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White Pine County
Board of County Commissioners

January 26, 2000

Wendy R. Dixon, EIS Project Manager
Yucca Mountain Site Characterization Office
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
P.O. Box 30307, Mail Stop 010
North Las Vegas, Nevada 89036-0307

RE: Comments to Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada

Dear Ms. Dixon:

Consistent with requirements of the National Environmental Policy Act (NEPA) and consistent with the fiduciary responsibility vested to it through designation by the Secretary of Energy as an "affected unit of local government" pursuant to the Nuclear Waste Policy Act (NWPA) the Board of White Pine County Commissioners are submitting these comments to the Draft Environmental Impact Statement (DEIS) for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.

White Pine County is submitting these comments with full expectation that they will serve to enable the Department of Energy (DOE) to prepare a Final Environmental Impact Statement (FEIS) which meets the statutory requirements for a "legally sufficient" document which can be used by the Secretary of Energy, the Nuclear Regulatory Commission (NRC), the President of the United States, and the Congress in making major federal decisions regarding the transportation and disposal of spent nuclear fuel and other high-level radioactive waste. Failure by the DOE to adequately address White Pine County's comments in preparing the FEIS may render the document legally insufficient to support major federal decisions.

Please feel free to contact me should you have any questions regarding these comments.

Sincerely,

Brent Eldridge
Chairman

cc: Nuclear Regulatory Commission
U.S. Environmental Protection Agency
Governor Kenny Guinn
Members, Nevada Congressional Delegation

2/7...To EDO for Information...Copy to: Chairman, Comrs, SECY/RAS, OGC...00-0080

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Comments to Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada

Submitted To:
Wendy R. Dixon, EIS Project Manager
Yucca Mountain Site Characterization Office
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
P.O. Box 30307, Mail Stop 010
North Las Vegas, Nevada 89036-0307

Submitted By:
Board of White Pine County Commissioners
953 Campton Street
Ely, Nevada 89301

January 26, 2000

These comments are divided into those concerning process (ie. preparation of the FEIS), those of a general nature (not addressing a specific section of text in the DEIS) and those of a specific nature (addressing a specific section of text, particular table, etc.). General comments focus upon fundamental deficiencies in the DEIS. Substantive changes to the DEIS are required to address the general comments provided by White Pine County. **To the extent that such changes introduce substantial new information or uncover previously undisclosed significant impacts, White Pine County would encourage DOE to issue a revised DEIS for further public review and comment.**

Process Comments

In preparing the FEIS, 40 CFR 1502.9(b) requires DOE to respond to all comments received and to discuss any opposing views on issues raised. White Pine County understands that DOE has the option to group comments together and to provide generic responses to input received. However, given the complexity of the repository project and the geopolitical brevity and differences of the affected region, the County urges DOE to provide individual responses to all comments it receives. White Pine County deserves to know DOE's specific response to each comment and how, if at all, said comment resulted in a revision of the DEIS. **The County requests that DOE prepare a comment response document and that said document be made available prior to or concurrent with release of the FEIS.**

Prior to release of the FEIS, DOE is encouraged to meet with affected units of local government to discuss how the Department intends to revise the DEIS in responding to local government comments. Such a meeting will insure that DOE fully understands the local government comments and that the proposed response or revision to the DEIS satisfies the issue of concern

DOE is encouraged to identify and make commitments within the FEIS to reasonable measures to mitigate significant impacts. The subsequent Record of Decision to be issued by DOE should also identify mitigation measures to be implemented. DOE is discouraged from preparing a separate and stand-alone mitigation plan. Such a document does not fulfill the requirements of and indeed is outside the NEPA legal framework governing the minimization of the effects of major federal decisions.

The DEIS does not reveal the process DOE plans to use in selecting a preferred rail and/or heavy-haul corridors. The baseline information provided in Chapter 3, and the impact analysis provided in Chapter 6 and Appendix J, are particularly deficient regarding impacts on highly populated areas-, engineering feasibility; construction costs, and cost uncertainties; potential for voluntary acquisition of private lands; impacts on Native American lands and cultural resources; and economic development costs and opportunities, including risk-induced socioeconomic impacts. The FEIS must include a specific framework for identifying preferred transportation modes and routes.

General Comments

In its current form, the DEIS does not contain sufficient information to fully assess all reasonable alternatives. For example, the DEIS does not consider specific impacts associated with legal-weight shipments of spent nuclear fuel along U.S. Hwy 93, U.S. Hwy 6, and State Route 318 through White Pine County. Given that this route has been identified by the Nevada Department of Transportation[1] as one of two candidates for designation by the Governor as an alternate to Interstate 15 and U.S. Hwy 95 through Las Vegas and given that the State of Nevada[2] has already encouraged DOE to use the Hwy 93, Hwy 6, SR 318 route to ship LLW and thereby avoid the Las Vegas Valley, it is a clearly reasonable alternative for which specific analysis in the DEIS is lacking.

The Draft EIS does not analyze impacts associated with specific nuclear waste transportation routes, even though it is intended that it will be used at some time in the future to select transportation modes and routes from 75 individual waste sites to Yucca Mountain. Residents along potential transportation routes to Yucca Mountain - through 43 states, and within 1/2 mile of more than 50 million people - are most knowledgeable about local hazards, yet their specific knowledge is co-opted by the generic treatment of transportation risk in this Draft EIS. This generic approach also eliminates any substantial analysis of environmental justice, which leads the Draft EIS to conclude, despite dissenting opinion, that there are no environmental justice issues that require analysis.

With respect to eastern Nevada, the DEIS fails to consider the potential impacts of legal weight truck (LWT) shipments of Spent Nuclear Fuel (SNF) and high-level radioactive

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1 Adrila-Coulson, M.V., 1989, *The Statewide Radioactive Materials Transportation Plan, Phase II*, College of Engineering, University of Nevada-Reno, Reno, Nevada.

2 Governor Kenny Guinn, *Letter to Chairman Julio Costello of the White Pine County Commission Dated August 24, 1999*, State of Nevada, Office of the Governor, Carson City, Nevada

waste (HLW) through Elko and White Pine Counties. Studies prepared for the Nevada Department of Transportation (NDOT) have identified Alternate US 93 from West Wendover to Lages Station, US 93 from Lages Station to Ely, US 6 from Ely to Tonopah, and US 95 from Tonopah to Yucca Mountain as a possible route for highly radioactive materials shipments. Appendix J of the DEIS identifies this route, the so-called "NDOT B Route," as a potential state-designated alternative route for truck shipments to the repository. DOE used portions of this route for truck shipments of SNF from the Idaho National Engineering and Environmental Laboratory to the Nevada Test Site in the 1980s.

Failure of the DEIS to consider the impacts of legal-weight truck transportation through White Pine County is made worse by Table J-48 which demonstrates that risks of transporting spent fuel and high-level radioactive wastes through the County are significantly greater than the risks for the Base Case (routes allowed by current Department of Transportation regulations for Highway Route-Controlled Quantities of Radioactive Materials). The fact that LLRW is also being transported on a route through White Pine County raises the specter of significant cumulative impacts.

According to the DEIS, there could be about 49,500 to 96,000 LWT shipments to the repository under the mostly truck scenario. Ninety percent or more of these shipments, an average of 5 to 10 trucks per day, could travel the NDOT B Route through West Wendover, McGill, and Ely.

The Draft document fails to consider unique local conditions along the NDOT B Route that could result in significantly higher routine radiological exposures than those calculated using by DOE using the RADTRAN 4 computer model. For example, individuals who reside, work, or attend school at certain locations within 6 to 40 meters (20 to 130 feet) of a nuclear waste highway route could receive exposures in excess of the average annual background radiation dose. DOE has failed to investigate whether such conditions exist near school zones and pedestrian crossings, left-turn lanes and traffic signals, congested intersections, and uphill grades in West Wendover, McGill, and Ely.

The DEIS also fails to consider unique local conditions along the potential truck route that could cause unacceptable safety and security risks for truck shipments using General Atomics GA4/9 casks. Primarily a rural two-lane highway with numerous steep grades and sharp curves, the route traverses high mountain passes subject to severe winter storms. Long segments (up to 60 miles) have no safe parking areas, few refueling facilities, and limited local emergency response capabilities. The Draft report assumes that almost all truck shipments will be made in the new GA-4/9 casks. The weight of the loaded GA-4/9 cask requires that it be used in conjunction with a specially designed trailer, a lower weight, cab-over-engine tractor, and a single fuel tank. DOE has failed to demonstrate that the GA4/9 system is appropriately designed for a decades-long, nationwide shipping campaign to Yucca Mountain.

