

From: Mark_Vandeberg@ymp.gov [mailto:Mark_Vandeberg@ymp.gov]
Sent: Wednesday, March 12, 2008 4:11 PM
To: Sullivan, Neil
Subject: STB Application Documents

QA:NA

Neil
Attached are final STB documents

mark

LSN: Not Relevant - Not Privileged
User Filed as: Excl/AdminMgmt-14-4/QA:N/A

From: Bradley Levine@Exchange on 03/12/2008 02:30 PM EDT

To: Gary Lanthrum/HQ/RWDOE@CRWMS, Ned.Larson@rw.doe.gov@SMTP@Exchange
cc: Mark Vandeberg/YD/RWDOE@CRWMS, Kurt Rautenstrauch/YM/RWDOE
<Kurt_Rautenstrauch@ymp.gov>@SMTP@Exchange

Subject: STB Application Documents

- C.htm
- FN 35106 Exhibit N.PDF
- FN 35106 DOE Application for a Certificate of Public Convenience and Necessity.PDF
- FN 35106 Exhibit A.PDF
- FN 35106 Exhibit B.PDF
- FN 35106 Exhibit C.PDF
- FN 35106 Exhibit D.PDF
- FN 35106 Exhibit E_F.PDF
- FN 35106 Exhibit G.PDF
- FN 35106 Exhibit H.PDF
- FN 35106 Exhibit I.PDF
- FN 35106 Exhibit J.PDF
- FN 35106 Exhibit K.PDF
- FN 35106 Exhibit L.PDF
- FN 35106 Exhibit M.PDF

NOTICE:

This message is for the designated recipient only and may contain privileged or confidential information. If you have received it in error, please notify the sender immediately and delete the original. Any other use of this e-mail by you is prohibited.

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 35106

UNITED STATES DEPARTMENT OF ENERGY
--RAIL CONSTRUCTION AND OPERATION--
CALIENTE RAIL LINE IN LINCOLN, NYE,
AND ESMERALDA COUNTIES, NEVADA

APPLICATION FOR A CERTIFICATE OF
PUBLIC CONVENIENCE AND NECESSITY

Mary B. Neumayr
James B. McRae
Martha S. Crosland
Bradley L. Levine
United States Department of Energy
Office of the General Counsel
1000 Independence Avenue, S.W.
Washington, DC 20008
(202) 586-5857

Attorneys for Applicant
United States Department of Energy

TABLE OF CONTENTS

UNITED STATES DEPARTMENT OF ENERGY
--RAIL CONSTRUCTION AND OPERATION--
CALIENTE RAIL LINE IN LINCOLN, NYE,
AND ESMERALDA COUNTIES, NEVADA

APPLICATION FOR A CERTIFICATE OF
PUBLIC CONVENIENCE AND NECESSITY..... 1

 OVERVIEW (Section 1150.2)..... 1

 (a) Brief narrative description of the proposal..... 1

 (b) Full name and address of applicant..... 4

 INFORMATION ABOUT APPLICANT (Section 1150.3)..... 4

 (a) Name, address, and phone number of representative..... 4

 (b) Facts showing applicant's common carrier status..... 5

 (c) Statement indicating whether the rail line will be operated by
 applicant..... 6

 (d) Statement whether applicant is affiliated by stock ownership or otherwise
 with any industry to be served by the line..... 6

 (e) Date and place of organization, applicable state statutes, and brief
 description of the nature and objectives of the organization..... 6

 (f)(1) Officers, directors, and ten principal stockholders of the corporation..... 7

 (f)(2) Resolution of stockholders or directors..... 7

 (g) Name and address of all general partners and their respective interests..... 7

 (h) Name, title, and business address of principals or trustee..... 7

 (i) Details about appointment of trustee, receiver, assignee, or personal
 representative..... 7

 (j) Reference to applications within the previous three years..... 8

INFORMATION ABOUT THE PROPOSAL (Section 1150.4)	8
(a) A description of the proposal and the significant terms and conditions, including consideration (monetary or otherwise) to be paid	8
(b) Details about the amount of traffic and a general description of commodities	14
(c) Purposes of the proposal, public convenience and necessity factors supporting the proposal	18
(d) Map	30
(e) Counties and cities to be served and availability of other rail service; connecting railroads	30
(f) Time schedule	31
(g) Construction of a new line	32
(1) Approximate area to be served by the line	32
(2) Existing and prospective industries in the area	32
(3) Crossings required of other rail lines	33
OPERATIONAL DATA (Section 1150.5)	34
FINANCIAL INFORMATION (Section 1150.6)	36
(a) Proposed financing of construction	36
(b) Balance sheet and income statements	36
(c) Present value determination of project costs	37
(d) Projected net income, based upon traffic projections	38
ENVIRONMENTAL AND ENERGY DATA (Section 1150.7)	38
ADDITIONAL SUPPORT (Section 1150.8)	38
NOTICE (Section 1150.9)	39

