NYE COUNTY

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FEB 28 2000

February 9, 2000

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Nye County, Situs Jurisdiction, Comments on the 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:

On behalf of Nye County, the situs jurisdiction of the proposed action, we are pleased to submit the enclosed comments on the subject draft Environmental Impact Statement (EIS). These written comments are intended to supplement oral comments previously made by Nye County officials and/or their representatives in Public Hearings held in Amargosa Valley, the Town of Pahrump, the City of Ely, Goldfield, and Las Vegas, Nevada, as well as at meetings held in Boise, Idaho and Washington, D.C.

1... As has been noted in our oral comments, Nye County believes that the draft EIS, as written, presents an inadequate basis for decision-making. The draft EIS is fraught with technical errors, a lack of data, and in many areas uses inappropriate methods and assumptions. As such, the draft EIS does not accurately portray the affected environment and affected communities in Nye County, nor does it adequately identify, assess, or evaluate the potential impacts that can be reasonably expected to occur should the repository program go forward.

The Board understands, however, that the Department of Energy (DOE) will give full consideration to these comments and expects that responses to these comments may necessitate changes to the EIS. Further, Nye County believes that the complete resolution of several of these comments, as well as others received, may substantively change the findings presented in the August 1999 version of the draft EIS. Should such

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1 cont. changes occur, Nye County would strongly recommend that the DOE issue a second draft, or supplemental impact statement for public review and comment.

Thus, the Nye County Board of County Commissioners is submitting these comments with the expectation that they will empower the DOE to prepare a final EIS that meets the statutory requirements for legal sufficiency, and can be used by the President and other decision-makers in implementing the provisions of the Nuclear Waste Policy Act.

Please feel free to contact us should you have any questions regarding our comments.

Very truly yours,

Dick Carver, Chairman
Nye County Board of County Commissioners

Enclosures: as stated

cc w/encl: Governor Kenny Guinn
Senator Harry Reid
Senator Richard Bryan
Congressman Jim Gibbons
Congresswoman Shelly Berkley

Nye County Comments on the 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

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Nye County Comments on the 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

Introduction

Nye County, the situs jurisdiction for the proposed action, has completed its review of the subject Draft Environmental Impact Statement (EIS) and is offering the following written comments for resolution. These written comments are intended to supplement the oral comments previously made in the public hearings conducted from September 1999 through January 2000. Copies of the oral statements made by Nye County Commissioners Taguchi and Davis at the Washington, D.C. hearing on October 26, 1999, are also provided. Summaries of other oral comments are also included.

2... The following Nye County plans, resolutions, and supporting technical references for the Nye County comments are also included in this submittal. The majority of the documents were previously available to the Department of Energy (DOE) for use in the Draft EIS.

Planning Documents

- Nye County Road Plan, Lumis, 1993.
- Nye County Comprehensive Plan, 1994.
- Tri-Party Framework for Interactions to Address Public Lands Issues in Nye County, Nevada, 1996.
- Nye County Overall Economic Development Plan, EDEN, 1997.
- Nye County, Nevada Water Resources Plan, 2000.

Nye County Board of Commissioners' Resolutions

- Nye County Resolution #93-49: Nye County Public Roads, Resolution Declaring Certain Public Travel Corridors Across Public Land Within Nye County As Nye County Public Roads, Refer to Resolution #95-24, Resolution Clarifying the County's Position Relating to Its Dispute With the Federal Government.
- Nye County's Resolution #94-14: Adoption of the Nye County Comprehensive Plan.
- Nye County Resolution #98-21: Resolution Approving and Recommending to the U.S. Department of Energy Proposed Criteria for the Transportation of Nuclear Waste Into, Through or Within Nye County.
- Nye County's Resolution #99-01: Resolution Declaring Nye County's Policy Regarding Public Roads.
- Nye County's Resolution #99-03: Resolution Declaring Nye County's Preferences Relating to a Route and/or Mode for Transportation of High-Level Nuclear Waste and Spent Nuclear Fuel, in the Event the U.S. Congress Mandates Development of a High-Level Nuclear Waste Repository or Interim Storage Facility Within Nye County.
- Nye County Ordinance #139: An Ordinance Amending Title 18, Chapter 18.04, Section 18.04.010, of the Nye County Code and Nye County Ordinance 136; Removing the Area Known as Crystal (Forty-Bar) from the Unincorporated Town of

2 cont.

Amargosa Valley; Amending the Boundaries of the Unincorporated Town of Amargosa Valley; Repealing that Portion of Nye County Ordinance No. 136, Codified as Title 18, Chapter 18.04, Section 18.04.010, in the Nye County Code Relative to the Boundaries of the Unincorporated Town of Amargosa Valley; Providing for the Effective date hereof; and Other Matters Properly Relating Thereto.

Technical Documents

- Nye County Perspective: Potential Impacts Associated with the Long-Term Presence of a Nuclear Repository at Yucca Mountain, Nye County, Nevada - Water Resources Evaluation; Prepared by Tom Buqo, Consulting Hydrogeologist.
- Annual Population Estimates: 1985-1989, Nye County and Nye County Communities.
- Population Estimates Through the Second Quarter 1992, Nye County, Nevada, 1992.
- Population Estimates Through the Third Quarter, 1992, Nye County, Nevada, 1993.
- Population Estimates Through the Fourth Quarter, 1992, Nye County, Nevada, 1993.
- Population Estimates Through the First Quarter, 1993, Nye County, Nevada, 1993.
- Population Estimates Through the Second Quarter, 1993, Nye County, Nevada, 1993.
- Population Estimates Through the Third Quarter, 1993, Nye County, Nevada, 1993.
- Population Estimates Through the Fourth Quarter, 1993, Nye County, Nevada, 1994.
- Population Estimates Through the First Quarter, 1994, Nye County, Nevada, 1994.
- Population Estimates Through the Second Quarter, 1994, Nye County, Nevada, 1994.
- Revisions to "Supporting Data, Tables, and Sources for Population Estimates Through the Third Quarter, 1994, Nye County," 1995.
- Population Estimates Through the Fourth Quarter 1994, Nye County, Nevada, 1995.
- Supporting Data, Tables, and Sources for Population Estimates Through the Fourth Quarter, 1994, Nye County, Nevada, 1995.
- Supporting Data, Tables, and Sources for Population Estimates Through the First Quarter, 1995, Nye County, Nevada, 1995.
- Population Estimates Through the Second Quarter, 1995, Nye County, Nevada, 1995.
- Population Estimates Through the Third Quarter, 1996, Nye County, Nevada, 1997.
- Supporting Data, Tables, and Sources for Population Estimates Through the Fourth Quarter, 1996, Nye County, Nevada, 1997.
- Supporting Data, Tables, and Sources for Population Estimates Through the First Quarter, 1997, Nye County, Nevada, 1998.
- Supporting Data, Tables, and Sources for Population Estimates Through the Third Quarter, 1997, Nye County, Nevada, 1998.
- Supporting Data, Tables, and Sources for Population Estimates Through the Fourth Quarter, 1997, Nye County, Nevada, 1998.
- Population Estimates Through the Fourth Quarter, 1998, Nye County, Nevada, 1999.
- Supporting Data, Tables, and Sources for Population Estimates Through the Fourth Quarter, 1998, Nye County, Nevada, 1999.
- Supporting Data, Tables, and Sources for Population Estimates Through the First Quarter, 1999, Nye County, Nevada, 1999.
- 1998 Baseline Economic/Demographic Projections for 1999-2008: Nye County and Nye County Communities, 1998.

2 cont.

- Baseline Economic and Demographic Projections: 1990-2010 Nye County and Nye County Communities, 1993.
- The Department of Energy Yucca Mountain Project: Contributions to the Nye County and Nevada Economies - Current Patterns of Workforce Assignment, Residency, and Procurement; Nye County Economic-Demographic Reports: #1, 1999.
- The Department of Energy Yucca Mountain Project: Contributions to the Nye County and Nevada Economies - Alternative Patterns of Workforce Assignment, Residency, and Procurement; Nye County Economic-Demographic Reports: #2, 1999.
- The Nevada Test Site & Related DOE/NV Activity: Contributions to the Nye County and Nevada Economies - Current Patterns of Workforce Assignment, Residency, and Procurement; Nye County Economic-Demographic Reports: #3, 1999.
- The Nevada Test Site & Related DOE/NV Activity: Contributions to the Nye County and Nevada Economies - Alternative Patterns of Workforce Assignment, Residency, and Procurement; Nye County Economic-Demographic Reports: #4, 1999.
- The Ponderosa and Pahrump Dairies: Contributions to the Nye County and Nevada Economies - Current Operations and Procurement; Nye County Economic-Demographic Reports: #6, 1999.
- The Desert Space Station Science Museum: Contributions to the Nye County and Nevada Economies - Expected Construction, Procurement and Operations; Nye County Economic-Demographic Reports: #7, 1999.
- Nellis Air Force Base: Contributions to the Southern Nevada and State Economies - Current Patterns of Operation and Procurement; Nye County Economic-Demographic Reports: #8, 2000.
- Military Retirees: Contributions to the Southern Nevada and State Economies - Current Retiree Income and Spending; Nye County Economic-Demographic Reports: #9, 2000.
- Mountain Falls Resort Community and the Cottonwoods and Artesia Subdivisions: Contributions to the Nye County and Nevada Economies - Expected Development Program and Buildout; Nye County Economic-Demographic Reports: #10, 1999.

Comments on the DOE's Implementation of NEPA and Other Procedural Issues

This section summarizes Nye County's concerns regarding the DOE's implementation of the NEPA process. These comments are meant to supplement the oral comments made in numerous public hearings.

3 **Need for a Second Draft EIS or Supplemental Draft EIS**

The NWRPO has found the Draft EIS to be deficient in a number of key areas. Because of these inadequacies, the DOE should prepare a second or supplemental draft of the EIS per the requirements of 40 CFR 1502.9. Nye County believes that factual corrections and the resulting reanalysis would likely result in substantially different findings. Nye County, other agencies, and the public should have an opportunity to review and comment on any revised EIS findings.

