine County is characterized by an abundance of outdoor recreational activities such as camping, fishing, hunting, water skiing, off-road vehicle use, hiking, rock hounding, camping and backpacking. There are two state parks in White Pine County—Cave Lake State Park and Ward Charcoal Ovens State Park—and the Great Basin National Park (Table 4-6). In addition, White Pine County has a significant casino-gaming industry, an 18-hole golf course, the Comins Lake recreation area, the 3-C Ranch, and the Nevada Northern Historic Railway. Due to many geologic amenities, White Pine County is a destination for University geologic and mineral science classes. Figure 7 illustrates the locations of several key tourism destinations in White Pine County.

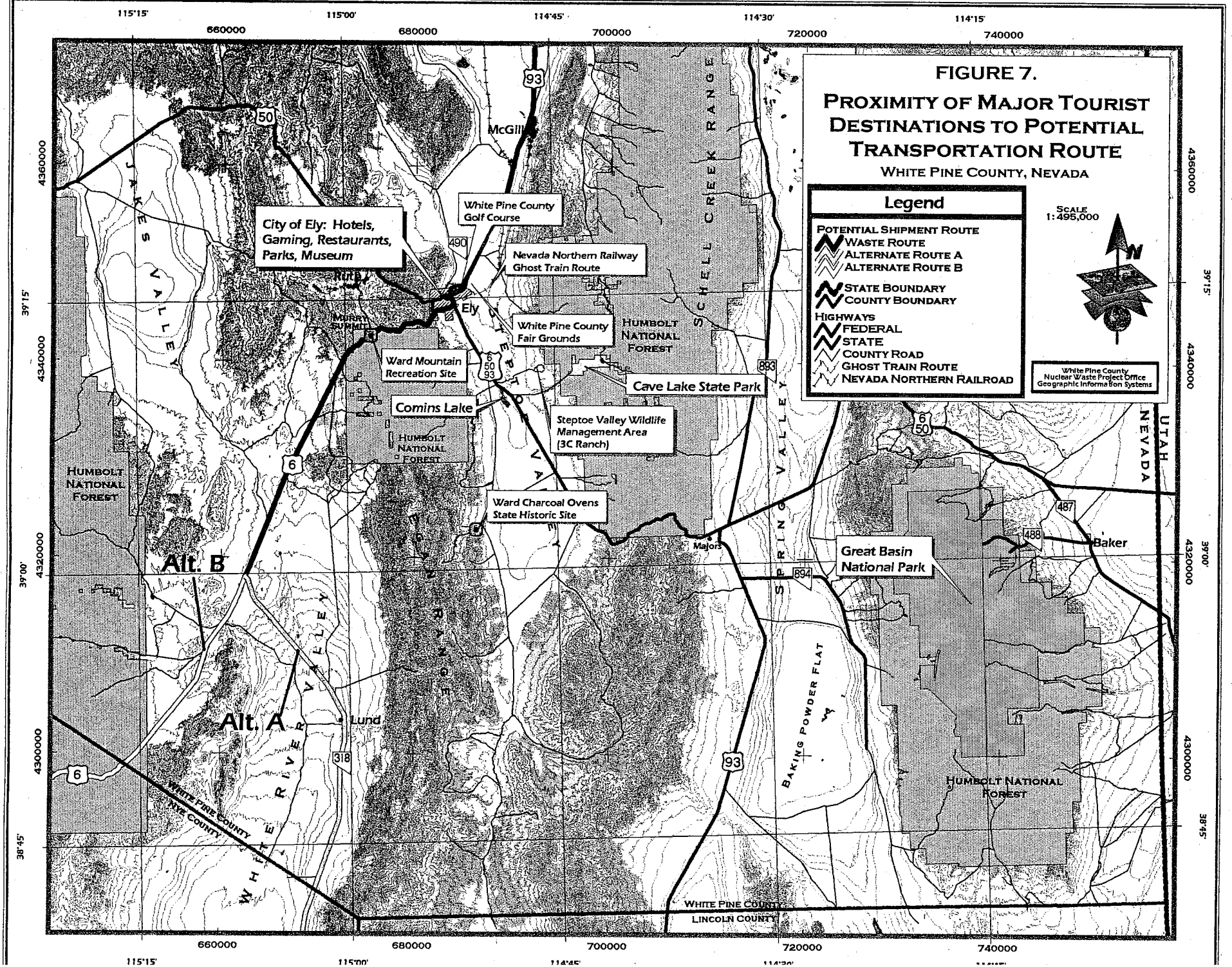


FIGURE 7.
PROXIMITY OF MAJOR TOURIST DESTINATIONS TO POTENTIAL TRANSPORTATION ROUTE
WHITE PINE COUNTY, NEVADA
Legend
POTENTIAL SHIPMENT ROUTE
WASTE ROUTE
ALTERNATE ROUTE A
ALTERNATE ROUTE B
STATE BOUNDARY
COUNTY BOUNDARY
HIGHWAYS
FEDERAL
STATE
COUNTY ROAD
GHOST TRAIN ROUTE
NEVADA NORTHERN RAILROAD
SCALE 1:495,000
White Pine County Nuclear Waste Project Office Geographic Information Systems
City of Ely: Hotels, Gaming, Restaurants, Parks, Museum
White Pine County Golf Course
Nevada Northern Railway Ghost Train Route
White Pine County Fair Grounds
Ward Mountain Recreation Site
Comins Lake
Cave Lake State Park
Steptoe Valley Wildlife Management Area (3C Ranch)
Ward Charcoal Ovens State Historic Site
Great Basin National Park
Alt. A
Alt. B
Ely
McGill
Majors
Baker
Lund
HUMBOLT NATIONAL FOREST
SCHELL CREEK RANGE
SPRING VALLEY
STEPTOE VALLEY
JAKES VALLEY
WHITE RIVER VALLEY
BAKING POWDER FLAT
UTAH
NEVADA
WHITE PINE COUNTY
NYE COUNTY
LINCOLN COUNTY
660000
680000
700000
720000
740000
115°15'
115°00'
114°45'
114°30'
114°15'
4360000
4340000
4320000
4300000
39°15'
39°00'
38°45'

In addition, there are numerous historic mining districts, prehistoric sites, historic sites from early settlements and silver mining. These include Indian camps, petroglyphs, mines, town sites, homesteads, and other historic relics. Most of these areas are unstudied, undeveloped and unprotected. These sites are part of the heritage of White Pine County and represent potential additional attractions for visitors.

Tourism and travelers passing through are a significant contribution to the local economy. Annual visitation to the two state parks and the one national park in White Pine County is significant with the heaviest park visitation occurring during the summer months, from June through September.

Table 4.6 White Pine County: State and National Park Visitation (visitor days)

Destination Park	1997	1998	1999
Cave Lake State Park	97,540	66,034	69,733
Ward Charcoal State Park	1,505	3,787	11,055
Great Basin National Park	91,467	80,477	90,125
Total visitors	190,512	150,298	170,913

Source: Ely Ghost Train Administration Office

The Nevada Northern Railway (Ely Ghost Train) is host to approximately 7,000 visitors per year. In addition, the BLM estimates over 230,000 recreation visitor days annually to Schell and Egan BLM land near Ely. White Pine County collects approximately $350,000 in room taxes annually. Some of these visitors are passing through, while others stay and recreate in the County, spending additional tourist dollars.