- Exhibit A – Resolution of Stockholders or Directors (Not Applicable)
- Exhibit B – Relevant Agreements Regarding Terms, Conditions, or Consideration (Not Applicable)
- Exhibit C – Map (“Area to be Served by Rail Line to Yucca Mountain”)
- Exhibit D – Operating Plan (Not Applicable at this time)
- Exhibit E/F – Balance Sheet / Income Statement for Fiscal Years ~~2005-2006 and 2006-2007~~
- Exhibit G – There is no Surface Transportation Board requirement for an Exhibit G
- Exhibit H – *Draft Supplemental 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 – Nevada Rail Transportation Corridor, DOE/EIS-0250F-S2D and Draft Environmental Impact Statement for a Rail Alignment for the Construction and Operation of a Railroad in Nevada to a Geologic Repository at Yucca Mountain, Nye County, Nevada, DOE/EIS-0369D.*
- Exhibit I— Secretary of Energy’s Transmittal Letter to President George W. Bush, and Secretary of Energy’s Recommendation Regarding the Suitability of the Yucca Mountain Site for a Repository Under the Nuclear Waste Policy Act of 1982
- Exhibit J— *Final Report Rail Transportation Economic Impact Evaluation & Planning, Wilber Smith and Associates 2005*
- Exhibit K— *Shared Use Option: Commercial Traffic Estimates, Ang-Olson and Gallivan. 2007*
- Exhibit L— Presidential Letter to Congress
- Exhibit M— Selected Public Comments in Support of Shared Use from the 2004 Scoping Process
- Exhibit N— Notice Required Under 49 C.F.R. § 1150.9

APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

Pursuant to 49 U.S.C. § 10901 and 49 C.F.R. Part 1150, the United States Department of Energy (“DOE”) hereby applies for a Certificate of Public Convenience and Necessity to construct and operate the “Caliente Rail Line,” the proposed rail line described herein. In support of its application, DOE submits the following information, as required by 49 C.F.R. §§ 1150.2-.9:

§ 1150.2 OVERVIEW

§ 1150.2(a) Brief narrative description of the proposal

The Nuclear Waste Policy Act of 1982, as amended (“NWPA”) (42 U.S.C. 10101 et seq.) establishes a comprehensive framework for the federal government to provide for the disposal of the nation’s spent nuclear fuel and high-level radioactive waste and initiated a process to select a site for a potential geologic repository.

Pursuant to the NWPA, on February 14, 2002, the Secretary of Energy transmitted his recommendation to President George W. Bush for approval of the Yucca Mountain site in Nye County, Nevada (“Yucca Mountain site”) for development of a geologic repository. The President approved the Secretary’s recommendation of the Yucca Mountain site for development as a geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste, and recommended the site to the United States Congress (“Congress”). Subsequently, Congress passed a joint resolution of the United States House of Representatives and the United States Senate designating the Yucca Mountain site for development as a geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste. On July 23, 2002, the President

signed the joint resolution into law (“Yucca Mountain Development Act,” Public Law 107-200). As required by the NWPA, the DOE is preparing an application for submittal to the Nuclear Regulatory Commission (“NRC”) seeking authorization to construct the repository.

In order to fulfill its responsibilities under the NWPA, DOE will need to transport spent nuclear fuel and high-level radioactive waste from the commercial and federal nuclear facilities where these materials are located to the Yucca Mountain site. Following completion of its *Final 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-0250), February 2002 (“Yucca Mountain FEIS”), the DOE announced its selection, both nationally and in the State of Nevada, of rail as the primary means of transporting spent nuclear fuel and high-level radioactive waste to the repository. 69 Fed. Reg. 18557 (April 8, 2004). Currently, no commercial or private rail lines in Nevada serve the repository site. In its Record of Decision issued April 8, 2004, DOE selected the Caliente Corridor for further evaluation for the construction and operation of a railroad in Nevada.

The DOE has prepared a *Draft Supplemental 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 – Nevada Rail Transportation Corridor*, DOE/EIS-0250F-S2D (“Draft Nevada Rail Corridor SEIS”) and *Draft Environmental Impact Statement for a Rail Alignment for the Construction and Operation of a Railroad in Nevada to a Geologic Repository at Yucca Mountain, Nye County, Nevada*, DOE/EIS-0369D (“Draft Rail Alignment EIS”) to

evaluate the potential environmental impacts of constructing and operating a railroad for shipments of spent nuclear fuel and high-level radioactive waste from an existing rail line in Nevada to a geologic repository at the Yucca Mountain site, including potential environmental impacts associated with operating the rail line along the Caliente Corridor for common carriage. The Draft Rail Alignment EIS identifies the Caliente Corridor as the preferred corridor in which to construct and operate a Nevada rail line.

The Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS are attached as Exhibit H of this Application. The Surface Transportation Board (“STB” or “Board”) is a cooperating agency in the development of the Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS and has participated in the development of these documents. For the purposes of this Application, the Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS are submitted in support of the Board’s fulfillment of its responsibilities under the National Environmental Policy Act (“NEPA”), as well as under the Board’s regulations (49 C.F.R. Parts 1105 and 1150).

