

**SUPPLEMENT TO 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  
(DOE/EIS-0250D-S)**

**FORMAL RESPONSE SUBMITTED BY  
CLARK COUNTY, NEVADA  
July 5, 2001**

*Legacy/maim-21*

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**Background**

This formal response is submitted on behalf of the Clark County Board of Commissioners. It should be considered in addition to previously submitted formal responses to previous Department of Energy (DOE) documents, including the Environmental Assessment (1985), Scoping Document (1994) and the Draft Environmental Impact Statement (DEIS). All previous comments made by Clark County are hereby incorporated by reference.

Since 1983 Clark County has been an active participant in monitoring the DOE Yucca Mountain nuclear waste program efforts. In 1988, DOE designated Clark County as an “*affected unit of local government (AULG)*” under provisions of the Nuclear Waste Policy Act of 1987. The designation was an acknowledgement that activities associated with the Yucca Mountain Program could result in considerable impacts to our citizens and community. The concern about potential impacts was further emphasized by the Clark County Board of Commissioners’ (the Board) approval of resolutions on January 8, 1985, April 5, 1988 and March 7, 2000 opposing the siting of a repository at Yucca Mountain. The Department of Comprehensive Planning has been designated by the Board to monitor Yucca Mountain Program activities.

On February 15, 2000 Clark County submitted to DOE an extensive document detailing comments associated with the DEIS. The Board also approved a resolution expressing concerns about the inadequacies of the DEIS in describing and analyzing potential impacts to our community. Of primary concern was the identification of a number of transportation routing and rail options in Clark County and Southern Nevada without a commensurate evaluation of the potential impacts to our tourist-based economy and quality of life.

Subsequently, the Board requested in its February 15, 2000 resolution that “*Since Clark County and other issues, appropriately required by the National Environmental Policy Act, are not adequately addressed in the DEIS, a new DEIS or a supplemental EIS for Yucca Mountain must be prepared by DOE to address failures in the current DEIS.*”

**General Comments**

Clark County officials continue to be concerned that the DOE has failed to formally respond to any of the concerns raised in the past, in particular the formal response by Clark County to the DEIS. There was an expectation on behalf of commentators to previous documents that the SDEIS would attempt to address these concerns. Instead, the SDEIS is focused on a new proposal for repository design, and at best inadequately addresses, or at worst ignores, the issues that have been identified as problematic in previous formal responses and comments. In our opinion, the SDEIS is an inappropriate vehicle to introduce a “*new proposed action*” such as the flexible repository design described in the SDEIS.

Further, the new design seems to violate the terms of the Nuclear Waste Policy Act in two key areas. One area is the fact that the new design heavily relies on engineered barriers, and not on the geology of the mountain itself, as required under the Act. The fuel blending and cooling facilities referred to in the SDEIS are *de facto* interim storage. The Act prohibits operating of an interim storage facility and a permanent repository on the same site. Another glaring omission that flies in the face of both NEPA and the NWPA is the lack of consideration of a programmatic EIS process, particularly for construction of the required infrastructure to support the project. Similarly, life cycle cost estimates for should have been included to reflect this *new proposed action*.

Clark County concurs with the Nuclear Regulatory Commission (NRC) and the Nuclear Waste Technical Review Board (NWTRB) that the introduction of a flexible design at this stage of the site characterization process offers nothing more than a moving target. This forces oversight agencies and the public to continually reevaluate data and reassess impacts that many times are vaguely addressed, or not at all addressed, by the DOE.

The SDEIS once again fails to address a multitude of issues of concern to the public elected officials and others in Clark County. Given that the DEIS listed a number of potential transportation routing options in Nevada, and in particular the Las Vegas Valley (e.g., the Beltway), it is unconscionable that these issues and related potential primary and secondary socioeconomic impacts have not yet been evaluated.