If all or portions of, the State of Nevada become stigmatized due to public perception that it is host to a high-level nuclear waste site, tourism may fall off. White Pine County is especially susceptible to the effects because it is downwind of the repository and crossed by a potential transportation route for the spent high-level nuclear fuel and other radioactive waste.

Literature suggests that tourism impacts from hazard events, may be short-lived and distance-dependent. However, these impacts would constitute a significant impact for residents and businesses in White Pine County. Tourism destinations within thirty miles of accident sites reportedly experience up to fifty percent sales and hotel occupancy declines lasting three to eight weeks. In the case of Three Mile Island, some evidence suggests that mild adverse impacts affected a minority of these businesses for an additional four to six months (Intertech Services Corporation, 1993).

Reduced tourism would likely mean a decrease in local sales resulting in less sales and gasoline taxes being collected. In addition, lost revenues, which occur in other areas of the State of Nevada as a result of stigmatization will affect White Pine County as shared tax revenues decline. Section 3.3 discusses the fiscal and economic consequences of tourist responses to a postulated truck accident involving spent nuclear fuel in White Pine County.

If stigma due to the repository results in reduced tourism, this would constitute a direct conflict with White Pine County's current plans and efforts to increase the tourist and visitor base in the County as a method to strengthen the local economy. The following studies have been recently completed by White Pine County to evaluate and implement a strategy to increase tourism:

- The White Pine County 2002 Strategic Plan: A Tourism Strategy for the 2002 Olympics and Beyond (1997)
- The White Pine County Comprehensive Tourism Master Plan (1994)
- Master Plan: Business Plan Element (1999)
- White Pine County Tourism Master Plan: Phase I (2001)

The Yucca Mountain repository system should not conflict with White Pine County's efforts to enhance tourism.

4.6.2 Economic Development

White Pine County has worked for many years to increase economic opportunities through a series of economic development plans that highlight the benefits of locating business in the County. One undesirable effect of the repository may be to off-set decades of effort to improve the image of the County both for business and for recreation and tourism.

A 1992 study by Mushkatel and Pijawka revealed substantial changes in investment intentions under three nuclear waste transportation scenarios in Clark County (Urban Environmental Research, LLC, 2000). The study found that, even under minimal risk situations, stigma-induced market effects are likely due to people's intrinsic behavior to reduce uncertainty, in this case investment. If stigma-related effects reduced or changed plans to invest in White Pine County, this would constitute a significant negative impact.

In a University of Nevada—Las Vegas national survey of public reactions to nuclear waste shipments, 68 percent of the respondents indicated that they would be unlikely to buy a house in the immediate area of a highway that was used to transport spent nuclear fuel. In the same study, 63 percent of the respondents indicated that they would move away from an area where nuclear waste was transported (Urban Environmental Research, LLC, 2000).