All too often, Nye County has submitted formal comments to a federal agency only to see those comments disregarded in the agencies preparation of the final NEPA documentation. Given the significance of the proposed action and the serious deficiencies in the Draft EIS, the DOE would be remiss if it did not prepare a supplemental draft for public review and comment.

In the 1994 transmittal of *The Secretarial Policy Statement on the National Environmental Policy Act (NEPA)*, the Secretary of Energy stated, "Full compliance with the letter and spirit of NEPA, our national charter for protection of the environment, is an essential priority for the DOE, consistent with our core values."

Nye County believes that the DOE's approach in evaluating impacts in the Draft EIS is woefully lacking, and meets neither the spirit nor the letter of NEPA. The Draft EIS ignores previously documented impacts of several other federal actions in Nye County with respect to federal land management, waste disposal, environmental, and water policies. The result is a fragmented analysis that does not meet the intent of NEPA. Substantive revisions to the EIS are necessary for the DOE to meet its own stated policy of full compliance with NEPA.

Recognition of Nye County Plans

4... The Draft EIS does not take cognizance of several Nye County Commission resolutions regarding the transportation of nuclear waste in Nye County. The resolutions state that it is unacceptable to ship highly radioactive wastes on Nye County's Main Street (US-95, between Tonopah and Mercury), or on Nevada Highway-160, the Main Street of the site county's largest and most rapidly growing community, and its link to the state's metropolitan center. Commission resolutions also state that shipment of high-level wastes should be by rail (cross-country and in Nevada), and that the preferred rail route is one that avoids site county communities to the greatest possible extent.

4 cont. The Draft EIS examines the shipment of highly radioactive wastes on 220-foot long heavy-haul tractor trailers, moving at average speeds of 20 miles per hour (or less) on two-lane rural public highways directly through Nye County communities. Resolutions by the Nye County Commission have made it clear that such shipment is unacceptable in Nye County.

Nye County Commission resolutions constitute local government plans, and should be recognized and treated as such in the analysis, identification, and evaluation of human health, environmental, and socioeconomic impacts.

Lack of a Preferred Transportation Plan

5 The Draft EIS does not present a preferred plan for a crucial component of the nation's high-level management program: transportation, cross-country and in Nevada. "DOE believes that the EIS provides the information necessary to make decisions regarding the basic approaches… as well as the choice among alternative transportation corridors… although it is uncertain at this time when DOE would make any transportation decisions," (pg. 6-1).

The Draft EIS examines two modal options for cross-country shipment of the nation's highly radioactive wastes ("mostly legal weight truck" and "mostly rail"). Within Nevada, it assumes that legal-weight trucks would use I-15, the proposed Las Vegas beltway, and US-95 (pg. 2-47). Rail shipments might use one of five newly constructed rail spur routes, leaving the UPSP at Beowawe, Caliente, Valley or Jean (pg. 2-48); or, rail casks might be transported to Yucca Mountain via heavy-haul trucks on public highways US-95, US-6, US-93 and/or Nevada Highway-373 (pg. 2-55).

Nye County believes that a site-specific statement of the impacts of the proposed repository must include a specific plan for transporting wastes to the specified site. Without such a plan, Nye County planning efforts are held hostage to the multiple uncertainties in the modes, routes, casks and canisters, and waste characteristics of prospective shipments. This is unfair to Nye County, as well as other affected parties.

Mitigating Measures

6 The proposed repository at Yucca Mountain raises a number of concerns to the citizens of Nye County and the Nye County Board of County Commissioners. First and foremost are the concerns related to health and safety impacts. These include a number of transportation issues. The national transportation network shown in the Draft EIS points to the fact that the shipment of wastes, whether by truck, rail, or intermodal means, will funnel *all* of the waste shipments through Nye County. The United States must take all necessary steps to ensure that: 1) the wastes are safely transported; 2) Nye County residents are not subjected to additional risks; and 3) Nye County be given the capability to respond to any accidents within its jurisdiction.

7 The impacts of Yucca Mountain on the County's precious water resources are also of paramount concern. The Draft EIS confirms that proposed action will result in the release of radioactive contamination into the only source of water available to the community of Amargosa Valley; only the timing and magnitude of the releases are uncertain. Additionally, the proposed action has the potential to render the water supplies of the Town of Pahrump and all of southeastern Nye County vulnerable to contamination. The DOE's hypothetical maximally exposed individuals will, in reality, be Nye County citizens, real people with real families. The United States must guarantee that the future generations of Nye County residents will have a reliable supply of safe water.

8 The Draft EIS does not identify the measures that will be taken to mitigate the contamination or other adverse impacts that will occur. Further, mitigating measures are not identified to provide Nye County the wherewithal to insure that long-term institutional controls are in place that will protect the County's future residents. The EIS must be revised to identify the mitigating measures that are available to mitigate the contamination of the County's water supplies that will result from leakage from the repository.

The adverse impacts on Nye County's water resources must be mitigated by guaranteeing the County will have a safe water supply, and by giving the County the wherewithal to implement and manage comprehensive wellhead protection programs, and continued oversight of the repository. Nye County must be guaranteed that comprehensive monitoring will occur as long as the wastes at Yucca Mountain pose a threat. Nye County must also be guaranteed that those charged with monitoring will have the institutional authority and the technical and financial resources needed to provide long-term protection of the health and welfare of the County and its residents. The EIS must be revised to include these guarantees as mitigating measures.

Comments Specific to Draft EIS Data, Methods, and Findings

The following comments address specific deficiencies and inadequacies of the Draft EIS data, methods, and findings. The comments focus on the areas of water resources and hydrology, transportation, demographics, and socioeconomic conditions.

Comments on Water Resources and Hydrology

The following sections address the water resource and related hydrology evaluations contained in the Draft EIS.

Omission of the Special Nevada Report

9... The Military Lands Withdrawal Act of 1986 required the preparation of the Special Nevada Report. This report, finalized in September 1991, contains a description of current and proposed defense-related activities in the State of Nevada, an analysis of their impacts, and possible actions that could be taken to mitigate those impacts. The report was prepared jointly by the Departments of the Air Force, Navy, and Interior with the Department of Army and DOE listed as cooperating agencies. Per Section 6(b)(1)(D) of

9 cont. the Act, the Special Nevada Report was mandated to include the lands withdrawn or being considered for withdrawal for use by the DOE.

With respect to water resources, a number of impacts were found to result from the cumulative land withdrawals including the lack of access to potentially developable water resources, water quality impairment, resource consumption by federal agencies, and resource competition with non-federal water users. Page 8-97 of the Special Nevada Report states that:

> "The withdrawal of land from public access and/or the purchase of water rights by DOD and DOE has the greatest potential for effects on Nevada...The water resources associated with these lands could, if they exist and were available, play an important role in the continued growth of southern Nevada."

The Special Nevada Report is not referenced in the Draft EIS for Yucca Mountain. Neither are the direct, indirect, or cumulative impacts of federal land withdrawals and water use considered and evaluated. These impacts are significant. The failure of the Draft EIS to incorporate the findings of the Special Nevada Report is a serious inadequacy in the document. These impacts continue to occur, have never been mitigated, and will be exacerbated by the additional land withdrawal and subsequent constraints on water availability. The EIS must be revised to include the findings of the Special Nevada Report and must include an evaluation of the cumulative consequences of the land withdrawal for the proposed repository at Yucca Mountain.

It is not acceptable for the DOE to assert that the Special Nevada Report has been superseded by recent NEPA documents prepared by the Departments of Energy, Defense, or the Interior as the Special Nevada Report is not a NEPA document but rather an independent evaluation of impacts. That recent NEPA documents prepared by these Departments did not take into account the findings of the Special Nevada Report represents the continued failure of federal agencies to perform adequate impact evaluations in the preparation of those documents, and is not a valid basis for the DOE to also ignore the findings of this important Congressionally mandated report.

Cumulative Impacts on Water Resources

10... The DOE, through their selection of a reduced region of influence, limited their analysis to only the direct impacts of their water withdrawals from a single basin while ignoring documented impacts that occur over a much broader region. Further, the Department ignored other federally prepared reports that detailed the direct, indirect, and cumulative impacts of Department of Defense, Energy, and the Interior actions over the same region. This approach is inconsistent with the CEQ guidance for considering cumulative impact assessment under NEPA and with 40 CFR 1508.25. The methods used in the Draft EIS should be revised to be consistent with CEQ guidance.

The Draft EIS states, with regard to cumulative impacts, that the potential impacts to groundwater would be small and limited to the immediate vicinity of the land disturbances

10 cont. associated with the action and that some minor incremental risk would occur from drinking the groundwater down gradient of the repository at some distant time in the future.

The approach used is inconsistent with statements presented in the Draft EIS. Specifically:

"The general path of water that infiltrates through Yucca Mountain is south toward Lathrop Wells, into and through the area around Death Valley Junction in the lower Amargosa Valley. Natural discharge of groundwater from beneath Yucca Mountain probably occurs farther south at Franklin Lake Playa;" Vol. I, p. 5-23.

"The implementation of the proposed action could potentially affect the water supply in Death Valley National Park, which is down gradient from Yucca Mountain;" Vol. II, Appendix C, page C-9.

The region of influence evaluated for cumulative impacts cannot be smaller than the region over which impacts are expected to occur. Thus, the Department's approach is inconsistent with the letter and intent of NEPA, CEQ guidance, and other federal documents including the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE, 1996) and the Special Nevada Report. The cumulative impacts on water resources will include the direct and indirect impacts of 1) the total radiological burden that will be imposed on Nye County; 2) the impacts of federal land withdrawals on water resource availability; 3) the impacts of federal policies regarding nuclear weapons testing, waste disposal, and environmental protection; and 4) the water resource use and management practices on both private and federal lands in the County.

If the DOE chooses to continue to ignore the local perspective by not evaluating the impacts identified in the Nye County document and by other federal agencies, then it is imperative that Nye County's perspective be clearly documented in the EIS as an opposing technical viewpoint, as discussed in Section 2.5.3 of the Draft EIS.