The Draft EIS fails to consider unique local conditions along the NDOT B Route which may increase the probability of severe accidents, and which could exacerbate the consequences of a severe accident or terrorist attack resulting in a release of radioactive materials. There are numerous mountain passes, such as White Horse Pass, Currant Summit, Black Rock Summit, Sandy Summit, and Warm Springs Pass. Near-route terrain frequently includes drop-offs into deep canyons or river valleys that would make response to an accident or attack, and recovery of the cask, damaged or not, quite difficult. Route proximity to surface water and groundwater resources is a major concern. DOE has failed to address the implications of route-specific conditions for accident prevention, emergency response, and the economic costs of cleanup and recovery.

The DEIS fails to consider unique local conditions along the NDOT B Route which could result in unacceptable adverse socioeconomic impacts. During the past decade, there has been significant demographic and economic growth in and around West Wendover and Ely. Most of the new commercial development, including hotels, casinos, restaurants, and retail sales establishments, has occurred within two miles of the NDOT B Route. The Draft EIS ignores the potential adverse impacts of large numbers of SNF shipments on tourism-based economics located near highway routes to Yucca Mountain. State-of-the-art risk studies sponsored by the State of Nevada researchers have documented the public perception of risks associated with nuclear waste transportation. DOE has failed to address potential adverse impacts on year-round tourism, seasonal tourism, and special-event tourism; the effects of risk perception on property values along shipping routes; and risk-related impacts on business location and expansion decisions.

The analysis of socioeconomic impacts in this Draft EIS does not include the impacts associated with perceived risk and stigma. It is well documented that negative reaction to nuclear waste ranks highest among reactions to risks within the U.S. population. In response to such perceptions, people behave in ways that have direct and measurable economic consequences (i.e. avoidance of places and products associated with nuclear imagery or stigma). The DEIS ignores this finding and does not consider the economic consequences of such stigma on tourist destinations and agricultural products available in White Pine County.

For White Pine County, a transportation accident just before the peak summer tourist travel season which was characterized by a great deal of media amplification of risks could result in stigmatization of the area and a significant and prolonged decrease in tourist visitation to the County. Information compiled by the Nevada Division of State Parks and the National Park Service indicate that combined peak season (July) visitation to Cave Lake State Park and Great Basin National Park has approached 50,000 visitor days in recent years. With the population of the western states expected to grow by tens of millions over the next 25 years, annual tourist visitation to Cave Lake State Park and Great Basin National Park are expected to also increase annually.

White Pine County has recently adopted a plan for managing the abundant and high-quality surface and ground water resources which characterize the area. Said plan envisions significant portions of these waters being put to beneficial use by way of beverage bottling to meet an ever-growing demand for beverages in the Western United States. The DEIS does not reference the White Pine County Water Resources Management Plan nor the potential for transportation of radioactive wastes through the County to stigmatize area water resources.

With regard to failure of the DEIS to adequately address transportation impacts it is important to note that transportation induced stigma must also be considered within the Final EIS. Research sponsored by the Board of Lincoln County Commissioners has demonstrated that transportation induced stigma can result in significant economic and fiscal impacts along transportation corridors.[3] In the event of an accident involving transportation of spent nuclear fuel in the weeks preceding peak tourist travel to and/through White Pine County, local businesses may be impacted and tax revenues lost to White Pine County and the City of Ely. It could take several weeks to many months for the area to recover from negative perceptions about safe travel in the County.

Based upon analogous cases (ie. visitation impacts of the accident at Three Mile Island), the DEIS must consider the possible economic and fiscal impacts to White Pine County of a transportation incident/accident which results in stigma induced reductions in tourist visitation to the County. Measures to mitigate such a downturn in tourism must be presented in the EIS. For example, DOE should commit to develop and fund a tourism marketing plan which could be immediately implemented in the event of a transportation accident in the County. Using an IMPLAN-based economic impact model developed for the County by the University of Nevada, Reno (Center for Economic Development), preliminary estimates of the economic impact of losing 30 percent of visitor days during the month if July could result in direct economic impacts of over $400,000 and total economic impacts in excess of $1,000,000 to the local economy.

The DEIS should estimate the number of expected transportation incidents/accidents which might be expected to occur within White Pine County over the 24 year shipping campaign. This information could be easily derived from U.S. Department of Transportation

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[3] Himmelberger, Jeffery; Baughman, Mike L.; and Yelena A. Agneva-Himmelberger, October 1993, *Tourism Impacts of Three Mile Island and Other Adverse Events: Implications for Lincoln County and Other Rural Counties Bisected By Radioactive Wastes Intended for Yucca Mountain*, Clark University, CENTED, Worcester MA. and Intertech Services Corporation, Carson City, NV.

incident/accident reports prepared for other shipments of spent nuclear fuel and high-level radioactive wastes. There have been incidents and accidents in the past. There will be such occurrences in the future. White Pine County is concerned that any single transportation incident or accident, even assuming no release of radioisotopes to the accessible environment, could be widely covered by the media, with perceived risks amplified and area stigma a result.

The draft EIS fails to consider transportation impacts on specific Native American communities located in proximity to potential spent nuclear fuel and high-level radioactive waste routes. In particular, there is no evaluation of possible impacts to the Duckwater Reservation, which is located in proximity to US 6 and the NDOT B route.

The DEIS does not include a reasonable No Action Alternative. It is unlikely that either of the No Action Alternatives included within the DEIS would ever be considered for implementation. In particular, No Action Alternative Scenario 1 entails radioactive waste to be left at the 77 sites where it is now found, but under institutional control for 10,000 years. Scenario 2 envisions loss of institutional control after 100 years. NRC guidelines discourage licensees from assuming institutional control beyond 100 years. However, it is highly unlikely that waste would be allowed to be stored at generator sites without any form of institutional control. A more reasonable No Action alternative would see waste stored on-site indefinitely with continued institutional controls.

White Pine County is troubled by the DOE's failure in the DEIS to recognize the County and its residents as potentially impacted by on-going and proposed radioactive waste management activities in Nevada. During scoping, White Pine County made a credible case for consideration of the impacts of low probability/high consequence events such as volcanism upon the residents and environment of the County.[4] In addition, our scoping comments clearly demonstrated the potential for shipments of spent nuclear fuel and high-level radioactive waste to be transported by legal-weight truck through White Pine County. Despite the direct risk to resident public health, safety and welfare associated with the Yucca Mountain project, the DEIS does not afford any assessment of impacts to residents and the environment in the County.

This failure to consider impacts in White Pine County appears contradictory to the Secretary of Energy's previous action to designate the County as "affected" pursuant to the Nuclear Waste Policy Act. The Secretary's designation, which is not required but is discretionary, clearly suggests the relationship of ongoing and proposed DOE radioactive waste management activities in Nevada to possible localized impacts in White Pine County. It

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[4] Eldridge, Brent, *November 22, 1995 Letter to Wendy Dixon Containing White Pine County Comments to the Scope of the Repository EIS*, Chairman, White Pine County Commission, Ely, Nevada.

is inconceivable that the Secretary of Energy would consider White Pine County "affected" yet the DEIS would not consider impacts which might accrue to residents and/or the environment of the County.

The DEIS does not adequately address issues raised and substantiated by White Pine County during the scoping process. A summary of key issues raised by the County which have not been sufficiently addressed within the DEIS follows:

1. The scope of the repository EIS should not be narrowly defined by inclusion of alternatives which are limited to the confines of existing law. Rather, consideration of alternatives that are outside the scope of what Congress has approved or authorized can and should be evaluated in the EIS as the document may serve as the basis for framing subsequent Congressional decisions.[5] In this regard, current legislative proposals concerning interim storage of waste and related transportation systems should be evaluated within the repository EIS. **The DEIS limits the alternatives it considers to only those to which current Congressional authorization exists. The document is therefore not useful as a tool for the Administration or the Congress to use in shaping possible new approaches to management of spent nuclear fuel.**
2. The repository EIS must consider the possibility that U.S. Highways 93 and 6 and State Highway 318 through White Pine County will be used for both high-level and low-level radioactive waste shipments. Alternatives considered within the EIS should consider with and without LLRW shipments along highway access options through White Pine County. **The DEIS does not consider the cumulative impacts (radiological, socioeconomic, etc.) of shipments of HLW and LLW through White Pine County.**
3. The repository EIS must include a comparative evaluation of the extent to which alternatives for accomplishing construction, emplacement, closure, and post-closure phases of the facility achieve containment of radioisotopes during volcanic eruption, earthquakes, and loss of criticality control. The comparative evaluation of alternatives for repository design, construction and operation should consider the full spectrum of uncertainty attendant to such options. In this way, the EIS should facilitate decision-making under conditions of uncertainty. **The DEIS does not provide a comparative analysis in a useful summary form of the extent to which construction design and operational alternatives provide containment of radioisotopes from the accessible environment. It is not easy to conclude from the information in the document which design and operational alternative is preferred.**
4. Beyond construction of the repository, alternative methods for conducting waste emplacement operations should be considered. Critical issues include candidate materials from which waste packages might be fabricated and alternative materials for