Currently, White Pine County is being considered by various companies as a location for coal-fired electrical generating facilities. One serious proposal involves a 1,000 megawatt plant representing an estimated $1,000,000,000 investment. This project may add an estimated $700,000,000 to White Pine County's property tax base. The project would employ an operational workforce of 80 to 90 persons resulting in an annual payroll estimated at about $10,000,000. Facility support personnel may increase direct project employment by 20 to 35 positions. This project would have a dramatic favorable effect upon the economy and fiscal stability of White Pine County. Given the variety of power plant siting options available in Nevada, the County is concerned that the potential for

nuclear waste shipments through the area may diminish the desirability of White Pine County as a location for one or more non-nuclear electrical generating stations.

4.6.3 Real Property

Public perception of risks associated with the repository, and the transport of spent nuclear fuel could have a noticeable detrimental effect on property values in White Pine County. This would result in a negative consequence for community homeowners as well as on property taxes and the fiscal health of the community.

A study of property values near the DOE's Rocky Flats Nuclear Weapons Plant in Colorado indicates that values of property in close proximity to the facility are lower than property values in similar communities in the region. In this study the survey respondents wanted extraordinary distances between themselves and the plant itself. Denver metropolitan area respondents said that the "closest distance to Rocky Flats" they would consider was a mean distance of 21 miles and a median distance of 15 miles. Only 16% of the respondents would consider a house in the affected community even when a discount was offered. The average discount including those who would buy in the 2-4 mile range without a discount was $9,270 and in the 4-6 mile range was $6,048 (Hunsperger, n.d.).

Another study, using a sample of Boston area housing prices between 1975 and 1992 found that the distance to superfund sites significantly impacted residential prices, with nominal premiums of between $3000 and $6000 per mile (Gawande and Jenkins-Smith, 1999).

A study of property values along a nuclear transportation route in South Carolina also found reductions in property values associated with proximity to the transportation route (Gawande & Jenkins-Smith, 1999). In a 1992 court case (Santa Fe v. Komis) the New Mexico Supreme Court upheld a lower court's decision that the purchase of part of a property by the City Santa Fe reduced the value of the adjoining property and required compensation (Hunsperger, n.d.).

Congress has also recognized the unusual status of communities along nuclear waste shipment routes and the potential for the stigma to significantly impact property values. In 1997, H.R. 1270, the Interim Nuclear Waste Storage Bill, was amended to require compensation for land owners if transport of the waste could be shown to have devalued their properties by at least 20%. Loss of value of 20% or more would require compensation, while losses of 50% or more would require DOE to purchase the affected property (Gawande and Jenkins-Smith, 1999).

In a survey of recent home buyers in the Las Vegas Area, 90 percent of respondents indicated that a distance of over three miles was the closest they would consider living to a nuclear waste transport route (Urban Environmental Research, LLC, 2000). Given the size and configuration of the City of Ely, the majority of these respondents would not consider the City an acceptable location to live if it becomes part of a transport route for spent nuclear fuel and other high level radioactive waste.

Another survey of Clark County residents indicated that 78 percent of respondents believed there would be a downturn in the value of residential property located near highways considered for nuclear waste shipments. 41 percent of the respondents believed there would be a decline in the value of commercial or business property located near a highway used for the transport of nuclear waste (Urban Environmental Research, LLC, 2000). Furthermore, 75 percent of the respondents indicated that under no condition would they consider purchasing residential property near a highway to be used for the shipment of nuclear waste.

Table 4.7 shows the wide range of potential impacts to property values in the City of Ely due to the transport of radioactive waste through the city.

Table 4.7 Potential Dollar Reduction in Property Value for the City of Ely Based on Recent Data and Research

Disamenity Evaluated	Percent Reduction In Value	Imputed Dollar Reduction in Value for Ely*
Landfill	7.0%	$3,084,454
Opinion Survey In Santa Fe (lower-end)	11.0%	$4,846,999
Opinion Survey In Santa Fe (upper-end)	30.0%	$13,219,089
Rocky Flats Nuclear Weapons Plant (low-end)	5.45%	$2,379,436
Rocky Flats Nuclear Weapons Plant (upper-end)	9.33%	$4,111,136
Conceptual threshold below which DOE would not have to Compensate	19.0%	$8,372,089

Source: Hunsperger, Wayne, L. The Effects of the Rocky Flats Nuclear Weapons Plan on Neighboring Property Values, n.d.
* Based on an assessed valuation of the City of Ely of $44,063,631 (Cornutt, 2001).

These findings are significant and indicate that White Pine County and the City of Ely need to be vigilant for stigma induced reductions in property values.