Waterborne Radiological Consequences

11... The sections concerning the waterborne radiological consequences (Sections 5.4, and 8.3.1) and supporting discussions (Sections 5.1, Appendix A, and Appendix I) are not clearly presented, and raise a number of issues and concerns. The EIS should be revised to include sufficient information for readers to check the accuracy of the numbers presented in the main text of the document. In its present form, it is impossible to perform an independent verification of many of the numbers presented. Tables are presented with inconsistent units (curies, curies per waste package, dose rates) without enough information presented to verify the conversion calculations or to trace information from one table to another. Non-germane tables such as those which break down the specific isotopes by place of origin should be deleted, as they tend to obfuscate discussions that are already esoteric and lacking details about the specific methodologies employed.

According to the information presented in the Draft EIS, of the 53 individual radionuclides in the reactor wastes, only nine "dominant" radionuclides were selected for analysis. The

11 cont. radionuclides presented in Tables 8-35, 8-42, 8-46, and 8-50 represent a selected suite of the radioactive constituents in the wastes. The EIS should be revised to provide specific information on why certain long half-lived radionuclides present in the wastes, including americium-243, cesium-135, curium-245 and curium-246, nickel-59, plutonium-240, neptunium-239, radium-226, uranium-233, uranium-235, uranium-236, and uranium-238 were excluded from the evaluation. A table that lists the basis for inclusion or exclusion of each of the 53 waste radionuclides should be included in the EIS so that the basis for carrying an isotope forward in the analysis is clear to the reader and the decision maker.

Further, the Draft EIS should be revised to more clearly describe how decay products were included in the evaluations, such as plutonium-239 decay to uranium-235. Of particular note is americium-241, the principal daughter of plutonium-241. After cesium and strontium, plutonium-241 is the single largest projected radionuclide in the waste inventory (see Table A-18) with an estimated 2.6 billion curies. The half-life of plutonium-241 is relatively short (13 years) but the half-life of the principal daughter product is appreciably greater (458 years for americium-241). Finally, americium-241 decays to neptunium-237, which has a half-life of 2.2 million years.

On page I-8, the Draft EIS states that the estimated activity of neptunium-237 was increased 58 percent to include the activity of the precursors californium-249, curium-245, plutonium-241, and americium-241 in the performance assessment model. However, the basis for this increase is not clear in the Draft EIS that states that the entire inventories of these radionuclides were put in Neptunium-237. It is not clear how the value of 58 percent was determined insofar as the inventory for Neptunium-237 is listed at only 28,000 curies (Table A-10 of the Draft EIS), while some of the precursors have activities that are several orders of magnitude greater (e.g., plutonium-241 at 2,600,000,000 curies and americium-241 at 230,000,000 curies). The plutonium-241 and amercium-241 will decay to more than 33,000 curies of Neptunium over a single half-life of americium and will ultimately decay to more than 50,000 curies of neptunium, significantly more than 58 percent of the starting inventory. The decay of californium-249 would further increase the total neptunium but since no inventory of californium-249 is given in Table A-10, the actual contribution is uncertain. The inventory of curium-245 (23,000 curies) and its moderately long half-life (9,300 years) suggest that the contribution from this isotope will not be insignificant; such information should be disclosed in the EIS.

Well Concentration of Chemically Toxic Materials

12... The evaluation of chemically toxic constituents does not account for background concentrations that are already in the groundwater, decay products, nor the contribution from underground testing areas and other contaminant sources on the Nevada Test Site (NTS). The first constituent in Table I-13, barium, is used for illustrative purposes, but these comments apply to other toxic constituents as well. Table I-10 gives the inventory of barium placed in the repository as 19,000 kilograms and Table I-13 summarizes the release concentration for barium from the release of high-level radioactive waste due to the corrosion of a waste container using a "series of simple calculations." Based on this

12 cont. methodology, barium was eliminated from further detailed analysis. However, the "series of simple calculations" fails to account for a number or factors.

If a leak from Yucca Mountain occurs, the concentration of barium in the groundwater will depend upon a number of factors including the form of the barium (as a salt such as barium sulfate or as a metal hydroxide resulting from the decay of dissolved cesium), the chemistry of the water (particularly the sulfate concentration), the chemistry of the formations through which the water flows (particularly with respect to whether or not reducing or oxidizing environments are present), and the ion activity of the Group IIA alkaline earth metals and the anionic species (typically Cl, SO_4, F,CO_3, HCO_3, etc.).

The ultimate concentration of barium (or any other constituent for that matter) must be based upon an understanding of the natural baseline concentration and the three potential additional sources: 1) the quantity released from the wastes and/or waste package; 2) the quantity resulting from the decay of radioactive isotopes released from the wastes or CRUD; and 3) the quantity that could be contributed from the underground testing areas located on the NTS. In assessing the total inventory of barium that will be released, the Draft EIS does not take into account the decay of cesium to barium. Cesium will be released from the dissolution of the waste materials and any cesium released will be fully decayed to barium in about 1,000 years. Any release of cesium from the repository, or its decay products, could lead to a significant increase in the barium concentration in the groundwater above the levels shown in Table I-13. After only one half-life for cesium (30 years), more than 23,000 kilograms of barium will have been created through the decay of cesium, an increase in the total barium inventory of more than 100 percent. The EIS should be revised to account for the decay of cesium, other toxic constituents, and the decay products of radionuclides in the evaluation of release concentrations and subsequent wellhead concentrations.

The release of barium from the wastes and/or waste package will depend largely on the specific barium salt (or salts) that form in the repository and the sulfate concentrations in the near field. Other anions available from the wastes and/or waste package may locally increase the solubility of barium to levels that effectively overwhelm the available sulfate through precipitation with a corresponding reduction in the sulfate concentration and a corresponding increase in solubility. A "front" of barium-enriched water may thus migrate away from the leaks in the repository in the form of a plume of contaminated groundwater.

The basis for the barium concentration limit listed in Table I-13 is not given in the Draft EIS. Table I-11 lists source concentrations for some toxic materials based upon solubility in repository water but does not include barium. Given that natural concentrations of barium in public water supply systems in the United States average 0.043 mg/L and that the groundwater down gradient of Yucca Mountain has barium concentrations as high as 0.04 mg/L, the concentration limit of 0.00412 mg/L listed in Table I-13 is obviously too low. Similarly, the concentration limit listed in Table I-13 for manganese is 4.4×10^{-11} mg/L but the concentrations as high as 0.1mg/L are known to occur in the groundwater down gradient of Yucca Mountain, almost ten orders of magnitude greater than the concentration limit listed in Table I-13. The rationale for selecting the constituents listed

12 cont. in Table I-13 should be presented in the EIS along with a clear explanation of how the concentration limits were derived and an explanation of why some of the contaminants occur at background concentrations one to ten orders of magnitude above the "concentration limit" listed in Table I-13.

The EIS must be revised to accurately present the concentrations of chemically toxic and radioactive constituents in the groundwater. The use of a "series of simple calculations" must not be used in lieu of more accurate tools, specifically chemical models that can account for the complexities of multiple contaminant sources, different receiving waters, variations in the formations through which the flow occurs, and the contribution of non-radiologic contaminants from the decay of radionuclides.

The dilution factors given for the chemically toxic materials are questionable (page I-19, Table I-13, and accompanying text). The Draft EIS gives no rationale for an order of magnitude dilution for the saturated zone. Presumably this factor is from the Total System Performance Assessment (TSPA) (TRW 1998s, Table 8-20). However, the TSPA clearly indicates that dilution factors may be as low as 1.0 or as high as 72. Thus the saturated zone dilution factor (based upon 100 realizations of the conditional, axiomatic performance assessment models) would range from one full order of magnitude less to 70 times greater than the value used in the Draft EIS calculations. A conservative approach based on simple calculations should use conservative values based upon the range of outcomes from the models, rather than a single expected value. The EIS should be revised accordingly.

With respect to the unsaturated zone, the Draft EIS used the ratio of the total cross-sectional area of all waste packages to the total surface area of the repository. This simple approach takes the maximum credit for dilution. When coupled with the equally simplistic annual fractional release rates given on page I-18, the resulting approach is not conservative.

The well concentrations listed in Table I-13 and the accompanying text does not give any indication of the time since the release or the distance to the "well." The EIS should be revised to include this information. If the "well" is located at the point of the leak, then it should be so stated in the EIS.

With respect to the contribution of contamination from the NTS, the Draft EIS states (page 8-76) that the estimate of the maximum potential dose from the underground testing area has a high degree of uncertainty but that "the use of bounding assumptions ensures that any reduction in uncertainty would only lower the already low estimated impact." The statement is inconsistent with the assumptions used in the analysis regarding the removal of technetium through precipitation caused by reducing conditions along the carbonate aquifer flow paths, dilution in uncontaminated water from recharge over the NTS, and aquifer mixing with transport. These assumptions all tend to dilute the dose and are thus not conservative.

For example, technetium would not be removed unless flow is through carbonate aquifers, which has not been established over most areas and is known to be a hydraulic

12 cont. impossibility in some areas where the head in the carbonate aquifer is above the volcanic confining units. Recharge is not equally distributed over the testing areas so any uniform dilution with bulk recharge over the NTS would not result in a conservative dose estimate; rather, the approach takes the maximum credit for dilution from recharge. Assuming that all of the underground testing inventory would migrate through the same locations as releases from the repository is, as correctly stated in the Draft EIS, a conservative approach. However, without much more detail concerning the other assumptions and what specific dilution factors were used in the analysis, it is misleading for the Draft EIS to characterize the overall results as being conservative. The results are presented to the nearest 0.01 millirem, which implies a much greater degree of certainty than actually exists. The EIS should be revised to clearly state the assumptions, the values of the dilution factors that were used, and the uncertainty in the results.

Given all of these considerations, the wellhead concentrations listed in Table I-13 may not represent reasonably expected conditions, and must be recalculated and revised to include the baseline natural concentrations, the toxic materials generated by the decay of radioactive constituents, a range of dilution factors, and realistic concentration limits.