The purpose of this application is to request a certificate of authority for the DOE to construct and operate a common carrier rail line along the Caliente Corridor. The new rail line would be approximately 300 miles long, connecting an existing rail line near Caliente, Nevada to the Yucca Mountain site. The line would permit the DOE to transport construction materials, spent nuclear fuel and high-level radioactive waste to a repository at Yucca Mountain. The rail line would also promote economic development in rural communities in Nevada along the Caliente

Corridor by making the rail line available for common carriage rail service by commercial shippers.

The rail line would extend north from Caliente, Nevada, turn in a westerly direction and head to near the northwest corner of the Nevada Test and Training Range, and then continue south-southeast towards Yucca Mountain. The estimated minimum construction period is 4 years and the current estimated cost is approximately \$2.2 billion in year 2005 dollars. The current estimated cost of construction is approximately \$2.6 billion in year 2008 dollars. The Draft Rail Corridor SEIS and Draft Rail Alignment EIS reflect the cost estimate in 2005 dollars; the Final Rail Corridor SEIS and Final Rail Alignment EIS will reflect the change in cost estimates from 2005 dollars to 2008 dollars.

§ 1150.2(b) **Full name and address of applicant**

United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

§ 1150.3 **INFORMATION ABOUT THE APPLICANT**

§ 1150.3(a) **Name, address, and phone number of representative**

Correspondence regarding this application should be sent to:

Director, Office of Civilian Radioactive Waste Management
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-6842
Fax: 202-586-6630

Director, Office of Logistics Management
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-4167
Fax: 202-586-1047

Copies of correspondence should also be sent to:

Assistant General Counsel for Civilian Nuclear Programs
ATTN: Bradley L. Levine, GC-52
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-5857
Fax: 202-586-6977
Email: Bradley.Levine@hq.doe.gov

§ 1150.3(b) Facts showing common carrier status

DOE's preferred alternative is for the rail line to serve public needs not only by transporting spent nuclear fuel and high-level radioactive waste to the repository, but also by making the rail line available for common carriage rail service by commercial shippers. On April 8, 2004, DOE published a Notice of Intent announcing that it would prepare an EIS for the alignment, construction, and operation of a rail line for the shipment of spent nuclear fuel, high-level radioactive waste, and other materials from a site near Caliente, Lincoln County, Nevada, to a geologic repository at Yucca Mountain. 69 Fed. Reg. 18565 (April 8, 2004). The Notice of Intent invited comments on among other things, whether DOE should allow private entities to ship commercial commodities on its rail line. In the Draft Rail Alignment EIS, DOE identified its preferred alternative would be to construct and operate a railroad along the Caliente rail

alignment and to implement the Shared-Use Option (allowing commercial shippers to use the rail line for general freight shipments).

§ 1150.3(c) **Statement indicating whether the rail line will be operated by applicant**

DOE anticipates that the rail line would be owned by the DOE and operated by a contractor to the DOE. The DOE anticipates that it would conduct a formal bidding process to award the contract for operation of the rail line.

§ 1150.3(d) **Statement whether applicant is affiliated by stock ownership or otherwise with any industry to be served by the line**

This section is not applicable to the DOE.

§ 1150.3(e) **Date and place of organization, applicable state statutes, and brief description of the nature and objectives of the organization**

The DOE was established by the Department of Energy Organization Act of 1977. The DOE's overarching mission is to advance the national, economic, and energy security of the United States; to promote scientific and technological innovation in support of that mission; and to ensure the environmental cleanup of the national nuclear weapons complex. The NWPA sets forth a comprehensive statutory framework under which the DOE exercises its responsibility for the disposal of spent nuclear fuel and high-level radioactive waste.

The Office of Civilian Radioactive Waste Management ("OCRWM") was established by Section 304 of the NWPA. The OCRWM is headed by a Director, who is directly responsible to the

Secretary of Energy. The Director is responsible for carrying out the functions of the Secretary of Energy under the NWSA. Among these functions is the establishment of "a schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository...."

NWSA § 111(b); 42 U.S.C. § 10131.

§ 1150.3(f)(1) **Officers, directors, and ten principal stockholders of the corporation**

This section is not applicable to the DOE.

§ 1150.3(f)(2) **Resolution of stockholders or directors**

This section is not applicable to the DOE.

§ 1150.3(g) **Name and address of all general partners and their respective interests**

This section is not applicable to the DOE.

§ 1150.3(h) **Name, title, and business address of principals or trustee**

This section is not applicable to the DOE.

§ 1150.3(i) **Details about appointment of trustee, receiver, assignee, or personal representative**

This section is not applicable to the DOE.

§ 1150.3(j) **Reference to applications within the previous three years**

The DOE has no previous filings.