5.0 Mitigation of Impacts

5.1 Council on Environmental Quality Defined Impact Management Techniques

A mitigation measure is an action that is designed to provide a solution to an environmental problem. Mitigation is required under the regulations of the National Environmental Policy Act (NEPA). The Council for Environmental Quality (CEQ) has defined impact management techniques in 40 CFR 1508.20 as follows:

- **Avoiding** the impact by not taking certain action or parts of an action
- **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation
- **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment
- **Reducing** or **eliminating** the impact over time by preservation and maintenance during the lifetime of the action
- **Compensation** for the impact by replacing or providing substitute resources or environments

The common thread that runs through these actions for mitigation is that the measure will result in physical change to the proposed action that will reduce or eliminate impacts. In practice, however, many agencies write mitigation measures that do not meet any of NEPA's definitions. Actions that do not comply with NEPA requirements include (Bass & Herson, 1993):

- "Consult with..."
- "Conduct further studies..."
- "Prepare a plan to mitigate..."
- "Strive to protect the resource..."
- "Monitor the problem..."

White Pine County and the City of Ely expect DOE to implement aggressive actions to mitigate all impacts within the County, stemming from the Yucca Mountain repository. In addition, due to the long-term nature of the project, its unique characteristics, and the potential for stigma impacts that could produce a variety of unexpected impacts, White Pine County also expects DOE to implement detailed monitoring of environmental and social impacts. The monitoring should not replace mitigation actions where impacts can be determined in advance. In order that the monitoring comply with NEPA requirements, the County expects DOE to commit in advance to specific mitigation actions if impacts are detected and reach a predetermined threshold.

5.2 Recommendations for Mitigation of Impacts Within White Pine County

5.2.1 Radiation Exposure

1) Doctors and medical staff in White Pine County and the City of Ely should be trained to identify radiation sickness and the hospital must have the capability to isolate patients and treat for radiation exposure.
2) Studies indicate that more than 90% of the risk of exposure to the population along the transportation corridors is during stops. As stop time increases so does the exposure to the population. This indicates that controls on the duration and location of stops are an important technique for reducing exposure to radiation. Stop times in populated areas should be minimized and designated rest stop locations should be isolated.
3) Increased speeds were also found to reduce exposure. For truck shipments through White Pine County, DOE needs to evaluate the trade-off between increased speeds to lower radiation exposure and the greater risk of an accident that comes with higher travel speeds. The optimal operating speed should be determined and adhered to for various route segments.
4) Rail shipments were found to result in lower exposure levels to the population than truck shipments. DOE should consider this fact when determining the final mode and routes for shipping nuclear waste (Sathisan & Madhavapeddi, 1996).

5) County and City officials should have independent opportunities for radiation monitoring and access to federal and state monitoring data. This includes funding for staff to perform the independent monitoring and necessary equipment.

6) DOE should conduct a thorough baseline and cumulative assessment of radiation levels and exposure in White Pine County. This baseline study should include risks from direct exposures from atmospheric tests, direct exposures from unconfined underground tests, risks from future migration of radioactivity deposited on the surface or underground at the NTS. The study should include the inventory and potential future releases of radioactive materials at the test site from all tests, the transport by air and water of radioactive material, the human exposure and uptake of radioactive material, and the expected health consequences of the exposures. Without this complete assessment of past and ongoing exposure, risk, and health consequences, DOE cannot know that the Yucca Mountain repository is not increasing exposure levels to residents of White Pine County.

7) DOE should execute advance agreements with White Pine County and the City of Ely regarding compensation that will automatically go into effect if background radiation levels exceed an agreed upon level. This "bright-line" approach assures residents of the County and City that they will be compensated for harm that may be inflicted on them and it reduces the likelihood of long drawn-out litigation between DOE and citizens in these communities.

8) Guarantee from DOE that the Department will bear the full cost of clean-up activities if radiation is detected in White Pine County, using best available clean up techniques and equipment.

9) DOE should conduct an ecological risk assessment to determine the radiological risks to the wildlife and vegetation directly adjacent to the highways that will be used for transport of the high-level nuclear waste.

10) DOE could further reduce radiation exposure to citizens of White Pine County by building a by-pass highway around the communities of Ely and McGill for the trucks carrying spent nuclear fuel and other high-level nuclear waste.

11) DOE should improve the safety of the shipping containers to minimize the likelihood of a release into the environment in the event of a transport accident.

5.2.2 Socioeconomic

5.2.2.1 Employment

The following measures would help ensure that opportunities for employment are maximized in White Pine County:

1) DOE could locate ancillary activities in the County. At peak employment, DOE anticipates requiring nearly 800 clerical/office workers to support site characterization activities at Yucca Mountain. Through the use of currently available data transmission technologies (i.e. modems, internet access, etc), certain "back office" functions could be conducted at locations in White Pine County (Intertech Services Corporation, 1994b). In addition, DOE could locate a Global Positioning System (GPS) based transportation tracking facility (TRANSCOM) in Ely. Other functions, such as traffic control and transportation system records management could also be located in White Pine County.
2) DOE should commit to local procurement policies within the State of Nevada and for White Pine County.
3) Assist the County in becoming designated as a HubZone by the U.S. Small Business Administration.
4) DOE could locate manufacturing and/or transportation system support functions in White Pine County. These could include (Baughman, 1995):

- Legal-weight or heavy-haul trailer fabrication and maintenance
- Rail car fabrication and maintenance
- Transport skid fabrication and maintenance
- Intermodal skid fabrication and maintenance
- Tie-down component manufacturer
- Personnel barrier manufacture
- Placard holder manufacture
- Inspection decking manufacture
- Traffic Control
- Warehouse and excess equipment storage

5.2.2.2 Income

1) A procurement policy that would increase purchases of goods and services from businesses in White Pine County and the City of Ely, would provide employment and income benefits.
2) Manufacturing and other back-office support functions for the Yucca Mountain repository system would benefit income in White Pine County.