[5] See 40 CFR 1502.14(c) for regulatory guidance on the relationship of NEPA compliance documents to congressional decision-making.

fabrication of waste package baskets. **The DEIS does not appear to consider technology alternatives or material choice in construction of waste packages.**

5. The EIS should consider the possibility that the repository may never be permanently closed. Long-term below ground monitored retrievable storage at the site should be evaluated within the EIS. A comparative analysis of the merits of backfilling the facility vs. other means of closure should be included within the EIS. Alternative materials, which might be used to achieve closure, should be evaluated against their contribution to risk management, retrievability and cost. **The DEIS does not consider a repository with indefinite institutional control and lack of closure activity. Alternative methods for closure of the repository are not considered. Retrieval of waste (where waste is taken and how) is not considered within the DEIS.**
6. The EIS should evaluate the risk management contributions of alternative methods of warning future generations of the hazardous nature of materials located within the repository. **The DEIS does not consider the risk management benefits or the costs of alternative methods for warning future generations.**
7. Alternatives to be considered should include construction and use of a hazardous cargo route around the City of Ely. **The DEIS does not consider the benefit, feasibility or cost of this alternative.**
8. The risks associated with use of U.S. Highways 93 and 6 and State Highway 318 through the County should be compared against the risks of using other routes (i.e. I-15 to U.S. 95). **Although Table J-48 provides a summary of risks for each route, there is no analysis of the data in this table. In fact, Table J-48 reveals that the risks of transporting waste through White Pine County are significantly greater than through the Las Vegas Valley. The detailed analysis of routes through the Las Vegas Valley then do not bound the range of expected impacts the text in Chapter 6 implies. Table J-48 makes clear that specific impacts of transportation through White Pine County should have been included within the DEIS.**
9. Legal weight truck operational alternatives, which should be considered within the EIS, include escorted versus unescorted shipments. **The DEIS does not consider the risk benefit/cost implications of escorted vs. unescorted shipments.**
10. The analysis should evaluate the risk management benefits of time-of-day travel restrictions (i.e. to avoid transport past the White Pine County High School during school hours). **The DEIS does not consider time-of-day travel restrictions as a risk management option.**
11. The EIS should assess the regional economic benefits of using of local versus non-local trucking firms. **The DEIS does not provide a comparative assessment of the regional economic benefits of using local v. non-local trucking concerns.**
12. The impacts of alternative vehicle payloads upon highway infrastructure, maintenance costs and traffic safety should also be addressed within the EIS. **The DEIS does not appear to assess added maintenance costs or the change in crash rates per vehicle miles travelled as a result of slow-moving vehicles (i.e. heavy-haul trucks).**

13. The EIS must consider alternatives for provision of effective emergency first response capabilities along legal weight truck routes in White Pine County. **The DEIS does not consider existing emergency response capabilities to respond to incidents/accidents involving spent nuclear fuel or high-level radioactive waste.**
14. Because of the latent consequences associated with repeated exposures to radioactivity and given uncertainty associated with historic dose levels to residents, White Pine County is convinced that the description of the affected environment must contain a before repository system (baseline) assessment of public health conditions. **The DEIS does not provide a baseline or "before repository" assessment of public health conditions.**
15. The DEIS should consider those environmental features which may affect safe transport of radioactive materials. Examples include weather conditions, wildlife conflicts with vehicles, and flood prone areas, among other possibilities. **The DEIS only considers these environmental features as such may be impacted by construction and operation of the transportation system. The extent to which these environmental characteristics may impact upon safe transportation is not addressed within the DEIS.**
16. DOE is encouraged to make use of the White Pine County Economic Impact Model in preparation of the repository EIS. **DOE did not utilize the White Pine County Economic Impact Model despite said model having been given to the Department. The DEIS does not include an assessment of economic or fiscal impacts in White Pine County.**
17. The repository EIS should consider existing capabilities of local first responders in White Pine County. **The DEIS does not consider existing capabilities of emergency first responders in White Pine County.**
18. The Department of Energy should acquire and make use of each of the White Pine County sponsored technical studies, models and data sets in preparing a comprehensive description of the affected environment within White Pine County. **Despite White Pine County having responded to a DOE request for "reference materials", DOE did not apparently use this information as none of the White Pine County provided source materials are referenced in the DEIS.**
19. It is imperative that the repository EIS includes an exhaustive evaluation of the environmental consequences of waste transport through White Pine County. Because of the unique attributes of the County and its communities, the analysis must be specific to these geographic areas. A generic assessment of transportation risks will not facilitate identification of specific impacts and will preclude consideration of mitigation options necessary to alleviate such effects. **The DEIS includes only a cursory assessment of transportation impacts in White Pine County. Socioeconomic, environmental, land use, etc. is not assessed. Measures to mitigate impacts of transportation through White Pine County are not included within the document.**

20. The repository EIS must consider these significant differences in risk (estimated by UNLV-TRC[6] as being significantly greater in White Pine County) and address appropriate methods for managing risks in the County to a level commensurate with other areas of the Nation. **Table J-48 of the DEIS confirms that risks of transporting waste through White Pine County are significantly greater than other routes involving Interstate highways. The DEIS does not address methods for managing transportation risks in White Pine County.**
21. The repository EIS should include assessments of transportation on property values. **The DEIS does not address the effects of transportation on property values.**
22. The EIS must include an exhaustive identification and evaluation of measures to mitigate repository system impacts. **The DEIS identifies mitigation measures for only a fraction of the impacts identified within the document. None of the mitigation measures identified is evaluated as to its technical, institutional, or economic feasibility. The DEIS contains no identifiable commitments to mitigation.**

Collectively, failure of the DEIS to address most of the issues raised by White Pine County during scoping renders the document wholly inadequate.

The National Environmental Policy Act (NEPA) requires federal agencies to consider "connected actions." Construction and operation of a repository at Yucca Mountain will result in spent nuclear fuel and high-level radioactive waste being transported through Nevada (and in all likelihood by legal-weight truck in the short-term). The prospect of transportation of spent nuclear fuel and high-level radioactive waste through the Las Vegas Valley will likely trigger a decision by the Governor of Nevada to designate alternative routes. Therefore, the

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6 Parentela, Emelinda, et. al., Risk Analysis for Spent Nuclear Fuel Transportation Through White Pine County: Highway Routes, University of Nevada-Las Vegas, Transportation Research Center, prepared for White Pine County Nuclear Waste Project Office, UNLV/TRC/RR-95/9, November 1995.

FEIS must consider the impacts of State of Nevada identified alternative routes as a connected action pursuant to NEPA.

A serious omission in the DEIS is the identification and evaluation of alternatives for mitigation of impacts. White Pine County's preliminary review of the DEIS has found no obvious commitments by DOE to mitigate any impacts. The FEIS must include both the identification and evaluation of mitigation alternatives as well as commitments to feasible mitigation measures.

The description of the repository system, including transportation, is too vague to enable assessment of impacts. The degree of ambiguity and uncertainty associated with key assumptions (i.e. whether or not State of Nevada will designate alternate routes) renders the analyses deficient for decision-support. DOE is encouraged to validate assumptions, reduce uncertainty, and remove as much ambiguity as possible in presenting a revised analysis of impacts in the FEIS.

Although the DEIS acknowledges that there could be impacts to Native American cultural sites along rail spur routes or at Yucca Mountain, the draft document completely ignores wider issues and impacts to Native peoples and communities. The draft includes a discussion of the Native American "perspective" on the project, but then proceeds to discount the viewpoint expressed and goes on to conclude that no significant impacts to Native Americans will occur, even though no substantive impact assessment work has been done in any of the Native communities potentially affected by the facility or by transportation routes.

Impacts on American Indian communities within the DEIS are specified in more detail than other communities. There seems to be some bias that the only "Traditional Cultural Properties" considered are those related to American Indian Communities. This is a misconception. Traditional cultural properties could also be related to Pioneer settlements (for example the original Wagon Train route used to settle Preston and Lund or the Keystone and HiLine steam railroad corridor for the Nevada Northern Railroad). There is no assessment of the impacts of the proposed action on cultural tourism. This is a particularly important issue for White Pine County (and other areas like Death Valley National Park) where the economy is currently being re-arranged from traditional extractive industries to tourism.