§ 1150.4 **INFORMATION ABOUT THE PROPOSAL**

§ 1150.4(a) **A description of the proposal and the significant terms and conditions, including consideration (monetary or otherwise) to be paid**

The DOE proposes to construct, operate, and maintain an approximately 300-mile rail line from an existing rail line near Caliente, Nevada to the repository at the Yucca Mountain site for the shipment of spent nuclear fuel, high-level radioactive waste, and common carriage goods. DOE initially studied five potential rail corridor locations (Caliente, Valley Modified, Caliente-Chalk Mountain, Jean and Carlin) from existing rail lines in Nevada to the repository site in the Yucca Mountain FEIS. DOE has prepared a draft supplement to the Yucca Mountain FEIS, the *Draft Supplemental 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-0250F-S1D), October 2007 (“Draft Repository SEIS”), to consider the potential environmental impacts associated with the repository design and construction and operational plans as they have evolved since issuance of the Yucca Mountain FEIS in 2002. The Draft Repository SEIS has been made available for public review and comment, and is available online at: http://www.ocrwm.doe.gov/ym_repository/seis/index.shtml.

Based on the information provided in the Yucca Mountain FEIS, the DOE announced its selection, both nationally and in the State of Nevada, of the mostly rail scenario as the primary

means of transporting spent nuclear fuel and high-level radioactive waste to the repository. See *Record of Decision on Mode of Transportation and Nevada Rail Corridor for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, 69 Fed. Reg. 18557, 18561 (April 8, 2004). In the Record of Decision, DOE also announced its selection of the Caliente corridor for evaluating potential alignments for the construction of a rail line to the Yucca Mountain site. 69 Fed. Reg. 18557, 18562 (April 8, 2004).¹

In its Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS DOE evaluates the potential environmental impacts of constructing and operating a railroad for shipments of spent nuclear fuel and high-level radioactive waste from an existing rail line in Nevada to a geologic repository at Yucca Mountain, as well as operating the rail line for common carriage. In the Draft Rail Alignment EIS, DOE has identified the Caliente Rail Alignment, along with the Shared-Use Option, as its preferred alternative. See *Draft Rail Alignment EIS Section 2.4 DOE Preferred Alternative* at p. 2-114.

¹ During the subsequent public scoping process for the Rail Alignment EIS, DOE received comments suggesting that other rail corridors be considered, in particular, the Mina route. In the Yucca Mountain FEIS, DOE had considered but eliminated the Mina route from detailed study because a rail line within the Mina route could only connect to an existing rail line in Nevada by crossing the Walker River Paiute Reservation, and the Tribe had informed DOE that it would not allow nuclear waste to be transported across the Reservation.

Following review of the scoping comments, DOE held discussions with the Walker River Paiute Tribe and, in May 2006, the Tribal Council informed DOE that it would allow the Department to consider the potential impacts of constructing and operating a railroad to transport spent nuclear fuel and high-level radioactive waste across its reservation. After a preliminary evaluation of the feasibility of the Mina rail corridor, DOE announced its intent to expand the scope of the Rail Alignment EIS to include the Mina corridor. See *Amended Notice of Intent to Expand the Scope of the Environmental Impact Statement for the Alignment, Construction, and Operation of a Rail Line to a Geologic Repository at Yucca Mountain, Nye County, NV*, 71 Fed. Reg. 60484 (October 13, 2006). Although the expanded NEPA analysis, referred to as the Nevada Rail Corridor SEIS and the Rail Alignment EIS, evaluates the potential environmental impacts associated with the Mina rail corridor, DOE has identified the Mina alternative as nonpreferred because the Tribe has withdrawn its support for the EIS process. See *Summary to the Rail Corridor SEIS and the Rail Alignment EIS (Exhibit H) Foreword* at p. viii.

The DOE anticipates that the Final Rail Alignment EIS will be issued in June, 2008. The Final Rail Alignment EIS will assist DOE in deciding whether to construct and operate a railroad, and if so, within which corridor and alignment. The Final Rail Alignment EIS will also assist DOE in deciding whether to implement the Shared-Use Option. These decisions will not be made until DOE issues the Final Rail Alignment EIS and a record of decision.

The proposed rail line would tie into the Union Pacific mainline at, or near Caliente, Nevada. The rail line would extend north from Caliente, turn in a westerly direction and head toward the northwest corner of the Nevada Test and Training Range and then continue south-southeast towards Yucca Mountain. In addition to construction of the new rail line, temporary facilities, such as construction camps, access roads, and water wells, and permanent facilities such as a staging yard, maintenance-of-way facility, rail equipment maintenance yard, cask maintenance facility and railroad control center would be required to support the construction and operation of the rail line.

The rail line would be constructed of 136-pound, continuous-welded rail, and will be built and maintained to Class IV railroad standards. Construction activities would occur inside the 300-meter (1,000-foot)-wide construction right-of-way, except in some areas requiring deep cuts or high fills, which could extend beyond typical widths. For railroad construction DOE would construct: construction camps; the roadbed; the track; bridges, culverts, and at-grade and grade-

separated road crossings; facilities to support the railroad; signal and communications systems; and an electric power distribution system. See Draft Rail Alignment EIS at 2-39 to 2-80.

Construction Camps

Up to 12 construction camps would be developed along the rail alignment to provide housing for construction workers and a logistical base from which to conduct construction activities. These camps would be located about every 30 miles along the alignment. It is anticipated that six camps would be operated at any one time.