The Draft EIS does not clearly present how the concentrations used in the screening process and presented in Table I-13 relate to the concentrations presented in Table 5-17. The value presented in Table I-13 for the well concentration of chromium is 1.1 mg/L while the highest value in Table 5-17 is only 0.037 mg/L. These values suggest that chromium released from the repository at a maximum concentration of 300 mg/L is diluted by a factor of 8,100 in only five km of transport. Such a large dilution factor is not considered likely and there is insufficient information given in the Draft EIS Chapter 5, Appendix I, and the TSPA to determine the validity of the numbers presented. The specific methods used in calculating the concentrations for chromium listed in Table 5-17 should be given. The EIS and its supporting documents should be revised so that the methods used in modeling the concentrations are clear and can be tracked by readers and decision makers.

With regard to Table 5-5, the text of the Draft EIS states, "(T)he values in Table 5-5 include a scaling factor for water use." The EIS should be revised to state the scaling factor value, and the rationale for the use of the scaling factor.

Later in the same paragraph the Draft EIS states, "The performance assessment transport model calculated the dose rates for the maximally exposed individual assuming dissolved radionuclides would mix only in water that flowed through the unsaturated zone of Yucca Mountain with no further mixing in the saturated zone aquifer. Infiltration through the Yucca Mountain repository accounts for only about 27,000 cubic meters of water per year. This compares to an annual water use in the Amargosa Valley of about 17.3 million cubic meters. **The analysis diluted the concentration of the nuclides in the 27,000 cubic meters of water throughout the 17.3 million cubic meters of water prior to calculating the population dose**," (emphasis added).

12 cont. The rationale for the three order-of-magnitude dilution factor and resulting doses and latent cancer fatality (LCF) probabilities should be clearly stated in the EIS as being an artifact of the use of a 1990 population distribution and the use of an assumed dilution factor that is based on the entire water production of the hydrographic basin without regard for where that production occurs. The population of Amargosa Valley has grown since the 1990 census and Nye County projections suggest that growth in this community will continue into the foreseeable future. The use of the 1990 census data results in an overall analysis that is not conservative.

The dilution factor is not correct as it includes water that is not along the flow path between Yucca Mountain and a receptor population. For example, in 1998, more than 2,000 acre-feet of groundwater was used by the Barrick Bullfrog mine and the American Borate operations. The groundwater was produced from areas that are not between Yucca Mountain and the receptor population. The inclusion of the agricultural water production in the dilution factor is also questionable. In 1998, more than 12,000 acre-feet of groundwater were pumped for irrigation in Amargosa Desert. Only a portion of this production was derived from areas between Yucca Mountain and the receptor population, that is, from the area where the simulated plume would occur.

Finally there is some question as to whether or not any dilution factor of this type should be included at all. The approach used assumes that dilution will occur in direct proportion to the water extracted, and this might not be true. If the contamination were the result of a one-time release, then the contaminants would probably be diluted to some extent depending upon the location of the drinking water supply wells with respect to the contaminant plume. The contamination will be continuous, however, at the annual release rates provided in Section I.3.2.3.2 (page I-18) of the Draft EIS and will thus be far less likely to be diluted.

Receptors who rely on water pumped from a well having a capture zone that intercepts a portion of a plume will drink water that has contaminant concentrations represented by the relative proportions of the capture zone intercepting and not intercepting the plume. As the capture zone of a well is directly proportional to the volume pumped and the duration of pumping (and is also affected by the aquifer mechanics and the hydraulic gradient), a domestic well will typically exhibit a very small capture zone while an agricultural production well will have a much larger capture zone. Thus, the well of concern, that is the one used to supply drinking water, is likely to have far less dilution than an agricultural production well. The use of a simplistic approach toward dilution based on total water withdrawals is certainly not conservative and the evaluations should be revised using a range of realistic dilution factors.

Risk and Model Uncertainty

13... The Draft EIS presents an assessment of human health and safety that purports to meaningfully portray the risks associated with the repository. Unfortunately, this assessment is based on an approach that is fraught with uncertainty and plagued by a lack of data. Further, the results have been severely criticized by expert panels assembled

13 cont. specifically to evaluate the validity and results of the specific models used to predict risk associated with the proposed repository.

The Draft EIS analysis in Chapter 5 follows the approach recommended by the National Research Council, 1995 (Technical Bases for Yucca Mountain Standards; hereafter referenced as NRC, 1995). In Section 5.2.4.1, the Draft EIS goes on to state "The analysis in this chapter follows the recommended approach, using as defaults societal conditions as they exist today; as such, **it is based on the assumptions that populations would remain at their present locations and population densities would remain at their current levels,**" (emphasis added). The approach introduces uncertainty into the analysis and the basis for the assumption is not valid. The reference to NRC (1995) is taken out of context; the discussion to which it is germane is the NRC's consideration of a population-risk standard, not impact analysis in a NEPA document. The Draft EIS attempts to use the NRC discussion as a rationale for ignoring the present (1999-2000) population of Amargosa Valley and short-term (50 year) future growth in the area, which is very predictable.

With respect to the future number of cancer fatalities in the vicinity of Yucca Mountain, NRC (1995, page 61) states, "...the total number of fatal cancers cannot be known without knowledge of the number of future persons residing in the Yucca Mountain vicinity. This number is obviously unknowable." Further, the NRC (1995, page 63) states, "For identifying the distribution and the varied lifestyles of a larger population, more assumptions of greater uncertainty would be required. The resulting data for a risk assessment would become so arbitrary that no adequate decision basis would result. **We therefore conclude that there is no technical basis for establishing a population-risk standard that would limit the risk to the nearby population for a Yucca Mountain repository,**" (emphasis added). Later in the same report (NRC, 1995; p. 96) additional findings are made with respect to future populations and future scenarios, **"(A)s far as we are able to determine, there is no sound basis for quantifying the likelihood of future scenarios in which exposures do or do not occur; about all that can be said is that both are possible....Any particular scenario about the future of human society near Yucca Mountain that might be adopted for the purposes of calculation is likely to be arbitrary, and should not be interpreted as reflecting conditions that eventually will occur,"** (emphasis added).

DOE clearly disregarded these portions of the cited document in the preparation of the Draft EIS insofar as Tables 5-5, 5-9, 5-13, 5-13, 8-40, 8-44, and 8-48 all contain population-based impacts that are based upon the arbitrary assumption that the population levels in 10,000 years will be the same, and will be distributed in the same manner as in 1990. As a consequence, the information in these tables is misleading, is based upon a number of other arbitrary assumptions, and does not provide an adequate decision basis. The decision maker, when reading these tables, might misinterpret the values to be based upon proven science, an adequate database, and logical assumptions, when in fact the values are based upon an unrealistic scenario, inadequate data, arbitrary assumptions, and questionable judgment. These tables must be deleted from the EIS.

13 cont. Section 5.2.4.2 has the heading "Uncertainty Associated with Currently Available Data," yet contains nothing about this uncertainty. Rather, the entire discussion is a synopsis of the DOE's plan to collect additional data to reduce the amount of uncertainty. The entire discussion in this section should be deleted and replaced with a discussion of the adequacy of the existing database (not the results of models, but rather actual data) for each key parameter in performance assessment. The section should clearly state that the data used to support the TSPA did not include any permeability, porosity, transmissivity, storativity, groundwater age, or water chemistry data for the area between Yucca Mountain and the closest receptor population, in the Lathrop Wells area of Amargosa Valley. This section should also make it clear that the corrosion rates, fractional release rates, and other key parameters used in the TSPA are based upon inadequate testing and measurements.

Section 5.2.4.3.5 ("Confidence in the Long-Term Performance Estimates") does not accurately summarize the uncertainty associated with long-term performance estimates. For example, Table 5-3 lists the confidence in models to reasonably represent specific impacts and processes, and the significance of uncertainty to the estimate of performance, and cites the Viability Assessment as the source document for the information presented in the table. A review of the corresponding portion of the Viability Assessment (Volume 4, Section 2.2.4.1) reveals that the significance of uncertainty estimates were made **"by considering quantitatively the effects of uncertainties associated with each principal factor on the peak dose rate calculated by TSPA. Judgments were then made taking into account limitations of the quantitative approach."** The EIS should be revised to state that the significance of uncertainty measures listed in Table 5-3 is based upon judgment.

Additional uncertainty is contributed from the time periods used for analysis. The Draft EIS breaks the analysis into two periods: 1) construction, operation, and monitoring and closure through the year 2025; and 2) long-term repository performance during the first 10,000 years after closure. However, the Draft EIS does not have comparable evaluations for both periods of time nor does the Draft EIS present the consequences of radionuclide and hazardous chemical contamination for the period between closure and 10,000 years after closure and simply states that "all peaks [for radionuclides] occur at or near 10,000 years." This statement appears to be based on the results of the TSPA-VA, which used bulk permeability values that were based either on expert elicitation or the results of the USGS site-scale model. The use of bulk permeability values does not yield a conservative result, but rather an average result. In actuality, the permeability values vary considerably and result in a similar variability in groundwater travel times and hence breakthrough curves for contaminants at a given distance from Yucca Mountain. Of importance with respect to groundwater flow and contaminant transport is that flow will predominate through preferential pathways that exhibit the fastest, not the bulk permeabilities.

Further, the statement is inconsistent with the findings of the TSPA-VA, which indicate that several specific contaminants have breakthrough curves that peak well before 10,000 years, such as technetium, plutonium on colloids, carbon-14, and others.

Comments on the Draft EIS Transportation Analysis

The following comments address specific aspects of the Draft EIS transportation analysis presented in Chapter 6 and Appendix J.

Assessment of Routine Transportation Costs and Consequences

14 Not only does the Draft EIS underestimate the radiological risk of routine transportation through rural communities along US-95, it also provides an incomplete assessment of the potential effects of routine transportation of highly radioactive wastes through these communities over a 30-40 year period. Specifically, the Draft EIS does not address the potential effects of such transport on the value of commercial and residential properties along the transportation routes, or the potential effects on visitors and travelers to patronize lodging along the transportation routes. The EIS must address the potential impacts of this lost socioeconomic opportunity.