Clark County, the State of Nevada and the other affected governments are currently in the process of developing "Impact Assessment Reports" (IAR) that are intended to substantively address a host of significant community impact not evaluated in the DEIS. Affected government IAR information will accompany the *Site Recommendation*. As part of the National Environmental Policy Act (NEPA) DOE is preparing a *Public Response Document* (PRD) to inform the public and others on how comments to the DEIS were addressed. It is our understanding that current plans are to release the PRD at the same time as the Final Environmental Impact Statement (FEIS.) Clark County, however, has requested that DOE release the PRD well in advance of the FEIS release date to enable IAR preparation efforts to be more focused.

The Yucca Mountain Project is national in scope. It creates the potential for impacts in much of the United States, largely with respect to the transportation of the waste. By limiting the scope of inquiry, however, the SDEIS perpetuates an incomplete and inadequate understanding of the potential effects of a project of this magnitude and complexity. Moreover, it discounts the views expressed by a large number of concerned citizens throughout the nation who participated in last year's DEIS public meetings. Similarly, it conveys the message that these issues are not important.

Since the SDEIS does not describe a specific design for the repository, the information provides nothing to increase the public's knowledge of potential environmental impacts. Also uncertain is how DOE can provide a "site recommendation" when the SDEIS and Science and Engineering Report (S&ER) are still examining "flexible" repository concepts. Absent a specific

design, it is also unclear how the site can be evaluated against a specific Environmental Protection Agency exposure standard siting guidelines.

Current TSPA analysis, as communicated to the Nuclear Waste Technical Review Board, during their June meeting showed that the DOE is now using an analysis that includes early waste canister failures. This means that the base case scenario, not including disruptive events, now shows releases during the expected compliance period. This is an outcome that has not been included in either the DEIS or the SDEIS. This is a major change in the long-term performance of the proposed repository and should be open for public comment prior to the release of the final EIS.

The following comments related to specific concerns with respect to those issues that have not been adequately addressed in the SDEIS, and that are of the most critical concern to Clark County.

### **Repository Engineering/Design**

The site suitability decision on Yucca Mountain should be made with the confidence that the researchers building the predictive tools are adhering to high professional standards. Likewise, there should be strong assurances that the tools employed in the decision-making process have some validity. Reliance on these basic issues, however, is also questionable. The DOE Office of Quality Assurance, for example, issued a corrective action report on May 3, 2001, which, under the description of Condition #6 noted that "*Yucca Mountain personnel failed to consistently implement . . . requirements (AP-3.10Q) for model validation. Based on the lack of progress to resolve this deficient area through various deficiency reports the area of model validation is considered to be a significant condition adverse to quality.*" Based on these deficiencies, both of which impact the TSPA-SR, it is imperative that the SDEIS and the Science and Engineering Report (S&ER) be reissued after the full impact of these conditions on the TSPA-SR and supporting documentation have been evaluated.

**Page 3-19, Section 3.2. Total System Performance Assessment (TSPA-SR)** will be the vehicle that is used to predict the long-term performance of the proposed repository. It is, therefore, one of the more critical elements in a Site Recommendation decision. On May 17, 2001 the NRC, in correspondence to the DOE, noted calculation errors and inconsistencies during a review of TSPA-SR documentation. The errors and inconsistencies in the TSPA-SR and the model validation issues, however, basically will cast a doubt on any conclusions reached using the TSPA-SR. With no confidence in the calculations it places the data in Table 3-14 in question, and makes statements such as the "*waste packages would remain intact for as long as or longer than for the higher temperature mode*" suspect.

**Page 2-8 (Lower-Temperature Repository Operating Mode)**, notes that "placing younger fuel in surface aging facility" could vary thermal outputs. In essence this is recommending the development of an interim storage facility at the Yucca Mountain site. Construction of such a facility, of course, violates the provisions of the 1987 Amendments to the Nuclear Waste Policy Act (NWPA), which prohibits the siting of a repository and an interim storage facility in the

same state. In addition to its illegality, the construction of such a facility would require a separate EIS process. Certainly, it must be acknowledged that any additional surface facilities necessary to implement the *new proposed action* would require a separate EIS process. Indeed, as is the case with the Private Storage Facility in Utah, proposed for the Skull Valley Goshute Reservation, it would require a separate EIS. Ideally, the EIS processes for the DEIS and the SDEIS would have been programmatic in nature, and more comprehensively addressed all of the environmental issues inherent in what the DOE recognizes as “the largest public works project in history.”