It is very difficult within the DEIS to evaluate impact on communities in the major zone of influence. One is hard pressed to find any quantification of how many actual legal weight-truck haul loads could be expected through Ely on the US 93 or SR 318 scenario. The table on J-7 might indicate around 1500 shipments from the Idaho National Engineering and Environmental Laboratory 800 shipments from Hanford that might use a route through Ely as an alternate to Interstate routes, spread over a 20-year period (Table J-4). It would be useful if there was analysis of some key points like Ely (apparently a relatively low impact area with

about 350 shipments of high-level radioactive waste a year, Table J-4) as opposed to perhaps high impact Mesquite with perhaps an average of 1700 shipments a year of commercial spent nuclear fuel (Figure J-10). The FEIS should identify the impacts of this increase of traffic on tourism trade. The DEIS should describe time of day, day of week and seasonal characteristics of shipping campaigns. Would there be an effort for shipments to occur during low season traffic times? The FEIS should consider the changing demographics of "snow-birds". The attitudes of snowbirds toward radioactive waste shipments should be considered within the FEIS. Would shipments be scheduled to occur during low traffic or high traffic hours, being moved at night or during the day? The effect of transport corridors be designated as "heavy-haul nuclear free" as a mitigating measure in order to alleviate concerns of motorists who wanted to avoid worst case scenario nuclear accidents should be considered within the FEIS? The extent to which such a measure might also reduce the possibility of exposure if there was a highway accident causing a loss of containment should be addressed within the FEIS.

The prevailing impression (including within the DEIS) is that significant archeological properties can be bought. Yet the cost of conducting data recovery operations is not specified within the DEIS. It appears that a majority of the significant archeological sites at the Yucca Mountain site have already been treated through data recovery. What have been the costs of this treatment? How do these costs at the sites at Yucca Mountain compare to data recovery costs at locations where highway or rail improvements may be made? The kinds of sites at Yucca Mountain may be much less expensive to conduct data recovery operations than sites in valley floors or riparian zones that tend to be more complex and therefore expensive to conduct data recovery operations. What kind of sites might be of such high value that data recovery should not be undertaken, but rather sites should be avoided by through re-routing and preserved in place. This is a particularly relevant question for a situation like Five Finger Ridge along I-70 between Richfield and Cove Fort in Utah. This site should have (and could have) been avoided if there had not been a mentality at work in the early 1980's that all archeological sites could be "mitigated" by data recovery. Why has the DEIS not considered off-site mitigation along potential "tourist corridors" that would be alternative routes to avoid heavy haul nuclear waste shipments?

There is reference to a DOE, Advisory Council on Historic Preservation agreement in each DEIS section on cultural resources. This agreement is now several years old. There are new standards for these agreements that emphasize public involvement and alternatives to data recovery as mitigation measures. Will this agreement be modified to deal with the very different issues in treating cultural properties on linear corridors rather than in large area blocks? Will there be more emphasis on public involvement and public availability of popular and research reports emanating from mitigation?

Can the experience of transport of low-level and transuranic nuclear waste and impacts (ie. Waste Isolation Pilot Plant (WIPP) and shipments to Nevada Test Site) be used as a model

for the Yucca Mountain repository? To what extent was WIPP Program Implementation Guide for transportation considered as a model for Yucca Mountain regarding mitigation within the DEIS? Was the experiences of these other shipping campaigns used as examples to assess community impacts and transport accident rates within the DEIS?

A variety of discrepancies within the DEIS text and tables and inconsistencies in data presented in the document exist. Several of the risk computations use assumptions that do not appear to be consistent with known references, and reasonable expectations. Examples of these problems with the DEIS are included within the specific comments which follow. Several of the "worst case scenarios" do not appear to be "worst case" for White Pine County. Using known intersections, traffic conditions, established weather patterns and road usage, County reviewers were able to develop several worst case scenarios that meet or easily exceed the ones listed in the DEIS. Examples of possible "worst case" scenarios which should be considered within the FEIS as a means to bound impact assessment and to identify reasonable mitigation measures include:

<u>Accident Scenarios</u>

1. Legal weight truck loaded with spent fuel collides with double-trailer gasoline tanker on U.S. 6 immediately south of the City of Ely water supply at Murry Springs. Both vehicles engulfed in flames. Fire of sufficient heat and duration to destroy cask seals resulting in breach of containment. Direct impacts include environmental contamination, closure of U.S. 6 and enhanced public perception of risk and related area stigmatization.

2. Legal weight or heavy-haul truck loaded with spent fuel collides with double-trailer gasoline tanker at intersection of U.S. 93 and State Route 375 near Crystal Springs in Lincoln County. Both vehicles engulfed in flames. Fire of sufficient heat and duration to destroy cask seals resulting in breach of containment. Indirect impacts in White Pine County include reduction of vehicular traffic along U.S. 6 and U.S. 93 through the County and related reductions in visitation to Great Basin National Park and other destination locations within the County.

3. Legal weight truck loaded with spent fuel collides with double-trailer tanker on U.S. 93 thirty miles north of Ely. Both vehicles engulfed in flames. Fire of sufficient heat and duration to destroy cask seals resulting in breach of containment. Direct impacts include environmental contamination, closure of U.S. 93 and enhanced public perception of risk and related area stigmatization. Economic and fiscal consequences of road closure.

Non -Accident Scenarios

1. Nevada's Governor designates U.S. 93 south from I-80 at Wendover through Ely to U.S. 6 then south to U.S. 95 then on to the Nevada Test Site as an alternate to transportation through Las Vegas via I-15. Direct impacts include residents and visitors in the County being exposed to risk of radiological exposure. Indirect impacts include enhanced public perception of risk and related area stigmatization.

2. Nevada's Governor designates U.S. 93 south from I-80 at Wendover through Ely to U.S. 6 then south to State Highway 318 through Lund to State Highway 376 to U.S. 93 then south to I-15 to U.S. 95 north to the Nevada Test Site. Direct impacts include residents and visitors in the County being exposed to risk of radiological exposure. Indirect impacts include enhanced public perception of risk and related area stigmatization.

Repository Pre-closure/Post-closure Scenarios

1. Disruptive event (i.e. volcanism, nuclear criticality) of unanticipated nature through repository horizon and of sufficient force to produce an emission plume and related deposition across White Pine County. Direct impacts include increased risk to residents and visitors of the County to exposure to radionuclides. Indirect impacts include enhanced public perception of risk and related area stigmatization.

DOE is also encouraged to give serious consideration to the scenario presented by Ms. Elizabeth Risden, a White Pine County resident, at the October 19, 1999 DEIS hearing in Ely.

Assumptions made in the DEIS, especially as such relate to cask permeability and potential for breach, seem very conservative and perhaps not well thought through. The use of conventional highway traffic data, while convenient may have limited applicability when examining scenarios within White Pine County.

Failure of the DEIS to designate a specific route, or even mode of transportation in advance of evaluation of the environmental impacts, grossly impacts the ability to prepare for and ameliorate the consequences of potential crash, or breach of containment. Here the cart is clearly before the horse. Government agencies, even individuals cannot adequately prepare for an infinity of scenarios. The designation of modes of transportation, the material to be transported (BWR, PWR, Greater that Class C, Weapons Grade Plutonium, Special Performance Assessment-Required LLW, etc), the routes, timing, seasonal and other factors should be ostensibly determined in advance of evaluation of environmental impacts.
Several things were not even considered, or were given extremely low priority in this DEIS, most noticeably the lack of assessment of socioeconomic impacts and public perception in both eventful and uneventful transport. While most considerably a statewide issue and one that will greatly impact Nye and Clark counties, White Pine County, by virtue (or lack thereof) of relative economic poverty could conceivably suffer severe economic hardships. This is

especially true in worst case scenarios. The lack of consideration for these issues may stem from the lack of designated routes and modes of transportation. Nonetheless, the DEIS should address these concerns and offer mitigating proposals to offset the deleterious effects.

Understanding that the public's perception of nuclear waste as inherently dangerous rather than potentially dangerous, the DEIS should address in detail the public's concern, the potential for economic downturns, and suggest economic and social compensation for both uneventful transportation and storage scenarios as well as worst case scenarios.

The DEIS conveys preconceived notions regarding the safety and efficacy of transportation of high-level nuclear waste and their subsequent storage at the Yucca Mountain site. Recognizing that transportation of hazardous materials and especially radioactive products has an excellent track record in the United States, and moreover that many great minds have established proven protocols to handling these products, White Pine County recommends that the results of this DEIS be reviewed by an independent technical group to ensure that analyses are appropriate and that all measures to effectively manage risk have been considered. While admittedly a costly measure, because of the nature of the material involved and longevity of the impact, a second study, ordered by the Congress of the United States, by another agency or group, might well be undertaken in an effort to confirm or dispute the findings in this report. At the very least, a group of experts in the various fields associated with this report, not associated with the Department of Energy or even the NRC should be assembled and charged with the task to carefully review this document with the understanding that their comments would be accepted, utilized and indeed exercised even after the February 9, 2000 comment period expired.