Roadbed Preparation

Construction of the roadbed would begin simultaneously at multiple locations. This activity would require clearing and grubbing, excavation, installation of drainage structures, and development and compaction of the rail roadbed. Typical heavy-duty construction equipment (e.g., front-end loaders, dozers, graders, water wagons, compactors, excavators, drill rigs, cranes, and scrapers) would be used for drilling, blasting, clearing, excavation, screening, and crushing work. To establish a stable roadbed for the track, some areas would have to be filled and others excavated, depending on terrain features.

Track Construction

Track construction would begin at the start of the rail line near Caliente and move west and then south to Yucca Mountain. Track construction would consist of placing concrete ties, rail, and ballast on top of the roadbed. First, concrete ties would be placed on the subballast. Special rail

equipment would then be used to unload and secure 1,440-foot rail strings onto the concrete ties. Ballast unloaded from rail cars would be dumped evenly on the skeleton track and the track raised until the total depth of ballast under the ties is 12 inches. DOE would construct approximately 12 passing sidings, one approximately every 40 kilometers (25 miles). These passing sidings would be up to 1,800 to 3,700 meters (6,000 to 12,000 feet) long to accommodate a maximum train length of 1,700 meters (5,500 feet).

Bridge, Culvert, and Road Crossing Construction

Construction would begin during the first year on bridges, culverts, and at-grade and grade-separated road crossings. It is anticipated that most ephemeral drainages with a normal peak flow of less than 1,000 cubic feet per second would be crossed using round corrugated metal pipes or concrete box culverts. Bridges would be constructed across larger drainages. Most bridges would be made of pre-cast concrete. DOE anticipates it would construct grade-separated crossings at paved highways along the Caliente Rail Line. For crossings at unpaved roads and private crossings, DOE would install passive warning devices, such as crossbucks and stop signs.

Facilities

Facilities that would be constructed to support operation of the railroad include a staging yard, an interchange yard, a maintenance-of-way facility, maintenance-of-way headquarters, and a rail equipment maintenance yard.

Signal and Communication Construction

Along the rail line, 15-foot-tall wayside signals would be installed to control train movement and warn operators of broken rails, rockslides, and certain equipment defects. At public grade crossings, public roads with substantial traffic would have active warning devices (flashers, gates, barriers). Grade crossings at roads with minimal traffic and private crossings would have passive warning devices such as crossbucks and stop signs. The communication system would use a fiber-optic communication cable, very high frequency radio, satellite radios, and possibly satellite telephones to facilitate communications between the train operator, the control center, maintenance personnel, and signal blocks. A fiber optic cable would be buried along the entire length of the rail line and communication towers would be constructed every 10 to 20 miles, depending on terrain. These radio towers would be 75- to 100-feet tall.

Electric Power Distribution System

A distribution line for electric power would be built along the entire length of the rail line to provide power to facilities and equipment. An underground high-voltage 25-kilovolt distribution line would be placed inside a trench excavated within the rail roadbed. Power to the distribution system would be fed from about five locations where the rail alignment intersects existing high-voltage transmission lines. At these intersections, DOE would construct electric substations adjacent to the rail line and above-ground power lines to connect the distribution line to existing transmission lines. Temporary above-ground power lines may also be constructed to construction camps, facilities, and other construction locations to facilitate construction prior to installation of the below-ground power distribution system.

Approximately 96 percent of the land required for construction of the rail line is managed by the United States Bureau of Land Management (“BLM”), approximately 1 percent is privately-owned property, and the remainder is presently managed by the DOE. Prior to constructing the rail line, DOE is required to obtain a right-of-way grant from the BLM pursuant to 43 C.F.R. Part 2800. Once received, the DOE will comply with all terms and conditions associated with the BLM right-of-way grant. The DOE would also obtain access to the privately-owned property prior to construction and operation of the rail line.

As stated above, the estimated minimum construction period is 4 years and the current estimated cost is approximately \$2.2 billion in year 2005 dollars, and \$2.6 billion in 2008 dollars.

§ 1150.4(b) Details about the amount of traffic and a general description of commodities

The DOE anticipates it would use the rail line to ship approximately 9,500 casks containing spent nuclear fuel and high-level radioactive waste to the repository over an operations phase of up to 50 years. Each cask would be shipped on an individual cask car. DOE would also ship up to 29,000 railcars of non-radioactive materials, including repository-construction materials, materials necessary for day-to-day operations of the rail line and the repository, and waste materials for disposal. The DOE estimates that its spent nuclear fuel and high-level radioactive waste, as well as its non-radioactive material shipments, would equal approximately 17 shipments per week during operation of the rail line. (See Table 1 below).

Table 1. Summary of potential train frequencies.^{a,b,c}

Train type	Approximate peak frequency (one-way, per week)
Cask trains	8
Repository construction materials and supplies trains	7
Maintenance-of-way trains	2
Total	17^c

a. Source: Rail Alignment EIS Table 2-1, at page 2-8.

b. Average frequencies; actual frequencies would vary from year to year over the operating life of the railroad.

c. The equivalent of 8.5 round-trip trains going from the Staging Yard to the repository and back in 1 week.