15 **Assessment of Transportation Accident Costs and Consequences**

The Draft EIS does not fully or adequately address the costs and consequences of potential transportation incidents and accidents in the site county. Even without radiation release, these costs include: 1) emergency response and evacuation (by responders who have been trained and equipped to safely and effectively perform such functions); 2) site cleanup; 3) potential effects on the business and/or value of adjacent property. A revised EIS should identify and estimate the potential costs and consequences of transportation incidents and accidents in Nye County.

Appropriate Pathways for Use in Transportation Accident Scenarios

16... In evaluating the hypothetical "maximum reasonably foreseeable accident scenario," the Draft EIS claims that the greatest consequences for the legal-weight truck scenario would occur under stable meteorological conditions in an urban area and only looks at the inhalation exposure pathway along with cloudshine (dose from being immersed in the plume of contaminated air) and groundshine (dose from activity deposited on the ground) sources. The evaluation does not look at the surface water or groundwater pathways. In the event that such an accident occurs, should it be raining at the time of the accident (or shortly thereafter), the radionuclides would be transported very rapidly to a receiving stream or, potentially, into the wellhead protection area of a public water supply system. Given a release of 2,000 curies (based on DOE responses to questions posed during public hearings, concerning the quantity of curies in the maximum reasonably foreseeable accident scenario), a total of 108 million acre-feet of water would be required to dilute the 2,000 curies to the drinking water standard of 15 picocuries/L. The magnitude of this release is illustrated by the following hypothetical example:

> A release of 2,000 curies occurs as a result of an accident during a rainstorm on a mountainous grade of U.S. Interstate 15 to the north of Glendale, Nevada. One-half of the radionuclides (with an activity of 1,000 curies) are quickly transported into

16 cont.

the Muddy River, and thence rapidly into Lake Mead. With a total storage capacity of 29,700,000 acre-feet and assuming full dispersion and mixing, the resulting concentration of radionuclides in the water in Lake Mead can be calculated as follows:

29,700,000 acre-feet = 9,682,200,000,000 gallons = 36,647,236,941,710 L

1,000 curies/36,650,000,000,000 liters = 2.73×10^{-11} curies/L
= 27.3 picocuries/L

In this hypothetical situation, the drinking water supplies of Las Vegas and the drinking water and agricultural water supplies for large areas of Arizona and California would be threatened until the contamination decayed to levels below the drinking water standard (probably about 30 years given that the two largest constituents of the wastes are cesium and strontium). If the receiving stream or reservoir is smaller (likely considering that Lake Mead is the largest man-made reservoir in the United States), then the level of contamination would be greater and could be appreciably greater. If the radionuclides are washed into a wellhead protection area somewhere along a transportation route, then the associated public water supplies will be vulnerable to contamination even if only a small percentage of the radionuclides reach the water table. In both the surface water and groundwater contamination cases, the consequences could be catastrophic. That the Draft EIS did not evaluate the consequences of surface water or groundwater contamination as a result of the maximum reasonably foreseeable accident scenario is a major deficiency in the Draft EIS that must be addressed.

55 ...

A careful review of the Draft EIS was unable to identify any evaluations of the consequences of an avalanche related transportation accident or a accident scenario whereby a cask plummets down a steep rocky slope. While the probability of such an event is apparently included within the analyses presented in the Draft EIS (in terms of reportable traffic incidents which would include these types of events), it does not appear that the severity is accounted for adequately.

There are numerous avalanche detection monitors and rock fall fences located along the Union Pacific Railroad lines in Clover Valley, immediately east of Caliente, Nevada. Discussions with railroad employees indicate that rock falls and avalanches are a common occurrence, that train cars are often hit, and that in some cases, boulders as large as boxcars have fallen onto the railroad tracks. Other portions of rail routes through mountainous terrain probably also have similar occurrences. The Draft EIS does not contain any evaluation of the consequences of a rock fall or avalanche along transportation routes (both rail and truck) or how such events would rank in the probability/severity matrix given in Figure J-8. The EIS must be revised to include an evaluation of the consequences of a rock fall or avalanche.

The Draft EIS does not evaluate the scenario of a traffic accident that results in a cask falling down a steep rocky slope. A review of the source documentation (NUREG/CR-4829, Fischer et al. 1987) indicates that only single impact scenarios were evaluated and

55 cont. that one of the key factors is the maximum effective strain on the containment shell of the cask. No evaluations were made of multiple impact scenarios such as a cask falling down a slope. Under a multiple impact scenario, numerous breaches could occur and much more severe breaches are likely; as a result, the release fractions from the fuel rods to the casks could be much higher than those originally estimated by Oak Ridge National Laboratory (see Lorenz et al. Fission Product Release from Highly Irradiated LWR Fuel, NUREG/CR-0722 as referenced in Fischer et al. Shipping Container Response to Severe Highway and Railway Accident Conditions, NUREG/CR-4829). The EIS must be revised to include an evaluation of multiple-impact scenarios especially with regard to release fractions from multiple impact and cask breach scenarios.

56 The Draft EIS does not include information on how the judgments regarding the release fractions were made. As noted by Lorenz et al. (as cited above, page 9-23), "...the ORNL test data may or may not overestimate the actual releases under high-impact conditions," and on page 9-29, ..."The results of this study depend primarily on the quality of the cask response models, the radiation release models, and the probability models and distributions used in the analysis.... If the objective of this study is to precisely define spent fuel transportation risk, many improvements need to be made to these models to calculate the probability and radioactive release estimates and to quantify the uncertainties in the estimates." The EIS should state that the maximum release scenario is based upon limited tests, mathematical models that incorporate a number of simplifying assumptions, and professional judgment.

Radioactivity Of Waste Shipments

17 The Draft EIS assumes that the typical spent fuel assembly has been enriched to less than 3.7 percent and has been stored on site at least 25 years after discharge from a nuclear reactor (pg. A-14). However, waste acceptance criteria permit shipment of more highly enriched, more highly irradiated and much younger (more radioactive) fuel to be shipped to Yucca Mountain. Nye County believes that a revised EIS should examine the effects of shipment of more highly radioactive material. Furthermore, the EIS should consider mitigating policies by which such fuel would be shipped only in sealed canisters that would not be unsealed for either storage or emplacement.

Radiological Risk in Nye County

18... The Draft EIS underestimates the radiological risk of routine transportation over a 30-40 year campaign of shipment through rural communities along US-95 in the site county. The factors that contribute to the underestimation include: 1) a larger proportion of current resident and workforce population is closer to the shipment route than is assumed in the EIS; 2) more current and potential future population (lodging visitors, school children in busses, pedestrians) is exposed to routine transportation than is assumed in the EIS; 3) the average shipment speed in through these communities is slower than assumed in the EIS.

18 cont. As it did for the Draft EIS, Nye County offers to work with DOE in a revised analysis to develop measures that more correctly reflect local conditions in the affected Nye County communities.

19... ***Comments on the Economic and Demographic Conditions and Trends in Nye County***

The Draft EIS estimates Nye County's population at 18,000 in 1990, 24,000 in 1995 and 26,000 in 2000 (pg. 3-78). It elsewhere estimates the 1997 population of Nye County at 26,000, and the 1997 population of the community of Pahrump at 19,000 (pg. 3-73). The Draft EIS estimates the year 2000 population within a 50-mile radius of the proposed repository at about 28,000 of which 25,600 are residents of Nye County (pg. 3-79,80).

The Draft EIS ignores state and local population monitoring and projection information, and ignores locally approved economic development plans. The Draft EIS characterizes Nye County as a community that has been relatively static in the 1990s, and which can be expected to remain static through the first decade of the 21st century and throughout the emplacement period. It seriously underestimates the current and potential population within a 50-mile radius of Yucca Mountain – the population that is the most at risk of exposure to radiological contamination from emplacement of highly radioactive wastes at the geologic repository.

Nye County Conditions During the 1990s

As noted above, the Draft EIS estimates the population of the site county at 18,000 in 1990 and 26,000 in the year 2000, suggesting an average annual population growth rate of 3.75 percent in the 1990s. Nye County has monitored community population, using accepted estimation data and procedures, on a quarterly basis since the 1990 census. These estimates show that Nye County's population has grown at over twice the average annual rate assumed in the Draft EIS. This growth rate (8.1 percent) is more rapid that that of the State of Nevada (7.0 percent), the Mountain West Region (2.5 percent) or the nation as a whole (1.0 percent). The Nye County community of Pahrump has grown at a 14.5 percent average annual rate during the 1990s.[1]

Economic and demographic conditions in the site county have been dynamic, not static, during the 1990s. They should not be expected to become static in future decades. There is no valid basis to assume that the Yucca Mountain site is in a community that can be expected to remain sparsely populated and static over the next decades and centuries.

If the communities affected by the Yucca Mountain Project can reasonably be expected to be dynamic, not static, during the construction and operation periods at Yucca Mountain, and if the dynamic elements are aspects that have been promoted and advocated by Nye

[1] See Figure 1: Estimates for the U.S. and the Mountain West Region (AZ, CO, ID, MT, NV, NM, UT, WY) are based on data from the U.S. Census (State Population Estimates: Annual Time Series: ST-99-3). Estimates for the State of Nevada are based on data from the NV Department of Taxation & NV State Demographer. Estimates for Nye County and Pahrump are based on data from the Nye County Population Monitoring Program.

19 cont. County's elected commission, then it becomes an obligation of the proponent to ensure that its project does not, directly or indirectly, thwart Nye County's desired economic future.

Comparison of State and Local Population Monitoring Methods

Nye County's population estimates have been consistently above those of the State of Nevada, especially since 1994.[2] In 1998, the county's estimate was 4,300 persons (14.4 percent) above that of the State Demographer.

The State Demographer's estimates have used housing vacancy rates, which in 1999 were demonstrated to be about twice the actual rate. By contrast, Nye County's estimate uses active residential utility accounts, thus avoiding the vacancy factor. Also, the State Demographer averages an estimate based on the housing unit method with an estimate based on employment. Since a very large number of DOE employees are in-commuters to Nye County worksites, employment-based estimates are unreliable in Nye County. By contrast, Nye County's estimate uses a housing unit method only.