White Pine County is concerned that here is no review of potential state-wide impacts, how changes in regional economic trends might impact neighboring counties, or impacts that could occur in counties along proposed transportation routes. It is not possible to suggest specific positive or negative impacts to White Pine County without initial analysis on anticipated state and regional impacts. In addition, the DEIS should include a separate review and analysis of impacts to communities along transportation routes once they have been selected. The FEIS should commit to such an analysis and the related identification of mitigation measures.

All communities with the state could be impacted by changes in the economic picture for the entire state because of the repository. The DEIS provides no assessment of the impacts to counties and cities from losses in state-level economic and fiscal activity. The State of Nevada Nuclear Waste Project Office has demonstrated the potential for statewide tourism related economic and fiscal impacts as a result of nuclear waste being transported throughout the state and stored at Yucca Mountain. State sales and gaming tax revenues could be reduced, and this would impact state services and funds available to counties and cities for

local services. It is also possible that the fact that high level nuclear waste is being transported on Nevada highways may influence motor freight routes. Communities like Ely receive a significant economic benefit from the increasing amount of truck traffic over US Highway 93 and State Route 318. If trucking firms elected to use Interstate 15 instead to avoid the routes used for high level nuclear waste, then our communities and the state as a whole would feel an economic impacts. Each of these key issues needs to be addressed in the FEIS.

Positive and negative impacts in neighboring counties including Lincoln, Nye, and Eureka Counties could indirectly impact White Pine County. Moderate increases or decreases in population and economic strength in Eureka, northern Nye, and northern Lincoln Counties could impact White Pine. These areas currently depend, at least in part, on Ely as a commercial and professional center. Decreases in their economies could reduce White Pine County's economic activity from its neighboring counties. Increases in population and activity could increase the economic activity in White Pine County. If the increases in the neighboring areas were significant enough to support development of new commercial and professional activity, it could decrease the activity now coming to White Pine County. These connected actions or impacts have not been considered within the DEIS.

It is possible that selection of transportation routes through White Pine County could result in socioeconomic impacts for White Pine County. If the presence of trucks hauling high-level nuclear waste in White Pine County required new state and/or federal employees in the area, their households would generate revenue in the community. New private sector ventures could be warranted to provide parking areas or shuttle services between parking and motels. However, the negative impacts of the presence of high-level nuclear waste could include reduced tourist traffic to White Pine County attractions, reduced customers for businesses located along the transportation routes or near the parking areas, reluctance of lenders to finance projects located within the corridor because of potential environmental hazards or increased risk perceived for the area; and regulations governing the use of areas along the transportation route could deter future land use decisions on mining, grazing, or tourism/recreation projects. The identification and analysis of impacts to the local economy in White Pine County and the City of Ely need to be included within the DEIS. Absent such analyses and identification of appropriate measures to mitigate impacts, potential effects will go unmitigated. Such an outcome is inconsistent with the intent of NEPA. The limited discussion regarding Clark, Lincoln, Nye, Eureka, Lander, and Esmeralda Counties does not show the true picture of impacts White Pine County could expect from the development of Yucca Mountain to store high level nuclear waste.

Although White Pine County is a remote rural area, the topography, climate, population concentration, existing transportation systems and economic condition are unique and must be considered in any decision on transportation routing for hazardous materials. The absence of any data in the DEIS concerning this is particularly disconcerting for the County's

emergency first responders. Besides transportation issues, it is a fact that White Pine County is downwind of Yucca Mountain and its residents have had health problems from testing conducted at the NTS. County residents would probably prefer the no action alternative where wastes are stored at their current locations. The DEIS should consider baseline health and public perceptions of risk.

Although the DEIS considers possible exposures due to historical shipments as a component of cumulative risk, it does not appear to include collective historical and future doses resulting from weapons testing. There has been historic deposition of radionuclides in White Pine County from DOE weapons testing activities. Residents of the County face the potential for exposure to concentration of radionuclides deposited in the County (ie. while hunting on mountaintops in the area) which when combined with exposures from reasonably foreseeable events, may result in a cumulative dose. The DEIS must consider the cumulative dose to White Pine County residents from historic weapons testing as well as historic and anticipated transportation activities through the County.

Transportation routes identified by the State of Nevada and evaluated in Appendix J go through White Pine County's most populated area and county seat, Ely. Here, ninety percent of the County's population exists within a 15 mile radius of the Ely city center and proposed transportation route. The main highway to the southwest goes five miles uphill along a winding, mountainous two lane route to Murry Summit (which is 7,700 feet high) passing within yards of the main water supply for the city. For six to eight months of many years, U.S. Hwy 6 is often icy and snow covered. It is not unusual for emergency first responders to take an hour to reach an accident site on any major highway because of the distances involved. If any highway is closed there are limited alternatives for routing traffic. The resulting economic impact could be devastating. Fog and snow can and has closed the only airport. The only hospital has limited capabilities. Volunteers are relied upon for fire and EMS resources. The DEIS does not adequately address these issues. The FEIS should include an assessment of unique circumstances impacting upon effective emergency first response in White Pine County.

Studies need to be undertaken to provide accurate assessments for those who are making transportation decisions concerning this area. Resources are limited and often inadequate without adding another demand on them. Money needs to be provided to increase the capabilities to specified levels and it must be provided to maintain those levels. Communications systems, support facilities, shelters, training and equipment, as well as qualified personnel are really inadequate to handle any serious accident. If a decision is made to route radioactive wastes through the county the costs associated with providing proper health and safety response agencies must be considered. There are some problems which money cannot solve. The DEIS then, must consider a combination of mitigation and compensation if risk management through effective emergency first response is to occur.

Before any decision is made concerning routing shipments through White Pine County a thorough assessment needs to be conducted and the results conveyed to those who will make the decision. This information, if not contained within the FEIS, should be a component in a subsequent supplement to the FEIS.

Carrier and shipper responsibilities and emergency response procedures require that response entities have a response team on call 24 hours a day. Will DOE and its carriers require/request 24 hour response capabilities of local first responders? The regulations at 10 CFR, Part 73, govern special safeguards. These regulations specify that transport vehicles carry personal communications devices. The DEIS should evaluate the extent to which such devices will function in rural Nevada and the extent to which rural emergency first responders have compatible communications capabilities. Of particular concern is the extent of communication "dead spots" located in areas of high accident hazard (i.e. canyons). Measures to mitigate communication deficiencies should be identified and evaluated within the DEIS (i.e. repeaters).

The DEIS should recognize that communications would be helpful to situation assessment. Keeping in mind that there is a lot of highway area and distance to travel, emergency first responders would benefit from knowing what was occurring at the incident before these Emergency Response Teams from White Pine County arrive. The FEIS should consider what enhancements in local communications capabilities would be required to facilitate such communication. The FEIS needs to include more investigation, study and planning if transportation is to be safe for both the environment and the communities within White Pine County.

The DEIS does not appear to address where and how relief drivers will be stationed or where and how these drivers will stop and park their trucks for meals, vehicle maintenance, fuel, etc. In addition, the DEIS does not address the qualifications of drivers and their respective knowledge in handling vehicle breakdowns or equipment failures as a means to mitigate risk. These issues need to be addressed in the FEIS.

The DEIS does not address restrictions in hours of operations for truck shipments as a possible measure to mitigate exposure risk in communities. For example, shipments could be restricted from passing schools at the beginning and end of each school day.

The DEIS does not consider the availability of specialized equipment which may be needed to transfer shipping casks from one vehicle to another while in transient. Delays in availability of such equipment may exacerbate exposure risks. This information must be considered in the FEIS.

The DEIS does not contain an adequate analysis of the special populations (ie. schools, hospitals, jails, prisons, churches, motels, hotels and communication stations) and strategic community facilities (ie. water supply wells and springs) which may be proximate to highway transportation routes. Potential impacts to such populations and facilities and related mitigation measures should be included in the EIS.

The DEIS mentions "uncertain" transportation-related decisions, "potential transportation impacts" and regulatory agency "attempts" to reduce potential hazards. Specific rail routes, heavy-haul routes and withdrawal lands need to be identified and analyzed as part of this EIS, not in the future. The FEIS must demonstrate how can true environmental impacts be addressed and major transportation decisions made, without this information.

Specific Comments

Page 1-1 A definition of an EIS is given here. The FEIS should also note that an EIS can and should be used to inform decision-makers of reasonable alternatives that would minimize impacts. Such alternatives could become the basis of Administrative proposals for legislation. The DEIS does not provide decision-makers with adequate information on alternatives to minimize impacts.