Page 2-20 illustrates a number of repository layouts. The “Flexible Design” and “Low Thermal Load” layout options extend further north than the proposed design. These, therefore, appear to extend closer to a location where, in previous analyses, the groundwater level would be closer to the repository horizon. This is not discussed or described, however, in the SDEIS.

One of the primary reasons for issuing the SDEIS would appear to be to evaluate the performance of a lower temperature repository option. It is not clear to Clark County how this evaluation can be made when some of the near field models used are not coupled and do not consider the critical temperature dependence of coupled chemical hydrological processes and their subsequent effect on corrosion.

On Page 3-20 Section 3.2.2 the DOE indicates that the software for the integration of the TSPA has been changed. Even though this is an important and major change from the DEIS no analyses were shown that would indicate the scope and effect of this change on the TSPA.

## **Fuel Blending Proposal**

The Fuel Blending process mentioned in the SDEIS is not discussed in detail in either the DEIS nor in the SDEIS. The SDEIS should contain a full description of the proposed fuel blending process. This description should include a complete estimate of the NEPA cognizable impacts that will occur as a result of the proposal. This information is not contained in the SDEIS. Clark County has two specific concerns with regard to the fuel blending facility. The first is impact related. The second is perceptual.

The fuel handling facility necessary to implement the action proposed by the SDEIS is itself a significant impact that is not assessed in the SDEIS. There are numerous unanswered questions about the facility. These questions should have been addressed in the SDEIS.

- How many rods will the facility handle at a time?
- What operations are performed on the rods?
  - Inspection
  - Removal from packaging
  - Characterization
- Replacement into packaging
- How many people are employed?
- What is the size of the budget for the facility?
- How long did it take to construct? License? Etc...

- What special emergency management precautions are provided to surrounding communities?

Employment at the facility is expected to reach 2000 persons. Approximately ninety percent of the 2000 persons expected to be employed at the fuel handling facility will live in Clark County. Based on traditional planning calculations the following impacts on municipal services are likely to be experienced.

\$1,972,125	Park Cost
\$375,000	Fire Station Costs
\$155,000	Police Station Costs
\$68,400	Traffic Signal Costs
\$12,236,574	Elementary School Cost
\$5,760,000	Middle School Cost
\$7,860,262	High School Cost
\$28,427,361	Total Direct Costs to Clark County

**Figure 1 Direct Costs to Governments in Clark County due to Fuel Blending**

Clark County is also concerned about the increased likelihood of stigma associated with the fuel blending proposal. The SDEIS proposes to construct a vast, complex nuclear fuel handling facility unlike any other in the world. The nearest similar type of facility is the controversial B-205 plant at Sellafield, England. The B-205 facility has a capacity of 1,500 tons per year. The fuel blending facility proposed in the SEIS will require handling 3,000 tons per year.

The handling of highly radioactive HLW in the pool building will create additional opportunities for accidents. Releases of radioactive materials from accidents may or may not be contained in the pool storage and blending area. The mixing of SNF assemblies of different sizes and different radiological characteristics, from different fuel batches and/or reactors, will create numerous opportunities for errors (e.g. insertion of incorrect assembly in disposal canister, insertion of assembly in incorrect disposal canister cell, etc). Deliberate sabotage also becomes easier and more likely with the additional step of fuel handling. Cleanup after accidents will likely increase worker exposures and generate additional streams of LLW, Mixed Wastes, and possibly HLW.