Nye County Growth

The Draft EIS presents no projections of socioeconomic conditions in the county and communities most affected by the Yucca Mountain Project. By not addressing other economic potentials for the site county, the EIS avoids the question whether the repository program, by raising concerns about the potential radiological contamination beyond the site boundary, could thwart other desired economic development that has been supported and advocated by the Nye County community and its elected officials.

Nye County population is projected to reach 54,000 by 2010, the State Demographer's "Middle" Projection, and could reach 62,000, which is the State Demographer's "High" Projection. Either projection reflects a higher average annual growth rate than that projected for the State (3.2 percent) or the nation (0.8 percent).[3] Consistent with these projections, in the community of Pahrump can be projected to grow at a 6.4 percent average annual rate. While the percentage growth rate in Pahrump is expected to decline, the population increase could be almost 2,500 persons annually over the coming decade, up from about 2,100 persons annually in the 1990s.

Using a respected economic model, Nye County has prepared a "baseline" projection in which the County's population increases to 54,000 in 2010. This projection, which is consistent with the State Demographer's "middle" projection for the County, does not

[2] See Figure 2: The State Demographer's estimates include the initial revision of the estimate for 1999. The Nye County estimates are from the County's Population Monitoring Program. Note: The State's 1998 estimates are 6.2% above those of the Census for the State of Nevada, and 3.2% above those of the Census for Nye County (See U.S. Census: CO-98-2).

[3] See Figure 3: U.S. forecast from U.S. Census "Resident Population Series (March 1996, Middle Series). Nevada and Nye County forecasts from Nevada State Demographer's Office: "Population Estimates (1997) and Forecasts (1998-2018)". Pahrump forecast based on the State Demographer's forecast for Nye County, and applies Nye County estimates of the percentage of county population growth in Pahrump.

19 cont. reflect special economic events, some of which the County has addressed in separate assessments.[4] Thus, not only have economic and demographic conditions in the site county been dynamic in the last decade of the 20th century, they are projected, by both the State and the County, to be dynamic in the first decade of the 21st century. Nye County does not offer Yucca Mountain a site community that will remain sparsely populated and static over the life of the project.

Nye County Population and Current Baseline Projections

Nye County has examined the economic impacts of several potential economic events not reflected in its baseline projections. One of these alone, the development of two subdivision communities in Pahrump that are proposed for build-out over the next decade, could add 30,000 persons to Nye County's population, thus exceeding the State's "high" projection for Nye County in the year 2020.[5]

Since the end of the Cold War in 1992, Nye County has made special efforts to devise a new economic future for the US-95 corridor in which development historically has been complicated by the proximity of nuclear weapons testing conducted at the NTS. These efforts are taking shape, and are being advanced in a project referred to as the "Science and Technology Corridor." Nye County communities and the Nye County Board of Commissioners have supported the economic proposals, and do not wish them to be jeopardized by the development of a Yucca Mountain repository.

Economic Contribution of Yucca Mountain Project

The Draft EIS does not address changes in the traditional management of the DOE's activity in Nevada, changes that have long been advocated by Nye County. Nor does it address the consequence of a continuation of current management practices. This consequence is that the Yucca Mountain Project makes a minor contribution to Nye County economy, while posing potential threats to other desirable development within the US-95 corridor and the 50-mile radius for radiological exposure calculation. The repository depicted in the Draft EIS poses a potential threat to the site county's desired post-Cold War economic future, without providing a guarantee that the project will not threaten that future, or even an economic basis for Nye County to accept the additional risk imposed by the transfer of the nation's entire inventory of highly radioactive commercial and defense wastes.

Nye County's economic impact analyses show that the Yucca Mountain Project made a very limited contribution to the economy of the site county in 1999. Of about $112 million in Gross Regional Product attributed to the Yucca Mountain Project in the State of Nevada, only $8.1 million (7.3 percent) occurred in the site county. The estimates reflect traditional

[4] See "Baseline Economic and Demographic Projections for Nye County, Nevada", Nye County Repository Program, January 1998.
[5] See "Nye County Economic-Demographic Reports: #10", Nye County Department of Natural Resources and Federal Facilities, December 1999.

19 cont. DOE management of its activities in Nevada, patterns that the Draft EIS suggests DOE expects to continue in the future.[6]

The current contribution of the YMP to Nye County's economy is much smaller than that of DOE/NV ($47.8 million), or of two dairies operating in Nye County ($12.4 million), or of the proposed Desert Space Station Science Museum and its visitors ($13.1 million).[7]

Nye County is concerned that the repository project, a project that makes little contribution to County's economy, will jeopardize other desired economic efforts that the County has worked hard to identify and promote. The EIS must address what measures the DOE will adopt if the proposed repository results in a loss of economic opportunity. Nye County believes that it should not be required to accept the risk associated with the repository without the benefit of appropriate mitigation.

Population Within the Radiologic Risk Zone

The Draft EIS estimates the 1997 population within a 50-mile radius of Yucca Mountain at 19,340, of which 16,700 is in Nye County.[8] Nye County's population monitoring program estimates the Nye County population within the radius used for calculations of radiological risk at 24,700 persons; this estimate is 4.1 percent above the Draft EIS estimate for Beatty, 7.7 percent above Draft EIS estimate for Amargosa Valley, and 57.5 percent above Draft EIS estimate for Pahrump.[9]

The Draft EIS estimates year 2000 population within a 50-mile radius of Yucca Mountain at about 28,000 persons, of which 25,600 are in Nye County (pg. 3-80). Nye County's baseline population projections estimate the County population within the radius used for calculations of radiological risk at 32,500 persons; this estimate is 26.4 percent above the Draft EIS estimate for Beatty, 11.8 percent above the Draft EIS estimate for Amargosa Valley, and 28.1 percent above the Draft EIS estimate for Pahrump.[10]

Nye County's baseline projections for 2010 place 47,900 persons within the 50-mile radius used in calculation of radiological risk, a figure 85 percent greater than the Draft EIS year 2000 estimate. Other special economic events could easily increase this figure to three times the Draft EIS year 2000 estimate.

Baseline Projections For Nye County

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[6] See: Nye County Economic-Demographic Reports: #1, Nye County Department of Natural Resources and Federal Facilities, December 1999.
[7] See Figures 4 & 5: Based on Nye County Economic-Demographic Reports #1, #6, #7, #3. Nye County Department of Natural Resources and Federal Facilities, December 1999.
[8] Based on DOE estimates of population within 50-miles of the repository site: 1997 (Quarter 1-4) and 1998 (Quarter 1), as requested from DOE.
[9] See Figures 6a-c: Nye County Population Monitoring Program.
[10] See Figures 7a-c: "Baseline Economic and Demographic Projections for Nye County, Nevada", Nye County Department of Natural Resources and Federal Facilities, January 1998, and Nye County Economic-Demographic Reports.

19 cont. It is apparent that baseline model runs were conducted in preparing estimates of the Draft EIS estimates of the economic impacts of the Yucca Mountain Project from 2010 through 2035 (pg. 4-44). However, these baseline projections are not presented or discussed in the Draft EIS projection. Thus, the Draft EIS presents no information about the context of the socioeconomic conditions affected by the Yucca Mountain Project in Nye County, nor does it recognize the ongoing local economic development efforts aimed at improving the post-Cold War economic conditions. There is no recognition by the DOE of any intent to avoid harm to this locally planned economic future.

Other Relevant Comments on Yucca Mountain Draft EIS

Comment: p. 3-89, 2nd paragraph

20 The statement "Drilling continues at a rate of about two wells a year (Buqo, 1999, page 34)" is incorrect and does not accurately reflect the referenced citation which states, "To date, about 7,000 domestic wells have been drilled in Pahrump Valley and new wells continue to be drilled at the rate of about 700 wells per year" (Buqo, 1999, pp. 35-36)". The EIS needs to be revised to accurately reflect the information presented in this and any other source documents.

Comment: p. 3-89, 4th paragraph

21 The discussion concerning wastewater treatment in southern Nye County is incorrect....the community of Beatty is not reliant on domestic septic systems. The EIS should be revised to accurately reflect the conditions in Nye County.

22 **Comment:** p. 5-39, Section 5.6 Consequences of Chemically Toxic Materials

An evaluation of the human health impacts from lead should be included in this section.

23 **Comment:** p. 8-59 through 8-73, Section 8.3.1

The EIS should state that chromium groundwater concentrations would exceed the Maximum Contaminant Level at the 95th percentile for the Inventory Module 1 high thermal load scenario at 5 and 20 kilometers.

24 **Comment:** p. 9-5 to 9-6 Section 9.2.2.2, [Mitigating Measures for] Groundwater

The Draft EIS states that "The selection of a potential site with favorable characteristics is a fundamental impact reduction measure" is misleading and should be deleted. Site selection is not a mitigating measure.

25... With regard to the groundwater measures under the proposed action, it must be clearly stated in the Draft EIS that in spite of all of the wonderful characteristics of the site, the Performance Assessment results indicate that the repository will leak and that the groundwater will be contaminated.

25 cont. The statement that, "The sparsely populated hydrogeologic basin into which groundwater from Yucca Mountain flows is closed, providing a barrier to a general spread of radionuclides in the event waste packages were breached and radionuclides reached groundwater" is incorrect, misleading, and should be deleted from the EIS. The Jackass Flats hydrographic basin is not closed nor is the Amargosa Desert hydrographic basin. There is no barrier between the general spread of radionuclides from the repository to receptor populations in Nye County.

26 **Comment:** p. A-18 - Table A10

The summation of the grand totals for the individual radionuclides should be calculated and presented in this table.

27 **Comment:** p. C-9, Section C.2.13

The Draft EIS states "the implementation of the proposed action could potentially affect the water supply in Death Valley National Park, which is down gradient from Yucca Mountain". As such, the region of influence for the water resources impacts of Yucca Mountain clearly extends to the regional discharge point of the groundwater flow system in which it is located. The EIS section on cumulative impacts should be revised to incorporate the larger area of influence.