In addition to DOE's shipments, DOE's preferred alternative is to make the rail line available for common carriage rail service by commercial shippers. Anticipated general freight shipments as a result of common carriage rail service would include stone and other nonmetallic minerals, petrochemicals, non-radioactive waste materials, or other commodities that private companies would ship or receive.

To provide for common carriage rail service, operational facilities and commercial sidings would need to be constructed to provide access for potential commercial shippers. Funding for these operational facilities and commercial sidings would be provided by the private sector, local, state, or federal government agencies. Shipments of spent nuclear fuel and high-level radioactive waste would be made by dedicated trains. Commercial railcars would be hauled by trains that are separate from trains carrying spent nuclear fuel and high-level radioactive waste, but could be hauled by trains carrying other repository related materials (for example, construction materials and fuel).

Under a DOE-funded cooperative agreement, Nye County commissioned a study of the potential economic benefits to Nye, Esmeralda, and Lincoln counties from the proposed rail line (Exhibit J—*Final Report Rail Transportation Economic Impact Evaluation & Planning*, Wilbur Smith and Associates 2005, et al.). Based on interviews with potential shippers, this report presented low-, mid-, and high-range estimates of commercial freight shipments on the rail line.

DOE conducted independent interviews with each of the potential shippers identified in the Nye County study. Through these efforts, DOE independently estimated levels of commercial freight demand. (Exhibit K—*Shared Use Option: Commercial Traffic Estimates*, Ang-Olson and Gallivan 2007, et al.).

In addition to DOE's estimated 17 train shipments per week, DOE has estimated approximately 8 train shipments per week (222 carloads) as the total commercial freight demand along the Caliente Rail Line. (See Table 2 below). This estimate is based on the Ang-Olson and Gallivan study listed above and is similar to the mid-range estimated demand scenario presented in the Nye County study (Wilbur Smith and Associates 2005, et al.).

Table 2—Potential commercial freight shipments – Caliente rail alignment ^a

Commodity	Weight (tons)		Carloads		Train Frequency
	Per week	Per year	Per week	Per year	Per week
Stone	3,580	186,000	36	1,860	Not available
Other nonmetallic minerals	10,580	550,000	106	5,500	Not available
Petrochemicals	5,770	300,000	58	3,000	Not available
Nonradioactive waste materials	1,350	70,000	13	700	Not available
Other commodities	920	48,000	9	480	Not available
Totals	22,290	1,154,000	222	11,540	8 shipments

a. Source: Ang-Olson and Gallivan 2007, all.

Most potential shippers have expressed a willingness to truck their freight shipments to or from a siding, although the maximum acceptable trucking distance varies considerably among the shippers. Some shippers would need to construct storage or loading/unloading facilities at the sidings. Potential shippers have not expressed any interest in either a long spur or a short spur/siding location that is not served by existing paved or gravel roads.

Commercial freight railcars would be set out and picked up at commercial-use sidings.

Commercial-use sidings would be constructed adjacent to passing sidings. DOE would construct passing sidings approximately every 40 kilometers (25 miles) so that trains running in opposite directions would be able to pass one another. These passing sidings would be up to 1,800 to 3,700 meters (6,000 to 12,000 feet) long to accommodate a maximum train length of 1,700 meters (5,500 feet). A commercial access siding (also known as a team track) would then be

constructed as a third track parallel to the mainline and the passing siding. Commercial-access sidings would generally be less than 300 meters (980 feet) long and would be double ended (switches at both ends). To the extent practicable and appropriate, DOE would also accommodate the construction of additional access sidings, or short-spur lines, by private shippers.

§ 1150.4(c) **Purposes of the proposal; public convenience and necessity factors supporting the proposal**

The proposed rail line is necessary and in the public interest. The DOE has four compelling purposes for seeking to construct the proposed rail line. First, the Congress, the President, and the Secretary of Energy have recognized the need to address the national interests in management of the nation's spent nuclear fuel and high-level radioactive waste. Second, there is no existing rail service to the Yucca Mountain site. The proposed rail line would enable the DOE to transport the nation's spent nuclear fuel and high-level radioactive waste safely and securely from existing rail lines to the repository at the Yucca Mountain site. Third, the rail line would enable DOE to ship construction materials for the construction of the repository to the Yucca Mountain site, which would alleviate the burden on the nation's highways for such transport. Lastly, by providing common carriage rail service, the rail line would promote economic development and services to rural areas of Nevada.

1. The need to address the national interests created by the nation's spent nuclear fuel and high-level radioactive waste

Spent nuclear fuel and high-level radioactive waste are the by-products of commercial nuclear energy production, defense plutonium production, and research and medical activities that utilize nuclear reactors or fission product nuclides. At present, more than 55,000 metric tons of spent nuclear fuel and high-level radioactive waste is stored at approximately 121 sites in 39 States. Approximately 2,000 metric tons of additional spent nuclear fuel is generated annually.