Publicity about these errors will naturally draw public scrutiny to Las Vegas and to the program itself. Nevada will continue to be stigmatized as a “garbage state.” Clark County will naturally be harmed by this activity. The SDEIS does not examine this problem. It does not state how the DOE proposes to mitigate these stigma effects and it does not provide persuasive evidence that they do not exist.

### **Transportation Impacts**

Transportation system impacts are defined as: changes to the operation, condition, and performance of the transportation network in Clark County, Nevada that are attributable to the

Yucca Mountain Project or the Department of Energy's (DOE) Environmental Management operations. These comments are organized as a discussion of significant issues. After a brief introduction each issue area is discussed.

Unfortunately, it is impossible to prepare definitive comments on the impacts attributable to the *new proposed action* (NPA) due to the DOE's failure to provide specific information about its program. The SDEIS fails to respond to criticism leveled at the DEIS's transportation analysis. For example the SDEIS fails to describe the mix of modes (i.e. rail and truck) necessary to implement the NPA. Another qualification is necessary. The drastic changes to the proposed action contained in the SDEIS invalidate any conclusions contained in the DEIS. To avoid confusion, the Proposed Action described by the DEIS is abbreviated as the PA and the *New proposed action* described by the SDEIS is abbreviated as NPA. Clark County has provided extensive comments about the inadequacies of the DEIS in our comments on that document. These comments will not be repeated here. The salient point is that not enough is known about the DOE's transportation program to adequately assess it. The SDEIS is deficient because it fails to rectify the shortcomings identified in the DEIS.

Transportation of HLW to Yucca Mountain is an indirect effect of the NPA under NEPA because 1) the effects are a consequence of the proposed action (i.e. construction of the Yucca Mountain HLW disposal facility) 2) the effects of this transportation are removed in time and location from the repository itself. The Council on Environmental Quality defines cumulative impact as "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions..." The use of NTS as a Low Level Waste (LLW) disposal site fit this definition. The Waste Management Programmatic EIS (WMPEIS) made it clear that most of the LLW from these sites will be shipped to the NTS for permanent disposal. For the foreseeable future, the most likely mode of transport for these wastes is by legal-weight truck on the highway system. Although the DOE has engaged in a cooperative effort with Clark County to avoid transporting LLW over the Hoover Dam and through downtown Las Vegas, it is clear that if HLW is transported through Las Vegas, the DOE will have little incentive to incur extra expense shipping LLW away from Clark County. Therefore the cumulative impact examined in this report is the effect an 268,000 shipments of LLW from DOE nuclear weapons production sites to the Nevada Test Site (NTS) will have on the transportation system that will be used to transport HLW to Yucca Mountain.

Clark County is within the region of influence of Yucca Mountain Program (YMP) for transportation because Congress identified the interstate highway system as the default route for the transportation of HLW. The most direct route from power generating sites to Yucca Mountain is the interstate highway system through Clark County. Therefore most of the truck trips from shipping sites will pass through Clark County.

The shortest routes from the waste generating sites to Yucca Mountain pass through Clark County en route to Yucca Mountain. Congress anticipated efforts to avoid transportation of waste through particular areas. That is why they designated the Interstate highway system as the default transportation route for the movement of HLW to a repository in the NWPAA. Therefore, any effort to avoid shipping any of these waste streams through Clark County will be met with

requests from other similarly affected areas. The result of these requests will be an uneconomical routing process that will be both circuitous and expensive. Clark County assumes that the interstate highway system through Clark County will be the primary route used to transport waste to Yucca Mountain.

Because the majority of the truck-transported HLW will pass through the county en route to Yucca Mountain, the transportation impacts will be concentrated in Clark County. The Nuclear Regulatory Commission identified Clark County as part of the maximally affected region in the nation in an Environmental Impact Statement.