28 **Comment:** p. I-8

The Draft EIS states "Based on decay equilibrium calculations for the first 1,000,000 years after repository closures, the error from neglecting all other nuclides is about 5 percent of the total radiological dose rate (DOE 1998a, Appendix C, page C6-2 and Figure C6-1)". The reference citation is incorrect and should be changed to TRW 1998s.

29 **General comment:**

The EIS should cite original source documents when citing references rather than citing DOE NEPA documents that summarize the information. Secondary citations of this type are numerous throughout the Draft EIS and make the task of verifying the content of the Draft EIS more difficult and very time consuming. The EIS should be revised to cite only original source documents and not intermediate DOE documents, especially when referring to data and other technical information.

Attachment 1: Oral Statements of Nye County Commissioners as Presented at the Washington, D.C. Public Hearing, held October 26, 1999

Nye County's Concerns Regarding the Draft Environmental Impact Statement for a High-Level Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada

Commissioner Jeff Taguchi

Nye County, the Situs County for the proposed repository and whose primary focus is the health and safety of its residents, remains neutral in its position regarding the proposed action.

30 **Nonetheless, Nye County finds that the DEIS is inadequate, and is calling for a second draft.**

Nye County, Nevada is the situs county for the proposed spent fuel and high-level nuclear waste repository at Yucca Mountain. The residents of Nye County will be those most affected by the transportation and disposal of the wastes from 77 sites located across the United States.

31 Based upon our initial review of the Draft EIS for Yucca Mountain, Nye County believes that the document is inadequate and has already called for the preparation of a second draft or supplemental draft. Our conclusions are based on the County's data and analyses intended to determine the impacts that could result from a repository. Copies of our work, work that was funded by the Department, have been provided to the DOE.

The Nye County Board of Commissioners has taken no position, either in favor of or in opposition to, a repository facility at Yucca Mountain. Nye County recognizes that it cannot affect the outcome decisions regarding the project. Thus, Nye County has approached the Yucca Mountain proposal objectively in order to act in the best interest of County residents. Furthermore, as part of its responsibility under the NWPA, the County conducts independent oversight in scientific and demographic investigations of the Department's activities, and recognizes that neutrality is a critical element necessary to ensure the credibility of our programs.

The Nye County Board of County Commissioners will continue to remain officially neutral on Yucca Mountain until directed otherwise by the residents of Nye County. Consistent
32 with our position of neutrality, Nye County maintains that should the proposed repository at Yucca Mountain goes forward, then it must be done in a safe manner with ***no*** added risk to Nye County's citizens.

The disposal of the nation's spent nuclear fuel and high-level wastes at Yucca Mountain is one of the most significant federal actions ever undertaken in terms of cost and magnitude, but more important are the long-term implications for the health and safety of the present and future generations of Nye County residents.

33 Nye County recognizes that the permanent isolation of the wastes that are currently in storage at scores of sites across the United States, is an essential element of our national energy policy. Nye County also recognizes that the disposal of these wastes at Yucca Mountain will reduce the threat to the natural resources, and the public dependent upon those resources, at each of those sites.

However, the United States must recognize that the risk reduction in communities across the country will result in the focusing of those risks on a single jurisdiction, my jurisdiction, Nye County. The disposal of these wastes, with a total radioactivity on the order of *14 billion curies*, will most certainly render the environment of Nye County vulnerable to contamination well into the future and will pose a threat to the citizens in the shadow of the repository that will last, for all practical purposes, in perpetuity.

Therefore, it is incumbent upon Nye County, the United States, and the decision-makers to be fully aware of the direct, indirect, short-term, and long-term impacts of the proposed
34 action. I am sorry to say that the Draft EIS does not adequately define, evaluate, and assess those impacts.

In its review, Nye County found that the Department has not adequately addressed the contribution to cumulative effects on the resources, ecosystems, and human communities of the County that will result from a repository at Yucca Mountain. The impacts of past federal actions, including the residual contamination from more than 900 atomic bomb tests, have already sacrificed the groundwater resources under more than 250 square miles of Nye County. The withdrawal of lands from public use for the NTS, Air Force bombing ranges, and the federal management of millions of acres of national parks, forests, and wildlife refuges have resulted in millions of dollars of lost opportunities from those lands.

Because of its location and characteristics, Nye County and its residents have been disproportionately impacted by past and ongoing federal actions. Yucca Mountain will significantly add to these impacts. Yet, the Draft EIS portrays to the decision-maker that the Yucca Mountain Project is just another casual federal action with no more impact than clearing a road through a forest. Nothing could be farther from the truth.

35... The proposed repository at Yucca Mountain raises a number of concerns to the citizens of Nye County and the Nye County Board of County Commissioners. First and foremost are the concerns related to health and safety impacts. These include a number of transportation issues. The national transportation network shown in the Draft EIS points to the fact that the shipment of wastes, whether by truck, rail, or intermodal routes, will funnel *all* of the waste shipments through Nye County. The United States must take all necessary steps to insure that 1) the wastes are safely transported and measures necessary to ensure safe transport are implemented; 2) Nye County residents are not subjected to additional risks, whether radiological or safety-related; and 3) Nye County be given the capability to respond to any accidents within its jurisdiction.

The transportation analysis in the Draft EIS fails to consider the safety hazards along the specific routes that are analyzed and thus fails to identify site-specific safety impacts;

35 cont. instead the Department cites DOT regulations as the basis for safe transport on two-lane highways in Nye County. Furthermore, by not including the mitigation measures required to safely use these roads for such a shipping campaign, the Department has failed to inform the decision-makers of an entire realm of impacts that would accompany repository operations.

36 Finally, there is the question of equity. The risks posed by the spent fuel and high-level wastes across the United States aren't going away....they are going to Nye County. Nye County will bear the burden of risk reduction in each of the counties where the spent fuel and DOE facilities are located, just as they must bear the legacy of more than 300 million curies of radioactivity left from the nuclear weapons testing era. Once again Nye County is being called upon to host a facility that carries with it an inherent risk and stigma that will last, for all practical purposes, in perpetuity.

37 How much will one County be told to do in the name of national interests? Nye County has faithfully served the nation's need for secure facilities for the testing and development of nuclear and conventional weapons and has received only negligible benefit from these actions. The soils and water resources have been contaminated and the water resources over large regions have been effectively taken by land withdrawals. The proposed repository at Yucca Mountain will result in further contamination of the County's groundwater resources and additional withdrawn land.

The adverse cumulative impacts associated with the proposed repository must be adequately mitigated. A comprehensive package of compensation and equity offsets must be put forth as part of the proposed action so that the County has the wherewithal to insure the long-term health and safety of its residents. Anything less would be unfair.

Nye County Position Regarding the Adequacy of the DOE's Yucca Mountain Draft Environmental Impact Statement

Commissioner Bob Davis

38... **The Nye County review finds that the Draft Impact Statement likely is inadequate and has identified several deficiencies. Furthermore, the Draft Impact Statement meets neither the letter nor intent of National Environmental Policy Act (NEPA) or the Nuclear Waste Policy Act (NWPA).**

Nye County strongly urges the DOE to address the deficiencies, and reissue second draft or supplemental Draft Impact Statement for public review and comment.

The NWPA provides relief from three specific requirements of NEPA; it does NOT provide a "road map" for the repository EIS. The provisions of NEPA continue to be the road map for the development of EISs.

39 The DOE's assumption that NWPA provides a road map for the EIS has resulted in a narrowly scoped, essentially myopic viewpoint of the locally relevant and important issues associated with implementing the NWPA.

Nye County believes that the Draft Impact Statement should adequately assess most aspects of implementing the NWPA, not just repository-specific action (construction, operation, transportation, closure). The EIS must also evaluate related NWPA implementation activities, as might be associated with mitigation, equity, and compensation. By failing to address these aspects of NWPA implementation, the EIS cannot accurately portray to the President, the Secretary, or the public, the range of potential impacts to the natural and human environment.

Some specific inadequacies of the Draft EIS include:

DOE's selection of alternatives fails to meet the intent of NEPA, even as modified by the NWPA.

40 First, alternative scenarios for implementing the NWPA, including the mitigation provisions of Section 116, are not included. Only a "no mitigation" alternative is evaluated. The full range of alternatives to implement repository construction, operation, transportation, and closure should include:

Scenario 1 - No mitigation measures
Scenario 2 - Financial mitigation measures only
Scenario 3 - Physical mitigation only, such as alternative water supplies and/or new interstate highway and other transportation system improvements
Scenario 4 – Mix of financial and physical mitigation measures

41 The no action alternative scenarios are, even by the Department's admission, speculative in nature, and the assumptions for institutional control have no technical or historical basis. Such is the baseline "No action alternative" which the Department has examined in great detail. Yet, on-going NRC licensing activities that would directly influence the implementation of the NWPA (connected actions), and could also affect the need for a repository, are not even evaluated.

42 Second, the Cumulative Effects analysis introduces a speculative new action alternative, based on public scoping comments, that is not currently under consideration by any branch of government. Nye County applauds the Department's responsiveness, but would like to know: If DOE considers scoping comments to be a reasonable basis for developing and evaluating an alternative, then why were Nye County, Affected Units of Local Government, and other local scoping comments dismissed from further consideration and evaluation?

43 With respect to the affected environments, the DEIS does not define and select appropriate Regions of Influence for analysis; the ROIs focus the analysis on the direct impacts, and do not allow for identification of the indirect impacts. For example:

DOE has grossly overestimated the areas potentially affected by the implementation of the "No Action" alternative, while unreasonably restricting the areas considered in evaluating effects from the proposed action. In doing so, DOE does not consider the effects on communities, jurisdictions, and availability of natural resources.

DOE has not used more recent and more accurate Nye County data collected in accordance with accepted methods. Demographic work performed by Nye County and funded by DOE, was ignored, while DOE used decade-old census data in their analyses instead.

DOE assumptions used to define affected areas in the vicinity of the proposed repository fail to consider regulatory, jurisdictional, and socioeconomic constraints on resource availability and use.