Page 1-1 2nd paragraph. Even if transportation-related decisions are uncertain at this time, any potential routes need to be field surveyed, local governments consulted and environmental analysis done as part of the EIS, not after the fact. For example, where does the EIS analyze potential impacts (socioeconomic, etc.) of transporting spent nuclear fuel and high-level radioactive waste on U.S. Highway 6 between U.S. Highway 93 and State Route 318 or U.S. Highway 93 between Ely and Caliente? Do mountain roads in January increase accident risks? These characteristics should have been considered as a component of the description of the affected environment.

Page 1-4 Section 1.2.1, Generation of Spent Nuclear Fuel and High-Level Radioactive Waste, Paragraph 5, Line #2 states "All of these reactors have been shut down for several years." This statement is not entirely correct. Most of these reactors have been shut down for several years, however the production of plutonium for weapons research and other research purposes have continued. In any case, it would be useful to reference how many years the reactors have been shut down, and what storage problems and considerations were observed, perhaps in the appendices.

Page 1-6. Section 1.2.2. "Cladding, if it is not damaged or corroded, has the capability to isolate the spent nuclear fuel and delay the release of radionuclides to the

environment for long periods." What is a 'long period'? This is not quantified.

Page 1-6. Section 1.2.2.2. How was the spent nuclear fuel from the "55 university- and government-owned test reactors" transported to Hanford and Savannah River? What was the accident record?

Page 1-6. Section 1.2.2.2 "Additional small quantities remain at other Locations." What is going to be done with these quantities? Will they be dealt with under this planned action?

Page 1-7. Section 1.2.4. Will the plutonium at the Pantex Plant, Rocky Flats Environmental Technology Site, Los Alamos and Lawrence Livermore National Laboratories be treated by this proposed action? If so, why are these not included in the maps, transportation routes and analysis?

Page 1-7 Section 1.2.3, High-Level Radioactive Waste, Paragraph 2, line(s)3-4 The text here states, "Treatment ordinarily includes separation of the waste into high activity and low activity fractions, followed by vitrification of the high activity fraction." High and Low fractions are not clearly defined. It would be advantageous to list the criteria for high and low fractions in the appendices not only for storage limitations but also for transportation criteria. Furthermore, the type of canister the vitrified high fraction material is stored in should also be listed both for storage and transportation purposes as this material may present different packaging demands than fuel assemblies.

Page 1-8 The DEIS does not consider the potential for certain defense high-level radioactive wastes to have security requirements which limits pre-notification of emergency first responders about pending shipments. Measures to mitigate pre-notification restrictions should be addressed within the FEIS.

Page 1-8 This section of the DEIS should discuss repository siting activities at Lyon, Kansas including why the site was not developed and what lessons for the Yucca Mountain project can be applied.

Page 1-9 The entire first full paragraph on this page, while offering history on the determination that a miens deep geologic repository was the final conclusion as best treatment alternative, offers information that is 20 years (plus) old. If newer studies or reviews have been completed or if other finding support or dispute these conclusions, they should be referenced. In light of the technological advancement, should other alternatives be considered?

Page 1-11. Section 1.3.2.2 The weight of inventory of radioactive heavy metal is Specified as 70,000 MTHM but how does this convert to volume?

Page 1-11 Section 1.3.2.2 indicates that DOE used 0.5MTHM per canister for defense high-level radioactive waste. The justification given in the document is that DOE has used this value "since 1985." This is no justification at all. Rather, the FEIS should base the assumed volume of waste per canister on current characteristics of waste and canisters to be utilized. Use of the assumed 0.5 may underestimate the number of defense waste canisters which must be transported to, and disposed of within the repository. While long-term repository performance may not be affected, underestimation of canister numbers will bear upon waste handling, emplacement, retrieval and transportation facets of the repository system and impacts related thereto.

Page 1-12. Section 1.3.2.2 Do we assume that the 105,000 MTHM of waste from operating nuclear power plants through 2046 would equal 210,000 canisters of waste. Why is this not specified when the 2,500 MTHM of DOE spent nuclear fuel translates to 22,280 canisters, far more than the 0.5 MTHM proposed per canister?

Page 1-14 2nd paragraph. States that if the land to be withdrawn included land that this EIS does not consider for withdrawal, DOE would perform additional analysis as required. The EIS should consider all possible withdrawal land. The land to be withdrawn should have been determined prior to finalizing the EIS. Same comment applies to Section 11.1, Statutes and Regulations Establishing or Affecting Authority To Propose, License, and Develop a Monitored Geologic Repository Federal Land Policy and Management Act of 1976, 3rd paragraph.

Page 1-14 Section 1.4.1. Is DOE considering withdrawal of Rail and Highway Transport routes that would be constructed exclusively for transport of canisters to Yucca Mountain?

Page 1-17 Section 1.4.2 "if authorized, would be a facility for permanent disposal of 70,000 MTHM of spent nuclear fuel . . ." What about the 105,000 MTHM mentioned earlier? Is this action going to cause an expansion of Yucca Mountain repository? Is this EIS to cover 70,000 and 105,000 additional MTHM? Or just 70,000 MTHM? Would approval of the 70,000 MTHM repository result in a reasonably foreseeable 105,000 MTHM addition? What are consequences of this on transport and expansion of the facility and associated risks?

Page 1-20 Section 1.4.3.3 "The views and comments of the governor and legislature of any state and of the governing bodies of affected Native American Tribes." Federal regulations nowhere define "Native American Tribes." Federal regulation deal with "recognized American Indian Tribes."

Page 1-20 Failure to provide institutional control over this sensitive and potentially dangerous material (provided governmental agencies concerned with this still exist) is poor logic. Perhaps the DOE could consider alternatives in the range between 100 and 10,000 years. Other parts of the document discuss permanent closure after 300 years. This appears inconsistent with other statements in the document.

Page 1-22 Section 1.5.1 How will American Indian Tribes affected by long distance haul routes be consulted? Other tribes and non-Indian communities outside the Yucca Mountain area itself should be consulted and may in fact be more impacted by transport than Tribes with traditional ties in the Yucca Mountain area itself.

Page 1-23 The first full paragraph here states that DOE invited affected units of local government to "prepare their own documents setting forth perspectives and views on a variety of issues of local and regional concern, which DOE agreed to incorporate be reference in the EIS." In response to this offer, White Pine County provided DOE with a complete set of technical studies and economic impact models developed for the County and asked that these be used by DOE in preparing the DEIS. The County is dismayed that not a single document provided to DOE is included in the list of references. The County must assume that DOE did not refer at all to the documentation, data and models provided in preparing the DEIS.

Page 1-24 States that the Caliente-Chalk Mountain rail line and route was added to four rail corridors and four heavy-haul routes previously identified for "potential transportation impacts." The transportation analyses described in Chapter 6 and Appendix J is insufficient for the EIS (see comments to Page 1-3).

Page 1-24 Section 1.5.2 indicates that calculations were verified independently. The FEIS should indicate the nature of the independent verification (who was involved).

Page 2-1 The second paragraph notes that the No Action Alternative is intended to serve as a baseline against which the Proposed Action can be evaluated. Because waste managed on-site at generator locations has institutional controls, the No Action assumption of loss of institutional controls is not a true reflection of baseline conditions.

Page 2-1 It is unclear from the discussion on this page whether the Secretary of Energy's determination whether to recommend Yucca Mountain to the President will include consideration of transportation issues. The FEIS should indicate whether transportation issues will be considered as a component of the Secretary's site recommendation.

Page 2-1 The DEIS is very vague as to whether DOE will and if so, when DOE would make decisions regarding transportation modes and routes. The FEIS should clearly state if DOE intends to make transportation decisions, what decisions the Department will and will not make, and a best estimate of when transportation decisions would be made. If DOE is assuming that any transportation decisions will be made by other parties, the nature and expected timing of such decisions should be identified.

Page 2-5 The FEIS should consider a rail to legal-weight truck alternative. Such an alternative is very plausible and could involve intermodal and routing alternatives not currently considered within the DEIS.

Page 2-47 Page 2, Paragraphs 4 and 5 of White Pine County's comments to the scope of the DEIS (1/22/95) address valid concerns that routing of waste may indeed occur through White Pine County. This occurrence should be considered and addressed by the DEIS.

Page 2-47 Section 2.1.3.3.1 should recognize and explain the role that states may play in routing. The assumption that waste will enter Nevada via Interstate 15 assumes that the State of Utah and the State of Nevada have not made alternative routing designations. The DEIS should review the process and difficulties which may attend definition of a national system of state-accepted routes.

Page 2-58 It is not clear whether the costs shown in Table 2-5 include expenditures on the Yucca Mountain Project to date. The table should explicitly show expenditures to date and projected expenditures in the future.