The DEIS assumed that DOE would be able to ship HLW using Clark County's planned northern and western beltways. However, these "beltways" are unlike beltways in other communities in several important respects. First, Clark County's beltway system is entirely paid for with local tax dollars and is not part of the Federal Highway System. As a result, Clark County's beltway is ineligible as a HLW route under Appendix A of HM 164. Another concern is that the beltway is being constructed as a frontage road rather than as a typical beltway facility. This is another reason Clark County's beltway system is ineligible as a transportation route. This means the primary route used for the truck transportation of HLW is likely to be Interstate 15 and US Highway 95 through Las Vegas. The SDEIS did not consider our comments in this area. However, the assumption that DOE cannot use the Clark County beltway system was used in this assessment.

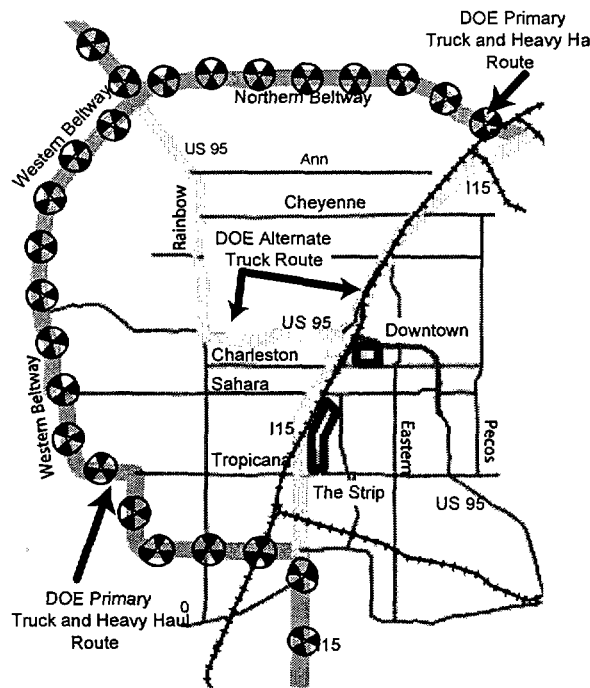


Figure 2 Truck Transportation Routes Through Urban Clark County

The SDEIS fails to examine the consequences of the fuel-blending proposal that is the heart of the NPA. In order to implement fuel-blending, younger, hotter spent fuel will have to be



transported to mix with older, cooler fuel. The addition of hotter fuel has enormous impacts on the transportation system that were not considered in the SDEIS.

Truck transportation casks are licensed to transport five-year old fuel. Rail casks are licensed to transport ten year-old fuel. As a result, the fuel-blending proposal in the NPA requires truck transportation and may eliminate the justification for rail transportation entirely. It is likely that constructing a rail line for a relatively modest number of shipments will be uneconomical. Additionally, moving hotter, younger fuel will prevent the maximum number of fuel assemblies from being transported in each waste package. The likely increase in truck trips cascades through the transportation system. A conservative estimate suggests that the number of truck shipments will double from 2100 shipments per year to 4200 shipments per year. A total of 100,000 truck shipments for the NPA is a reasonable estimate.

The DEIS estimated the consequences of the maximum reasonably foreseeable accident (MRFA) based on 26 year-old spent fuel. The change to shipping younger fuel invalidates the risk assessment provided in the DEIS. The SDEIS should have contained a risk assessment based on the types of fuel that will be shipped. A better analytical approach would establish boundaries of the worst case. That is, the SDEIS should have provided a risk assessment of the MRFA with five-year old fuel and twenty-six year old fuel to describe the effects of both the best and worst cases. The SDEIS fails to describe the fuel shipping campaign. The SDEIS should have contained specific information about the timing and composition of the shipments. The SDEIS fails to provide a description of the national routes that will be used to transport the waste from the reactors to Yucca Mountain.

The fuel-blending proposal may not be feasible because of the standard contracts with utilities that describe the order in which the DOE must accept the SNF from the utilities. It is entirely possible that the fuel-handling facilities will have to be significantly different than described in the SDEIS in order to accommodate a wide range of significantly different types of fuel necessary to make fuel-blending possible. The SDEIS should have carefully described how the NPA will avoid these problems.