The Congress, the President and the Secretary of Energy have determined that there is a need to address the national interests associated with the nation's spent nuclear fuel and high-level radioactive waste and to dispose of it in a permanent geologic repository. These interests include national security, non-proliferation objectives, energy security, homeland security, and protection of human health and the environment.

A. The Need Recognized by Congress

In 1982, the Congress established a comprehensive framework for the federal government to provide for the disposal of the nation's spent nuclear fuel and high-level radioactive waste and initiated a process to select a site for a potential geologic repository when it passed the NWPA. Congress' findings included but were not limited to: radioactive wastes create health and environmental risks which need acceptable methods of disposal; the accumulation of radioactive wastes has created a national problem; federal efforts to deal with radioactive wastes prior to 1982 were inadequate; and the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and spent nuclear fuel, but that the costs

should be the responsibility of generators and owners of such waste. See NWPA § 111(a); 42 U.S.C. § 10131(a) (2007).

With these concerns in mind, Congress stated four purposes in the NWPA: 1) to establish a schedule for siting, constructing, and operating a repository to reasonably assure that the public and environment will be protected from the risks of spent nuclear fuel and high-level radioactive waste; 2) to establish the Federal responsibility and a definite Federal policy for the disposal of such waste; 3) to define the relationship between the Federal Government and State governments with respect to such wastes; and 4) to establish a Nuclear Waste Fund, composed of payments by owners and generators of such waste, to dispose of such waste. See NWPA § 111(b); 42 U.S.C. § 10131(b) (2007).

To achieve these purposes and to administer this responsibility, Congress created the DOE's OCRWM and its Director to carry out the functions of the Secretary of Energy under the NWPA, including the purposes listed above. See NWPA § 304; 42 U.S.C. § 10224 (2007). In 1987, Congress amended the NWPA by identifying the Yucca Mountain Site in Nye County, Nevada, as the site to be studied for a potential geologic repository.

In accordance with the DOE's responsibilities under the NWPA and the National Environmental Policy Act ("NEPA"), and as part of the DOE's responsibility to characterize the Yucca Mountain site, the DOE prepared an environmental impact statement to examine the

environmental effects associated with constructing and operating a geologic repository at Yucca Mountain. *See Yucca Mountain FEIS.*

B. The Need for a Repository Expressed by the Secretary of Energy

On February 14, 2002, the Secretary of Energy submitted his recommendation (Exhibit I), along with a comprehensive statement of the basis for the recommendation, to the President for approval of the Yucca Mountain Site for the development of a nuclear waste repository. The Secretary's recommendation examined Yucca Mountain's scientific and technical suitability, articulated compelling national interests that require the development of a repository, and refuted arguments against locating a repository at the Yucca Mountain Site. The compelling national interests the Secretary addressed were national security, non-proliferation objectives, energy security concerns, homeland security, and national efforts to protect the environment.

i. A repository is important to national security

About 40 percent of the nation's fleet of principal combat vessels, including submarines and aircraft carriers are nuclear-powered. These vessels must periodically be refueled and the spent fuel removed. This spent fuel is currently stored at surface facilities under temporary arrangements. A repository is necessary to assure a permanent disposition pathway for this material and thereby enhance the certainty of future naval operational capacity.

ii. A repository is important to promote non-proliferation objectives

The end of the Cold War has brought with it the challenge of disposing of surplus weapons-grade plutonium as part of the process of decommissioning weapons the nation no longer needs. A geologic repository is an integral part of meeting this challenge. Without it, the nation's ability to meet its pledge to decommission its weapons could be at risk, thereby jeopardizing the commitment of other nations, such as Russia, to decommission their weapons.

iii. A repository is important to energy security

The nation must ensure that nuclear power, which provides approximately 20 percent of the nation's electric power, remains an important part of the nation's domestic energy production to meet our growing energy demands. Without the stabilizing effects of nuclear power, energy markets will become increasingly more exposed to price spikes and supply uncertainties, as the nation is forced to replace it with other energy sources to substitute for the almost five hours of electricity that nuclear power currently provides each day, on average, to each home, farm, factory and business in America. Nuclear power is also important to sustainable growth because it produces no controlled air pollutants, such as sulfur and particulates, or greenhouse gasses. A repository at Yucca Mountain is indispensable to the maintenance and potential growth of this environmentally efficient source of energy.

iv. A repository is important to homeland security

Spent nuclear fuel, high-level radioactive waste, and excess plutonium for which there is no complete disposal pathway without a repository are currently stored at approximately 121 sites in

39 States. More than 161 million Americans live within 75 miles of one or more of these sites. The facilities housing these materials were intended to do so on a temporary basis. They should be able to withstand current terrorist threats, but that may not remain the case in the future. These materials would be far better secured in a deep underground repository at Yucca Mountain, on federal land, far from population centers, that can withstand an attack well beyond any that is reasonably conceivable.

v. A repository is important to the nation's efforts to protect the environment

It is past time for the Federal Government to implement an environmentally sound disposition plan for spent nuclear fuel and high-level radioactive waste from defense activities. It is also past time for the Federal Government to begin the environmentally sound disposition of commercial spent fuel, a program that was set to begin in 1998. A repository is necessary for the accomplishment of either or both of these objectives.