5.2.2.3 Population

Due to the unique nature of the repository, population impacts are difficult to forecast and should be monitored closely, with a commitment from DOE to provide adequate compensation if adverse impacts are detected.

If there is an out-migration of residents due to stigma effects, or if the population does not experience the anticipated growth, there will be negative fiscal impacts because the County and City will need to absorb fixed tax supported outlays with a smaller population base. Mitigation and compensation under this scenario is discussed under section 5.2.6: Public Perception and Stigma.

5.2.3 Public Infrastructure and Services

5.2.3.1 Emergency Management

Emergency management systems will need to be upgraded to handle additional accidents associated with increased traffic flow through White Pine County and the City of Ely. These systems must be made capable of handling an emergency involving the release of radioactive material into the environment. White Pine County and the City of Ely must have the capability of handling this additional burden without compromising service to existing communities or to visitors and tourists. The following would serve to mitigate the effects of the additional burden:

1) Grants to upgrade current emergency response equipment to handle additional emergency situations (including fire and medical response capabilities) due to the increased number of trucks that will be passing through the County.
2) Grants to purchase the necessary equipment to enable the County and City to provide early response and scene management (up to eight hours) to handle an incident involving the release of radioactive material into the environment and human contamination.
3) Initial funding to expand the emergency response staff and continuing grants to maintain the additional staff.
4) A contingency for grants to cover additional staff time and equipment in the event of an emergency.
5) Cross training and reciprocal agreements with other impacted counties in Nevada.
6) Grants and aid in developing and publicizing an evacuation plan for the City of Ely and surrounding communities. The evacuation plan should include route planning, emergency personnel coordination, and public education. The evacuation plan will also need to establish procedures to handle the evacuation of inmates at the maximum-security prison near Ely. White Pine County will need to purchase emergency signals and communication equipment as well as vehicles to aid in evacuating students, hospital patients, elderly persons, prison inmates and others with special needs.

In addition to financial support and training, DOE needs to take a proactive and positive role in helping White Pine County, the City of Ely, and other similar sized communities along the transportation route with emergency planning for a radiological event. This includes:

1) Providing guidance for appropriate levels of community preparedness, training, equipment, and response procedures.
2) Clarifying responsibilities in response planning between the federal, state, and local governments, as well as between federal agencies, such as FEMA, DOE, DOT and EPA.

3) Taking responsibility to ensure (perhaps through certification training) that the local governments have the necessary training and equipment to handle an accident involving a radiological release.

Back-up emergency help is a long way off. Four hours is the minimum drive time for additional emergency personnel and equipment to arrive. Under these circumstances, DOE needs to evaluate:

1) Which critical heavy or large equipment should be stored in White Pine County so that personnel being flown in via small plane or helicopter would have the necessary equipment without the delay of waiting for trucks to arrive.
2) Other methods for reducing response time for back-up support to White Pine County emergency management systems.

Training for professional and volunteer emergency management personnel in White Pine County include (White Pine County Repository Program, 2000a):

1) Encourage the State of Nevada Division of Health, the DOE and FEMA to coordinate their recommendations for first responder actions.
2) Establish a method of providing incentives for local first responders to participate in and complete necessary training.
3) Arrange for all first response training to be conducted on-site rather then making participants travel great distances.
4) Establish a program of regular retraining of first responders.
5) Consider establishment of local video-conferencing capability as necessary to facilitate distance-training.

Steps to improve emergency management communication in White Pine County include (White Pine County Repository Program, 2000c):

1) Enhance mountaintop repeater communications facilities.

2) Establish separate telephone system for Fire Department and/or provide battery backup for existing telephone system at City Hall.
3) Establish and provide equipment for an emergency operations center.
4) Provide backup communications capabilities (cellular telephones) for rescue crews.
5) Establish a dedicated emergency management radio channel.
6) Encourage enhanced radio compatibility between the Nevada Highway Patrol and local first responders.

5.2.3.2 Emergency Medical

Emergency medical systems will need to be upgraded to handle additional accidents associated with increased traffic flow. In addition, the hospital will need to be able to handle an emergency involving the release of radioactive material into the environment and human contamination. The hospital must have the capability of handling this additional burden without compromising service to existing communities. The following would serve to mitigate the effects of the additional burden:

1) Funds to modify hospital facilities to provide the capability for radiological quarantine in the event that persons contaminated with radiation are admitted for initial treatment.
2) Funds to purchase equipment and supplies for use during a radiological event.
3) Funding to allow for ongoing training in radiological safety procedures and treatment for the hospital staff, including procedures for the intake of a patient with radiation contamination and safety procedures so as not do spread the radiation.
4) A contingency for grants to cover additional staff time in the event of an emergency and to replace contaminated or outdated equipment.
5) Cross training and reciprocal agreements with other impacted counties in Nevada.
6) DOE should develop a standard of competency for radiological medical treatment and ensure that staff in communities along the transport corridors meet the minimum requirements (perhaps through certification training).