The changed numbers of truck shipments increases the number of traffic accidents that can be expected to take place in Clark County. The Bureau of Transportation Statistics accident rate for legal-weight trucks is 233 accidents for every 100,000,000 shipping miles. Therefore, a forecasted number of accidents that will take place in Clark County due to the NPA is approximately 23. None of the costs or transportation system effects due to the NPA are assessed by the SDEIS. These accidents are directly attributable to the NPA. The cumulative impact of the NPA and the shipment of LLW to the Nevada Test also increases.

The number of accidents due to the transportation of LLW to the Nevada Test Site (NTS) for disposal is estimated at 72. Based on historical accident rates, up to eighty-five accidents involving DOE radioactive materials shipments will take place in Clark County. Approximately 3 accidents involving DOE radioactive materials will take place in Clark County each year. The DEIS does not discuss the consequences of these accidents anywhere.

The EPA issued transportation conformity regulations on Nov 24, 1993 to implement section 176(c) (4) of the Clean Air Act as amended. The transportation conformity regulations apply to actions of the FHWA and FTA. Actions of other federal agencies, including other transportation agencies are covered by the general conformity regulations issued by the EPA on November 30, 1993. The DOE is covered by these general conformity regulations.

The Las Vegas Valley is classified by the U.S. Environmental Protection Agency as a serious non-attainment area for carbon monoxide (CO) and particulate matter (PM<sub>10</sub>). The Clark County Regional Transportation Commission is responsible for establishing CO and PM<sub>10</sub> emissions and for demonstrating conformity. Because Clark County is a non-attainment area for air quality emissions, the pollutants generated by the NPA are of concern. Air quality impacts are important to Clark County for regulatory purposes that are not considered in the SDEIS. The construction and operation of NPA transportation facilities effects the ability of Clark County to meet national air quality standards. Failure to meet these standards will harm Clark County's ability to obtain Federal funding for transportation facilities and will generally harm the quality of life in Clark County.

Vehicular emissions are the primary source of CO pollutants, whereas construction activities are the primary source of dust (PM<sub>10</sub>) in the Valley. In addition to vehicle miles of travel, congestion is a significant contributor to increased CO emissions.

Projected carbon monoxide emissions calculated by the Regional Transportation Commission for the projected roadway types, travel speed characteristics, and emission factors using the Mobile 5b model are:

<b>Facility Type</b>	<b>Major Arterial (four lane)</b>
Posted Speed	45 mph
Free Flow Speed	45 mph
Average Travel Speed	35 mph
Congested Speed	20 mph

**Figure 3 Uncongested Travel Speed Characteristics and Carbon Monoxide Emissions**

45 mph	4.87 grams/mile
35 mph	6.82 grams/mile
20 mph	13.51 grams/mile

**Figure 2 Emission Factors and carbon dioxide emission factors**

These emission factors are used to calculate the amount of air quality impact on Clark County attributable to the YMP.

The emissions for the construction phase air quality impact cannot be calculated because not enough information is provided by the SDEIS on the vehicle trips required to construct and operate the facility. During the operational phase of the NPA there will be significant air quality problems. The impacts on air quality due to legal-weight truck shipments will be very substantial. The results of the analysis are presented below.

<b>Pollutants</b>	<b>Truck Air Quality Impacts</b>
CO2	48,213,000
PM10	47,223,000

**Figure 3 Total Grams of Air Pollutants During the Operational Phase**

The cumulative impacts due to the shipment of LLW to the NTS are assumed to be the emissions from the legal-weight trucks that will traverse the valley en route to the NTS. Because these shipments take place on the region's freeways, the emission factors for higher speeds are used. The cumulative impacts of LLW transportation are below.