Page 2-59 The No-Action Alternative should be recognized as more than simply "providing a baseline for comparison." In fact, DOE can choose the No-Action Alternative and the Secretary of Energy could do so in a subsequent Record of Decision. The DEIS must provide analytical evidence as to why whichever alternative is selected.

Page 2-80 Table 2-8. This table is unclear to the reader in that it doesn't define time parameter being measured. Does the table imply that the Maximally exposed individual receives 48 rem per year; over the course of all shipments; and so on? Units of measure should be defined over what time period, number of individuals exposed (i.e. collective dose stats) or in percentages based on shipments. The DEIS lacks sufficient information to allow the reader to deduce from either the table or appendices how these figures were arrived at. A maximally exposed individual receiving 48 rem per year (about 10 times maximum allowed under U.S. Federal Radiation Counsel Guidelines and 24 times the maximum accepted as safe practice by DOE) would have significant health risks. Even if this individual was exposed over the course of 10 years, his latent cancer probability should, on the basis of the logic in the DEIS, be about 10 times what the table predicts. The table itself should reference the appendices and how this data was developed and how those figures were arrived at, including related references.

Page 2-80 The third point on this page states, "Impacts from the transportation of spent nuclear fuel and high level radioactive waste from the commercial and DOE sites to the Yucca Mountain Site would be low for either national shipping mode." This statement is unsubstantiated in as much as the table it references is both unclear in its statistics and does not account for worst case scenarios. A better statement would be that statistical probability of impacts would be low, but actual impacts are not only unknown, but liable to random accident, man caused incidents and acts of nature. While these are addressed later in the study, they should at least be prefaced here.

Page 2-80 Section 2.4.4.1, 3rd paragraph states, "The National Transportation of spent nuclear fuel and high level radioactive waste would use existing highways and railroads and would represent a small fraction of the existing national highway and railroad traffic etc . . ." In as much as the burden placed on the national highway system by the transportation of high level nuclear waste would be small, this statement is pertinent to the study. However using accident prediction statistics would not be pertinent in as much as high level waste products, even the most minor accidents can cause tremendous traffic problems in light of the material being shipped. Consequently, a better analysis would be of known shipments of low level waste products, fuels transported to nuclear plants and studies that reflect accident rates for other hazardous materials. Studies of hazardous shipments would reflect the impact on roadways and populace where (for example) road closures over extended periods of time occurred or secondary accidents occurred as a result of higher traffic loads. While these shipments would most probably display lower accident rates

compared with all commercial freight, the costs associated with the accidents that did occur and impacts of those accidents might be significantly higher than other freight modes.

Page 3-70 Section 3.1.6.2.2. "According to Native American people, the Yucca Mountain area is part of the holy lands of the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shone peoples. Native Americans generally do not concur with the conclusions of archaeological investigators that their ancestors were highly mobile groups of aboriginal hunter-gatherers who occupied the Yucca Mountain area before Euroamericans began using the area for prospecting, surveying, and ranching." This statement is unsubstantiated, unquantified and insupportable. What are "holy lands?" How is it determined that Native Americans generally do not concur? What was the sampling design to determine this opinion? What "Native Americans" were interviewed or questioned? How were they determined to be representative? What were the specific questions asked to determine that there is a disagreement with archeological scholars? These statements are outrageous and insupportable stereotyping based on a sample of unknown representatives.

Page 3-98 Section 3.2.1.2 states, "Rail transportation routing of spent nuclear fuel and high level radioactive waste is not regulated by the U.S. Department of Transportation." The responsibility of designation of rail routing of high level waste products should be determined in advance. While this issue is addressed under the concern that at the time of writing this document no specific route or mode of transportation is recommended or assigned, of great concern is the lack of designated responsibility for routing during the shipment. If USDOT individuals are not designated as responsible, some entity must assume authority and that designee should be identified within the FEIS.

Page 3-98 The text here states "Final Transportation mode and routing decisions will be made on a site specific basis during the transportation planning process . . . " The DEIS should indicate whether local government such as White Pine County will be involved with this process. If not, then the DEIS should address routing through White Pine County.

Page 3-99 Section 3.2.2 address legal weight truck shipments on U.S. Highway 95. Does failure of the DEIS imply that legal weight shipments would not be allowed on other routes without supplemental NEPA documentation? The DEIS should indicate what, if any, supplemental NEPA documentation would be required for a route other than those assessed within the DEIS.

Page 3-99 Section 3.2.2 implies that only data for U.S. Highway 95 was used in the analysis. If this is the case, the analysis may not accurately represent risks of shipping fuel on other Nevada highways. Nevada's highways are characterized by unique traffic patterns, load levels, seasonal environmental conditions and physiography.

Page 3-112 Section 3.2.2.1.5 Analysis of a corridor limited to only 0.2 kilometers is incredibly restrictive for an overview assessment. This results in small sample sizes and an inability to reasonably characterize the affected environment. A wider corridor or sample design based on topographical, geomorphic, and vegetative strata for the corridors would be much more in keeping with current professional practice to predict impacts to cultural resources.

Page 4-45 Section 4.1.7 does not appear to consider exposure beyond 80 kilometers. The DEIS should indicate whether exposure beyond 80 kilometers is possible and if so, to what extent. Further, this section does not appear to consider off-site exposure potential associated with volcanism. Although volcanism is a low probability event, it would have a potentially high degree of consequence. The health risk associated with a low probability volcanism event should be estimated so as to determine whether some manner of related mitigation is warranted.

Page 4-60 Paragraph 2 of Section 4.1.8 Accident Scenario Impacts, states, "The impacts to offsite individuals from repository accidents would be small etc . . ." This statement appears unsubstantiated in as much as no appendices are listed where the reader can obtain the underlying data used to compute dosages and confirm or dispute the conclusions. The 0.013 rem threshold seems very small as it is significantly less that background radiation levels (background radiation levels as much as 0. 15 rem, Source Book on Atomic Energy, Glasstone et al, 18.38 pp745) and would be difficult to determine or quantify. The bounded worse case scenario for the noninvolved worker seems extremely low at 31 rem given nature of material being handled. Perhaps the drafters of the DEIS here assume safety measures for containment that are not otherwise described within the DEIS. Again this statement should reference the data used to compute it and what bounding criteria was utilized.

Page 4-88 The analysis on Section 4.1.15.4 should have considered the economic impacts of locating one or more cask manufacturing facilities at a greenfield site in Nevada, particularly, White Pine County. Such a facility might serve to mitigate potential negative economic impacts in the area.

Page 4-98 Section 4.2 should include an estimate of the potential number of shipments which would be required to move retrieved waste. In the worst case, all material disposed of at Yucca Mountain might have to be retrieved and transported out of the State of Nevada.

Page 5-6 The sequence of events described in the first paragraph of Section 5.2 should also include volcanism and human intrusion as initiating events.

Page 5-16 The third paragraph of this page should also consider nuclear materials brought to the surface as a result of drilling.

Page 5-38 The entire paragraph for Section 5.5.1 is vague. It doesn't reference what estimates were used to arrive at the calculation. Admittedly, carbon-14 release would in most probability be small, especially after traversing from storage facility to outside air. However, because the data points were not included, even in the appendices, the reviewer cannot ascertain how the conclusions were reached. Anytime "average values for stochastic (random) values" are used, it leads the reader to the suspicion that the values were "made up." The 14C existing in the atmosphere is being formed continually as a result of nuclear reactions between atmospheric nitrogen and neutrons from cosmic rays (DOE Radiological Handbook). At the very least, the baseline data used for this computation and the assumptions made should be listed in the appendices for confirmatory purposes.

Page 5-42 It is not clear why the DEIS assumes human intrusion at 10,000 years when peak dose is not anticipated until approximately 100,000 years. Is it not likely that the consequences of human intrusion would be substantially greater at 100,000 years?

Page 6-11 Section 6.1.2.5 The archeological impacts on the five rail corridors are essentially unassessed and unquantified. There is no information provided that would allow assessments to be made of the option to avoid outstanding significant sites rather than to damage, destroy or treat through data recovery. Sites should be characterized by type and the constraints provided for avoidance rather than damage or data recovery by rail corridor construction.

Page 6-26 The fourth paragraph of Section 6.2.4.1 appears to make some assumptions which do not concur with other data presented in this document or supposed worst case scenarios. Assuming 0.1 person rem per ?? accident, ?? annual average, ?? hour . . . this is far less than worst case scenarios for transportation, intermodal transfer, cask placement accidents, etc. Worst case

scenarios presented in this document call for higher dosages than that. What might be said is that experience to date reflects this to be handling accident statistics, however as quantities are increased and shipments begin, this dosage could be higher. White Pine County does not agree with the assumption that "handling incidents involving high-level waste would be less than those involving spent nuclear fuel."