7) Develop an effective evacuation system for the hospital staff and patients and educate all staff about evacuation procedures

5.2.3.3 Local Oversight

1) Funding will need to continue for the duration of the transport of radioactive waste through White Pine County for independent local oversight and monitoring programs.

5.2.4 Local Government Finance

1) Grants to the local governments if repository related impacts (both standard and stigma induced) require additional staff.
2) Means to compensate the local governments for capital outlays if stigma-induced effects reduce the population or cause the rate of expected growth to be less than expected.

5.2.5 Highway Transportation Accident Risk

1) DOE should evaluate the safety characteristics of the two-lane roadway links that could be used for shipments to the proposed repository. In particular, this should address causal factors of accidents and infrastructure related issues. For example, passing lanes or turn-outs might help enhance safety on these roadways. Thus an investigation of the relationship between traffic volumes, traffic composition, and safety could help identify the potential benefits of making infrastructure improvements. In areas where the accident rates are high, special passing lanes or turnouts could be provided to bypass the traffic, and thus reduce risks due to potential collisions.
2) DOE should bear the full cost of highway safety enhancements due to the additional legal-weight trucks passing through White Pine County, such as widening highway shoulders and upgraded railroad crossings
3) DOE should construct a special lane for the slow moving trucks over steep highway grades.
4) Lead and follow cars for the slow moving trucks will enhance safety.

5) Local control and management participation in accident assessments, especially in checking for radiation releases.

6) Elimination of at-grade railroad crossings on public roads and highways.

7) Special signing on private road crossings

8) Restrictions on truck movements if there is snow on the roads.

9) Upgrades to County and State snow plowing capacity and provision of funds for additional snow removal personnel, so that the trucks carrying the waste casks can move through the County in a timely and safe manner.

10) DOE should fund and staff a weather monitoring and communication system, based in White Pine County, that will advise all transport operators of weather conditions before they enter the region and while they are passing through.

11) DOE could further reduce highway accident risk by building a by-pass highway around Ely and McGill.

12) The Murry Summit route could be secured, limiting the time of day truck travel is allowed and providing for lane separation through installation of Jersey (centerline) barriers, to lower the probability of an accident.

5.2.6 Public Perception and Stigma

5.2.6.1 Tourism

1) Set in place a comprehensive monitoring system to detect if there are negative impacts on tourism in White Pine County due to the existence of the nuclear waste transport corridor. The monitoring system should be capable of detecting changes in tourism under incident-free conditions as well as in the event of an incident and/or accident.

2) Set in place clear milestones at which predetermined mechanisms for compensating businesses affected by reduced tourism, both short term and long term. The compensation package should address both incident-free as well as incident-related drops in tourism.

3) Grants to White Pine County to fund advertisement to attract additional tourists in the event that the repository results in a drop in tourism.

4) DOE should provide funds for White Pine County to develop and implement a contingency marketing plan in the event of an incident that receives wide-spread media attention that causes a detrimental effect on tourism.

5.2.6.2 Economic Development

White Pine County and the City of Ely have invested considerable resources in understanding and promoting economic development within the County. Several plans have been developed and are being implemented, and include, among others:

- White Pine County Overall Economic Development Plan. (1991).
- White Pine County Tourism Master Plan. (1994)
- White Pine County Land Use Plan. (1998).
- Ely Master Plan. (1999).
- City of Ely Master Plan Business Plan Element. (1999).
- White Pine County Water Plan. (1999).

DOE has a responsibility to ensure that the transport of high-level nuclear waste through the County does not hinder or reverse long-standing economic development programs sponsored by White Pine County, the City of Ely, and other local entities within the County.

1) DOE can establish policy that favors White Pine County businesses for the provision of services and materials that could be produced locally that could be used in the construction and operation of the repository.
2) DOE could establish satellite back-office functions for DOE clerical and management activities in White Pine County.
3) DOE should assist White Pine County and the City of Ely with planning and implementation of services to the community that will enhance the quality of life for residents. The goal here would be to off-set the negative image of the community and within the community that could result from being on the transport route for the spent nuclear fuel. These amenities could include, but are

not limited to, a public park, a public pool, a community recreation center, street beautification, gateway entrances to the City of Ely and other communities, and/or enhancements to the library.

5.2.6.3 Real Property

1) Establish pre-project property value data-base.
2) Monitor for changes in property values along the transportation corridor.
3) Monitor for changes in property values through-out the County.
4) Set in place clear impact threshold criteria that will trigger compensation to property owners and a mechanism for compensation.
5) Establish compensation trust fund to facilitate timely mitigation of identified impacts to property values.
6) Assistance with quality of life amenities for White Pine County and the City of Ely. (see section 5.2.6.2 on Economic Development.)