<b>Air Quality Impact</b>	<b>Cumulative Impacts</b>
CO2	182,274,840
PM10	869,450,987

**Figure 4 Cumulative Air Quality Impacts**

The upper boundary of the air quality impacts on the residents of Clark County due to air quality pollution caused by the NPA and the disposal of LLW at the NTS are:

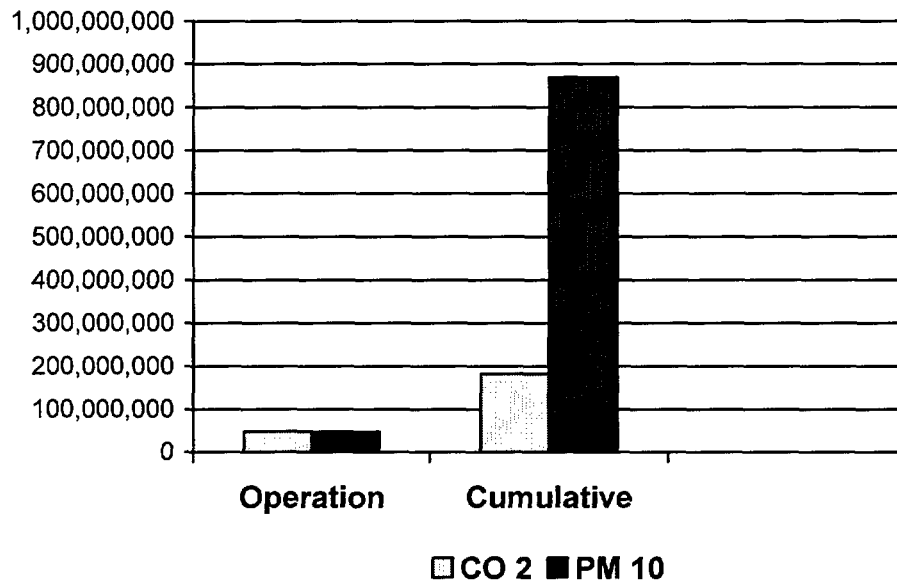


Figure 5 Air Quality Impacts on Clark County

The air quality impacts due to the YMP will substantially degrade Clark County’s air quality. They will make it increasingly difficult for local government to meet air quality goals and could cause other Federal agencies to take punitive action on Clark County due to the YMP. The NPA should have been prepared to accommodate the regional transportation plans and conform to the FHWA’s regulations for statewide planning.

**Public Involvement/Procedure**

Clark County’s comments to the DEIS were submitted to DOE on February 15, 2000, well over a year ago. The DOE has not responded to the issues raised in our review. In fact, the DOE asserts that they will not be making any formal response back to any of the comments, and have stated that they intend to merely append the public comments to the Final Environmental Impact Statement (FEIS) that will be submitted to the Secretary of Energy. The DOE’s failure to respond to the public comments could suggest a lack of recognition of public concern.

Finally, it is interesting to note that national stakeholders do not appear to have an opportunity to express their views on the SDEIS at public hearings. In the original review of the DEIS, citizens in venues throughout the nation, appropriately, had opportunities to offer public comments. Hearings held in other parts of the nation will enable others to consider the SDEIS, important since its treatment or non-treatment of issues will affect them as well. Furthermore, since there are ten affected units of local government in Nevada and California, DOE should hold also hearings in other areas of Nevada, or in Inyo County in California.

## **Conclusion**

The SDEIS lacks sufficient verifiable data to be relied upon, properly analyzed, or even commented on in a comprehensive manner. The SDEIS lacks sufficient analysis and full consideration with respect to repository engineering/design, transportation impacts, environmental impacts, and public involvement and procedural considerations. There is serious doubt as to compliance with both NEPA and the NWPA with respect to the proposed “flexible” repository design. Clark County’s position is that sufficient unanswered questions exist to call into question the accuracy, adequacy and appropriateness of the SDEIS. The DOE is therefore urged to withdraw the SDEIS until such time as the DOE is prepared to submit a SDEIS that adequately address both the concerns raised in the DEIS process and the gaps and errors found in the SDEIS in its present form. Further, we urge the DOE to republish the SDEIS incorporating the S&ER to ensure compliance with NEPA regulations.