Page 6-27 The assumptions underlying this section and related table are suspect. First, the assumption appears to be that the cask cannot be breached in any way, either by heat or physical forces. While the data presented here and in the supporting texts indicate the improbability of cask breach, they cannot rule it out. Rail casks, speared by a rail during accident would cause cask breach, extreme heat might damage seats, a terrorist act could breach the container, etc. Collective doses in these scenarios would be considerably higher than the data presented here. DOE should thoroughly re-think these hypotheses and present data that includes the potential for containment breach, along with the statistical probability of such an accident occurring. Second, distances from containers either during an accident or in subsequent clean up are not presented, either here or in Appendix J. It would be possible to skew data either up or down by adjusting the distance from radiation source. In other parts of this document (6.2.4.2.3 1 6, line 4-5) the assumed distance from source is 150 Meters (about 500 feet). Here again the data presented (if I understand the writer correctly) appears to disagree with data presented later on in the document on maximum exposure risks. Without knowing how this data was calculated, we cannot confirm or dispute the findings, and on the face of it, these exposure risks, associated with an accident appear artificially low.

Page 6-29 "The Modal Study," page 6-29, Paragraph 3. The NWPO didn't suggest alternative analyses or models and did not offer differing values for use in estimating consequences or risks of severe accidents. While the paragraph following this one leads the reader to believe that the data used in risk computation were extremely conservative, it is poor statistical research, in principle to use only one set of data points, or a single model to predict outcomes. The DOE and writers of this document should be commended on the research models done and obviously a great deal of research was done to assemble these models. It does not however relieve the DOE, the writers of this DEIS, or it's editors from the responsibility to provide other research models to determine accident scenarios or to use data sets and conditions that might otherwise offer different conclusions.

Page 6-31 Section 6.2.4.2. 1, Paragraph 2 states "The accident risk for legal-weight truck shipments dominates the total risk . . . " If this is the case and shipments through White Pine County are even a remote possibility, then detailed analysis of such shipments through White Pine County should be addressed in the DEIS.

Page 6-31 Paragraph 3, Last Line of this page states, " The maximally exposed individual, assumed to be about 360 meters (I 180 feet) from the accident would receive a dose of about 3.9 rem (table 6-1 1)." The assumption of the maximally exposed individual at nearly 1200 feet is an unrealistic assumption. Where was this derived from? Is there a national standard that references that distance as a common reference? If an average lane, on an average US Highway is 14 feet, and the average setback distance in any given municipality is about 50 feet, (I have no reference for this, but could probably produce one), then the maximally exposed individual might be an average (not including people who came in for a closer look) of 64 feet from the accident site. Assuming that the radiation dose is inversely proportional to the square of the distance from the source (Sourcebook on Atomic Energy, Glasstone 1979, pp752 footnote) it is conceivable that a maximally exposed individual might receive perhaps 800 to 1000 rem. Even a brief exposure at this distance would most probably prove fatal. Extended exposures, (greater than an hour) would certainly prove fatal. The estimates of dose do not appear realistic and could be easily exceeded.

Page 6-38 Section 6.3.1. Although proposed shipments using legal weight trucks would represent only a fraction (about 1 percent) of total truck traffic on Nevada highways, because of the nature of the material shipped, the impact on such things as socioeconomics, aesthetics and perception by the public could be significant. The relationship to regular commercial traffic is only applicable in the amount of fossil fuels burned and related impacts. Truck volume and other impact experiences from transport of spent fuel and other nuclear and hazardous wastes should be used to determine impacts of transportation.

Page 7-48 Section 7.3.2.5. This is inadequate treatment of the known cultural situation where expansion of facilities would be undertaken. If there are existing DOE and Commercial facilities what is known of the cultural resources in these areas and what would be the specific impacts on known cultural resources. If Scenario 1 is expansion at Yucca Mountain, what would the site-specific surface ground disturbing impacts be?

Page 8-79 Section 8.4. 1. I Inventory module I or 2 impacts, and Table 8-59. Some of the data reflected in this table does not seem to compute correctly. Specifically, a 58 percent increase in time spent shipping material reflects nearly 90 percent increase in kilometers traveled (580 million kilometers traveled vs. 1 billion

kilometers traveled) with only a 50 percent increase in fatalities (8.6 to 12.9). The fatality rate per kilometer driven actually drops in the inventory module I or 2 scenario from the proposed action by about 20 percent. This doesn't seem logical. An argument that the kind of waste being transported is a consideration is not meritorious in as much as trucks must still travel the same highways and therefore would incur the same risks as other commercial trucking and have roughly the same number of accidents.

Page 8-82:84 Section 8.4.1.2 and Table 8-60 are very misleading. The premise of this argument is based on original shipments of nuclear material in the United States around 1943. If truth were known, shipments of everything from heavy water to uranium 235 began in the early 1900s and occurred regularly (albeit clandestinely) in the 1930's especially around 1939 as original research that would later become the Manhattan Project began. DOE's use of 1943 is arbitrary as the University of Chicago graphite reactor was first tested December 2,1942 and the Oak Ridge Reactor became operational on November 4, 1943. High energy materials, Deuterium, graphite's, U-235 Radium and other products were routinely shipped, in small quantities, cross country throughout the 1930's and 40's. This is, ostensibly irrelevant to the shipment of high level nuclear waste products and spent nuclear fuel as proposed to begin in 2010. Also irrelevant are shipments made between 1943 and about 1957 when the 'Plowshare Program began because they pale in comparison to shipments since 1957 both in quantity of material and number of shipments. With the first "commercial reactor" coming online in Shippingport, PA at the end of 1957, shipments and management of high level nuclear waste of sufficient quantity became the concern we address Yucca Mountain Project. Hence, 1943 is a superfluous date. Even the shipments of high energy nuclear products since 1957 have little relevance except as statistical data that can predict 'per shipment' occurrences. To divide the total number of cancer fatalities by 100 years is rather akin to dividing all traffic fatalities by the number of years that cars have been on the road, or the incidence of atherosclerotic heart disease by the number of people that have died in the last one hundred years. Just because Oak Ridge and Hanford came online 1943 and 1944 bears little or no relevance to the prediction of LCF's related to the shipment of highly radioactive waste in 1999, 2010 or even 2047. Furthermore, using national cancer statistics as a baseline is truly a comparison between "apples and oranges". Millions of carcinogens, most of which are not radioactive, are included in ACS statistics. Even comparing lung cancer with pancreatic cancers is a slippery slope. Stating that the estimated number of transportation related latent cancer fatalities would be indistinguishable from other cancer fatalities is as absurd as stating that colon cancer fatalities are

virtually indistinguishable from auto accidents. The research presented here strains even the most clever of minds and gives rise to the skepticism that runs rampant in the general public about the DOE and this particular project. Even the material comparing module I and 2 vs. the proposed action are suspect. Here we have 600 percent more shipments, over 14 additional years and yet only a 17 percent increase in person-rem delivered and the subsequent LCF. The statistics presented here (.0007 percent) of the total cancer statistics is at least deceptive and could be construed as a deceitful means to manipulate statistics to make this project appear something it is not - inherently safe and nearly insurable.

Table 8-60 uses baseline data that indicates that no fatalities have occurred to date as a result of radiological accidents related to traffic accidents. The fact that we have not had one yet bears pertinence only in indicating that this industry has had a stellar track record and proper safety measures have been employed. Not discussed is the quantity of materials shipped so far, that fact that spent nuclear fuel has far higher emission rates in curies than does un-reacted fuels, and all of the material currently stored on site will have accrued since the early 1940's but will be shipped to a single location from sites throughout the United States between 2010 and possibly as late as 2047.

The final paragraph, (page 8-84) indicates that 4.4 million people have or will die between 1943 and 2047, and that the additional 100 killed in the process of transportation of spent nuclear fuels, high level nuclear waste and other radioactive products is a terrible comparison of statistics. It bears no relevance to the problems associated with transportation issues and is illusory, giving the impression that virtually no risk are associated with management of this material. There are so many things wrong with this that the DOE should remove this entire section.

Page 9-9 Section 9.2.4. "The Programmatic Agreement Between the United States Department of Energy and the Advisory Council on Historic Preservation for the Nuclear Waste Deep Geologic Repository, Yucca Mountain, Nevada." Please provide this document and the "Research Design and Data Recovery Plan for the Yucca Mountain Project- Permanent Copy" in the appendices. Do these documents adequately treat the rail and highway heavy haul routes and the Scenario 1 and 2 options discussed in the EIS? Will a new programmatic agreement be developed to deal with these dated (1998 AND 1990) documents?

Page 9-16 Not considered among the land use mitigation measures considered here is the need for additional 'safe havens' for operators of legal weight and heavy haul