5.3 Delayed (Anticipated) Effects

Emplacement of waste at the Yucca Mountain repository will occur over more than two decades, with a significant number of "firsts," including the mass transport of high-level nuclear waste across the County, through urban and rural areas, and into the State of Nevada. These facts indicate that all effects cannot be identified at the outset and that for the duration of the project, DOE needs to be both vigilant and flexible in identifying impacts and providing appropriate mitigation and compensation to the affected communities.

This report has identified a number of areas where effects can be anticipated, but the magnitude and results are uncertain. Under these circumstances, additional mitigation, including compensation, may be necessary. Some events that might occur in the future and are beyond the control of White Pine County include:

1) The detection of heightened radiation levels due to incident-free activities or due to an accident that results in the release of radioactivity into the environment.

2) Costs to the County emergency management system in the event of an accident involving a truck or vehicle engaged in business related to the Yucca Mountain repository. This would include both "normal" accidents as well as accidents that result in the release of radioactivity into the environment.

3) Costs incurred by the hospital to treat patients in the event of an accident involving a truck or vehicle engaged in business related to the Yucca Mountain repository. This would include both "normal" accidents as well as accidents that result in individual contamination.

4) Costs incurred by the local government if stigma-related effects result in a declining population or growth that is lower then anticipated for planning purposes. (fixed capital outlays to service a smaller population base.)

5) Reduced tourism (which results in lower personal income and reduced taxes) due to stigma-induced effects.

6) Costs incurred by the County and City to enhance business marketing efforts to mitigate stigma-induced effects.

7) Compensation for reduced property values along the transport routes, if these properties decline in value due to stigma effects.

While costs associated with these events are uncertain, there is a strong body of literature indicating that White Pine County can expect both transport related accidents and stigma-effects if the County is designated part of the legal-weight truck route through the State of Nevada. DOE should initiate advance agreements with the affected communities to ensure that mitigation, including compensation, is readily available throughout the duration of the Yucca Mountain repository project.

6.0 Equity Considerations

If the Yucca Mountain Repository is built, all other states and the U.S. government, who have benefited from the creation of the nuclear waste, will have all associated risk irrevocably transferred to the State of Nevada and its residents. In this regard, the Yucca Mountain Repository program represents a unique and unprecedented unilateral transfer of risk.

A great deal of good and well-intentioned scientific work has gone into evaluating the suitability of Yucca Mountain as a repository. There remains, however, substantial and largely irresolvable uncertainty associated with its performance. This is inherent in attempting to predict and quantify complex physical processes for over twice the recorded history of mankind. Indeed, the Nuclear Waste Technical Review Board (NWTRB) has repeatedly and consistently expressed its concerns over the level of uncertainty inherent in the Total System Performance Assessment (TSPA) approach to determining the suitability of Yucca Mountain as a geologic repository.

The DOE has further provided to date, only cursory analysis at best on the risks inherent in transportation of quantities of highly radioactive spent nuclear fuel and high level waste on an unprecedented nationwide scale over a very long period of time. The limited transportation analysis performed for the DEIS was often based on grossly outdated or simplified demographic and physical data, even though up to date information of this type was readily available. A rationale for this approach is very difficult to understand, but has the effect of trivializing or grossly underestimating the real risks associated with transportation of high level waste.

The DOE has further, to date, completely ignored socioeconomic and stigma based effects of the repository program on the economy and society of the residents of Nevada.

Residents of White Pine County have direct personal experience with the societal effects of radiological exposure as "downwinders" from Nevada Test Site atmospheric testing of nuclear weapons. To represent through silence that there are no socioeconomic or

societal effects from a program that has the potential to subject citizens and the environment to exposure is difficult to accept.

The result is that DOE has thus far represented to the Congress, the Administration, the State of Nevada, and affected units of local government that the overall risk implicit in the transportation to and storage in perpetuity of high level nuclear waste at Yucca Mountain represents minimal and statistically acceptable risk and is completely manageable. This conclusion is disingenuous and based on flawed, incomplete analysis and simply, the failure to consider certain impacts of the program. Consequently, White Pine County strongly disagrees with the DOE's findings thus far.

Rather, the County is convinced that there is significant risk inherent in the Yucca Mountain Repository Program. When viewed in totality, the risks in an overall sense are unmitigable through any reasonable means. In reality, said risks can only be fully mitigated by not going forward with the Yucca Mountain Repository Program.

White Pine County reluctantly acknowledges, however, based on the historical lack of fairness, equity, and complete science that has regrettably characterized the Yucca Mountain Program over the last decade, that the program may well go ahead. Should this be the case, the County believes that it would be both irresponsible and ethically wrong for the Administration and Congress to fail to provide to the extent practicable mitigation and equity compensation to the residents of Nevada of all imposed impacts resulting from the Yucca Mountain Repository Program.