As noted, the DOE approach to selecting ROIs, data, methods, and assumptions, has resulted in narrowly focused analyses that are incapable of identifying impacts to Nye County residents and communities. The inability to identify impacts, either direct or indirect, results in a failure to review significant and adverse impacts to the low-income and minority populations living in Nye County who may be disproportionately affected by the repository project. Nye County, will as part of its formal comments, provide DOE with the data and relevant assumptions that allow for adequate review and identification of direct and indirect impacts.

DOE in their analysis of Cumulative Impacts states that their approach "generally" follows the CEQ's 1996 guidance. Nye County strongly disagrees, especially with respect to water resources, land withdrawals and land use, transportation and human health and safety, and potential socioeconomic impacts related to stigma and risk perception.

Nye County has prepared cumulative impact analyses in the areas of water resources and land withdrawals, and is preparing similar analyses related to transportation that conform to CEQ guidance. Nye County will provide these analyses as part of its formal review, and strongly urges the DOE to incorporate them as an opposing technical viewpoint, as well as the viewpoint of the situs County.

38 cont. In conclusion, because of the inadequacies that I have briefly described, Nye County believes that the Draft EIS neither appropriately implements NEPA nor the NWPA; does not adequately portray the affected environments in the vicinity of the proposed repository or transportation routes; and fails to identify the impacts that could be reasonably expected
44 to occur as a result of repository actions. This failure to identify the impacts has led DOE to erroneously conclude that the repository can be constructed, operated, closed, and the waste transported through the hearts of our communities, without the need for mitigation.

Finally, regardless of the DOE's findings, the NWPA requires that mitigation measures be considered, and as such, should have been included in the proposed action and its analysis. Without these elements, Nye County finds that the Draft EIS is inadequate and cannot accurately portray the range of impacts that could be expected to occur if the repository program goes forward. Thus, Nye County is calling for a second or supplemental DEIS for agency and public review and comment that includes an action proposal that incorporate mitigation measures as an integral part of the alternative.

Attachment 2: Summary of Other Oral Comments

Implementation of the NEPA and the Administrative Process

45 **Nye County, the situs county that may receive 14 billion Curies of radioactive waste within their borders to be stored in perpetuity, has not been afforded a voice in the NEPA process.**

Nye County, the situs County for the proposed repository, has attempted to participate in the scoping and preparation of this EIS. Because of the importance and magnitude of this proposed undertaking, Nye County believes that the interplay of issues between the repository, natural resources, and the human environment, could have best been addressed in the EIS analyses by affording Nye County cooperating agency status. Whenever possible, and in accordance with CEQ recommendations and guidance, Nye County has fairly and effectively partnered with other federal agencies in the conduct of NEPA reviews, including, most notably, the DOE's Site wide EIS for operations at the Nevada Test Site.

Nye County requested and was repeatedly refused cooperating agency status in the preparation of this EIS. The refusal by DOE to allow our direct participation is this important process has resulted in a narrowly-focused EIS that underestimates the numbers of our citizenry, ignores our communities and businesses, and does not acknowledge the severity of potential impacts that can be reasonably expected to occur, should the repository go forward.

Nye County notes that participating in the NEPA process, or other federal agency interactions, is not a guarantee that local issues stemming from the implementation of federal actions will be addressed. In other recent reviews in which Nye County has participated, federal agencies did not recognize nor acknowledge the effects of their actions on the County, its citizens, businesses, or its environment, within the NEPA documents that they prepared.

NEPA affords local governments the opportunity to participate in the NEPA review, and to offer their insights, expertise, and knowledge of the local environment, especially when an action is site specific, as is the YMP repository action. NEPA also allows, and the President's Council on Environmental Quality recommended first in 1984, and again in July of 1999, that local governments be closely involved in the NEPA process, even as cooperating agencies. Thus, at a minimum, the EIS should fully acknowledge the views of Nye County, the host County. The viewpoints, analyses, and mitigation measures identified by the County in its impact report, are cited but not incorporated, and are not considered in the proposed action analysis.

46... The DEIS identifies opposing technical viewpoints. Yet, Nye County's work in impact analysis is identified as a local viewpoint, but not an opposing technical viewpoint. Although Nye County agrees with the DOE on many technical issues, our impact analysis, follows federal NEPA guidance and uses more recent and site-specific data. Our findings

46 cont. while different, are technically valid, and should be so identified in the EIS as opposing technical viewpoints.

47 DOE in the YMP DEIS fails to identify several of the indirect, direct cumulative, and indirect cumulative impacts in the locale of the proposed action, as required by NEPA at 40 CFR 1508.27. In this regard, the DOE and other federal agencies have been slow to acknowledge that such impacts occur, and consider implementing appropriate mitigation measures. Nye County's analyses and evaluations identified a range of direct and indirect cumulative impacts (land use, water resources, lost economic opportunity, and others). The County believes that these impacts, although adverse and significant, can be mitigated through various measures. At a minimum, they must be acknowledged in the EIS.

48 Finally, the DOE informed Nye County, in correspondence noted in an EIS appendix, that it is "no different" than any other local government, state, or federal agency potentially affected by the transportation of waste. Nye County invites DOE to explain and clarify this conclusion, given that 14 billion curies of waste will be disposed of in Nye County.

As the party most affected by the Yucca Mountain proposal, Nye County will continue to identify environmental issues, the potential impacts, and appropriate mitigation measures, and will ensure that the County's position is made part of the DOE's Administrative Record for the NEPA process. Our written comments will be submitted at the end of the 180-day public comment period.

Cumulative Effects of Federal and Actions on Nye County Communities and County Planning Efforts: Water Resources

Communities in Nye County are already experiencing water supply problems. The overwhelming presence of federal agencies and federal lands precludes the implementation of standard mitigation measures.

49 The Nye County Nuclear Waste Repository Office has prepared the Nye County Water Resources Plan. Part of the evaluations focused on Pahrump Valley. It is projected that the community of Pahrump will experience water shortfalls in the near future, and water importation has been identified as one alternative for addressing the expected shortfall.

Water importation is not a new concept. Already the Nevada communities of Tonopah, Logandale, Overton, and Virginia City, as well as major cities like Tucson and Los Angeles are importing groundwater to meet water demands. Because of the overwhelming presence of federally controlled lands in Nye County, water importation will at best be costly, and at worst will be prohibitively expensive.

Nye County cannot obtain additional groundwater supplies from the east because Las Vegas is already over appropriated and over pumped. To the south and southwest, water cannot be imported from California because of the Mojave National Preserve and Death Valley National Park. To the west and northwest, the presence of the endangered species at Devils Hole, Ash Meadows National Wildlife Refuge, and areas designated by the Bureau of Land Management as Areas of Critical Environmental Concern have resulted in federal policies to obstruct water development and use in Nye County communities.

To the north, groundwater in the heart of Nye County cannot be developed because of the presence of 300 million curies of radioactive contamination in or near the water table from the underground nuclear testing at the Nevada Test Site. The proposed repository is predicted to leak additional radioactive contamination into the aquifers in the southwestern portion of the Nevada Test Site. Water that is currently clean and potable will be contaminated, if DOE's Performance Assessment is correct. This significant adverse impact on water resources must be mitigated; Nye County believes that these impacts can be lessened using existing technologies that are slightly more advanced than the proposed drip-shields.

50... In total, the United States has implemented a policy of permissible pollution upgradient of the communities of Amargosa Valley and Pahrump and absolute preservation of the groundwater quality and quantity in the areas downgradient of these communities. Nye County, in their water resource planning efforts is between the proverbial rock and a hard place. Yucca Mountain will perpetuate the policy of permissible pollution and will further reduce the quantity of water that is available to meet future water demands in the County.

Under 40 CFR 1508.18 (b)(3) NEPA mandates that the impacts of federal policies must be evaluated in an EIS. The Yucca Mountain EIS must be revised to address the impacts of these contrasting federal water resource policies. The YMP DEIS does not evaluate the

50 cont. cumulative impacts of implementing these federal policies and actions, on a regional backdrop of rapid growth.

In short, Nye County has faithfully served as the nation's sandbox for almost half a century. Unfortunately, the Department of Energy and the Air Force have contaminated their portions of the sandbox and the Department of Interior demands that their portions be left pristine. These policies have had far reaching consequences for the County and greatly
51 hamper water-planning efforts. Should the repository at Yucca Mountain go forward, a guarantee of safe and adequate water supplies to the citizens of Nye County must be a lynch pin of any mitigation, compensation, or equity offsets. Copies of the report, which have been quoted and misquoted, in the Draft EIS are available on the Yucca Mountain home page.

52 Let me briefly summarize the results of Nye County's water resource studies for the record. Our evaluations found that the direct impacts of water withdrawals for the proposed repository will be limited to a localized lowering of water levels that was not deemed to be significant. However, the evaluation did find that the predicted leakage from the repository and the cumulative impacts of the proposed repository will indeed be significant and that mitigating measures must be implemented. The Draft Yucca Mountain EIS is inadequate with regard to its evaluation of impacts on water resources and corresponding mitigation and must be revised extensively.

The cumulative impacts on water resources will include the direct and indirect impacts of: 1) the total radiological burden that will be imposed on Nye County; 2) the impacts of federal land withdrawals on water resource availability: 3) the impacts of federal policies regarding nuclear weapons testing, waste disposal, and environmental protection; and 4) the water resource use and management practices on both private and federal lands in the County.

53 The Department of Energy, by using a reduced region of influence, limited their analysis to only the direct impacts of their water withdrawals from a single basin while ignoring documented impacts that occur over a much broader region. Further, the Department ignored other federally prepared reports that detailed the direct, indirect, and cumulative impacts of Department of Defense, Energy, and the Interior actions over the same region. DOE's approach is inconsistent with the CEQ guidance for considering cumulative impact assessment under NEPA and with 40 CFR 1508.25.

54 With respect to cumulative impacts, the Yucca Mountain EIS finds that the potential impacts to groundwater would be small, limited to the immediate vicinity of the land disturbances associated with the repository, and that some minor incremental risk would occur from drinking the groundwater down gradient of the repository at some distant time in the future. These conclusions are inconsistent with statements in the Draft EIS.