As indicated in Section 3.3 (Scenario Impacts), transportation incident related impacts resulting from the White Pine County realistic scenario are both wide-reaching and potentially devastating to the residents of White Pine County, its economy and society.

They are well beyond anything identified by the DOE in its Yucca Mountain DEIS. Regrettably, White Pine County will not have sufficient opportunity under the DOE's current schedule to review the final EIS, prior to issuance of this report to determine if

their final assessment of impacts approaches those identified herein. Further, the County will not know with certainty until a much later time frame as to whether high level waste destined for the Yucca Mountain Repository will in actuality be transported through White Pine County on legal weight trucks on US 93 and US 6.

Spent nuclear fuel and other high-level radioactive waste should not be transported through White Pine County on legal weight trucks due to the potential for catastrophic and largely unmitigable impacts. The presence of the Yucca Mountain Repository will have substantial negative impact on White Pine County.

Should circumstances and the will of the Administration and the Congress result in imposition of these potential impacts of the residents of White Pine County, we feel that all means available to mitigate impacts of the Yucca Mountain Repository Program should be provided without reservation to White Pine County, the City of Ely and their residents.

Transportation of spent nuclear fuel through, and disposal of the waste in, Nevada is a service the state and her units of local government will be providing, albeit involuntarily, to the rest of the Nation. The unacceptable environmental and public health risks associated with storage of waste at numerous sites throughout the Nation will be concentrated in Nevada. A currently unacceptable and uncertain institutional process for long-term stewardship of the wastes will be abated through centralized storage and disposal at Yucca Mountain. Indeed, the Nation's possible need for additional nuclear energy may in part hinge upon developing and operating the repository at Yucca Mountain.

The waste management service that Nevada may be forced to provide the balance of the Nation is an obligation which no other state has been willing to accept. The American public has demonstrated a willingness to pay large sums of money to develop and operate a deep geologic repository and related transportation system to the Yucca Mountain site. While all other states in the Nation will benefit from the Yucca Mountain repository,

some arguably more so than others, Nevada will accrue no clear net benefit from the project and in fact will be left with a significant unmitigated impact. Nevada and her units of local government, as agents for the residents and businesses whom are located here, should share proportionately in the National benefit to be achieved through development and operation of the repository system.

The total value of Nevada's service to the Nation can be estimated by applying a modest percentage of the American society's willingness to pay for safe, centralized storage and disposal of spent nuclear fuel and other high-level radioactive wastes. One measure of that willingness to pay is the total estimated cost of the repository system for which the United States Congress has established a fee schedule and from which the Congress has appropriated monies to cover costs of developing the repository system. DOE's most recent estimate of the total life cycle cost of the civilian radioactive waste management program is $49.3 billion in constant 2000 dollars.

Alternatively, one could consider that the value of the service being provided by the State of Nevada and her local governments is equal to the avoided cost of leaving the waste where it is now and where it may in the future be produced and stored (No-Action Alternative). Table 2-6 of the Yucca Mountain Draft Environmental Impact Statement estimates the cost for the first 100 years of the No-Action Alternative at $51.5 to $56.7 billion. Another $4.9 billion is required under the No-Action Alternative for waste management over the last 9,900 years of storage. If inflated to current 2000 dollars, the costs of No-Action likely approach $70 billion. When one considers that the current life-cycle cost of the Yucca Mountain repository system is $49.3 billion, the avoided cost of not doing the No-Action Alternative may be approaching $22 billion dollars. Collectively, the Nation's willingness to pay and its desire to save, represent one measure of the national benefit which might be assigned to the Yucca Mountain repository system.

Nevada and her affected units of local government should share in the National benefit of developing and operating the Yucca Mountain repository. Mitigation, including compensation, of impacts merely keeps Nevada whole in the sense of pre-project

conditions. Mitigation, including compensation, of impacts does not address Nevada's share of the National benefit which results from the Yucca Mountain repository system. An equity payment is needed to enable Nevada and her affected units of local government to share in the benefits the repository system posits for the rest of the Nation.

It is suggested that a factor of 5-10 percent be applied to the amount the Nation is willing to pay to for the safe storage and disposal of nuclear waste in Nevada as a means to enable the State and her affected units of local government to share in the national benefit proffered by the repository system. At 5-10 percent, the total equity payment to Nevada would range from $2.5 to $5 billion dollars. If provided to Nevada as one or more trust funds, this amount would yield $250 to $500 million for the State in perpetuity. These funds should be made available to the State of Nevada; affected units of local government in Nevada; and certain non-profit economic and community development entities within said counties for use in making investments in the future economic and fiscal vitality of the State and to enhance the public health, safety and well being of its residents. In addition to a one-time payment from the Nuclear Waste Fund (to avoid the uncertainty associated with annual Congressional appropriations), the benefit might take the form of procurement guarantees to stimulate business and industry in Nevada; transfer of public land for community expansion; location and funding of federal research and development initiatives in Nevada; and federal income tax abatements for Nevada residents; among other possibilities. Conceptually, the ratepayer/utility portion of the benefit payment could be in the form of cash while the benefit associated with DOE defense weapons programs might take other forms as described above.

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