C. The Need Expressed by the President of the United States

After receiving the Secretary's recommendation expressing the above listed interests on February 14, 2002, on February 15, the President, in accordance with the NWPA, approved the Secretary of Energy's recommendation of the Yucca Mountain Site for development as a geologic repository, and recommended the site to the Congress as qualified for the DOE to pursue an application for construction authorization for a repository (Exhibit L—Presidential Letter to Congress). Subsequently, Congress passed a joint resolution of the United States House of Representatives and the United States Senate designating the Yucca Mountain site for

development as a geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste. On July 23, 2002, the President signed the joint resolution into law (Public Law 107-200). In his letter recommending the site to Congress the President stated:

Proceeding with the repository program is necessary to protect public safety, health, and the Nation's security because successful completion of this project would isolate in a geologic repository at a remote location highly radioactive materials now scattered throughout the Nation. In addition, the geologic repository would support our national security through disposal of nuclear waste from our defense facilities.

A deep geologic repository, such as Yucca Mountain, is important for our national security and our energy future. Nuclear energy is the second largest source of U.S. electricity generation and must remain a major component of our national energy policy in the years to come. The cost of nuclear power compares favorably with the costs of electricity generation by other sources, and nuclear power has none of the emissions associated with coal and gas power plants.

This recommendation, if it becomes effective, will permit commencement of the next rigorous stage of scientific and technical review of the repository program through formal licensing proceedings before the Nuclear Regulatory Commission. Successful completion of this program also will redeem the clear Federal legal obligation safely to dispose of commercial spent nuclear fuel that the Congress passed in 1982.

This recommendation is the culmination of two decades of intense scientific scrutiny involving application of an array of scientific and technical disciplines necessary and appropriate for this challenging undertaking. It is an undertaking that was mandated twice by the Congress when it legislated the obligations that would be redeemed by successful pursuit of the repository program. Allowing this recommendation to come into effect will enable the beginning of the next phase of intense scrutiny of the project necessary to assure the public health, safety, and security in the area of Yucca Mountain, and also to enhance the safety and security of the Nation as a whole.

Thus, Congress, the President, and the Secretary of Energy have all expressed the need to address the national interests created by the management of the nation's spent nuclear fuel and high-level radioactive waste, including national security, non-proliferation objectives, energy security, homeland security, and protection of human health and the environment.

2. The rail line would enable the DOE to safely and securely transport the nation's spent nuclear fuel and high-level radioactive waste to the proposed repository at Yucca Mountain

In the Yucca Mountain FEIS, DOE analyzed a proposed action to construct, operate, monitor, and eventually close a geologic repository at the Yucca Mountain site for the disposal of spent nuclear fuel and high-level radioactive waste. As part of that action, DOE evaluated various modes of transporting spent nuclear fuel and high level radioactive waste from commercial sites and DOE sites nationwide to the Yucca Mountain Site. The evaluation considered the modes of transportation that would be used both nationally and in Nevada.

The purpose of the evaluation was to analyze and compare ~~the range of potential transportation~~ impacts to human health and the environment. DOE evaluated ~~two national transportation~~ scenarios, referred to as the "mostly legal-weight truck scenario" and the "mostly rail scenario," and three Nevada transportation scenarios, referred to as the "Nevada mostly legal-weight truck scenario," the "Nevada mostly rail scenario," and the "Nevada mostly heavy-haul truck scenario."

Following completion of the Yucca Mountain FEIS, the DOE announced its selection, both nationally and in the State of Nevada, of rail as the primary means of transporting spent nuclear fuel and high-level radioactive waste to the repository *Record of Decision*, 69 Fed. Reg. 18557, (April 8, 2004). In making its decision to select the mostly rail scenario both nationally and in the State of Nevada, DOE carefully weighed factors including but not limited to the potential radiation exposure to workers and members of the public, impacts to the environment, the

number of rail and highway shipments needed, the proximity of commercial facilities to railheads, the State of Nevada's preferences expressed in comments to the DOE, the irreversible and irretrievable commitments of resources, and cumulative impacts from transportation activities. *Id.* at 18561.

Specifically, with respect to the impacts to human health by potential radiation exposure to workers and members of the public, it was estimated that there would be fewer non-radiological traffic fatalities under the mostly-rail scenario (3 fatalities), compared to the mostly legal-weight truck scenario (five fatalities). *Id.* at 18559. Additionally, with respect to routine (incident-free) exposures from cask loading/unloading and shipping along transportation routes, it was estimated that there would be fewer worker and general public latent cancer fatalities under the mostly rail scenario (3 worker fatalities, 1 general public fatality) than the mostly legal-weight truck scenario (12 worker fatalities, 3 general public fatalities).² *Id.*

The DOE has recently issued its Draft Repository SEIS, which supplements the Yucca Mountain FEIS. The Draft Repository SEIS provided updated estimates under the mostly rail scenario for non-radiological traffic fatalities and routine (incident-free) exposures from cask loading/unloading and shipping. These estimates in the Draft Repository SEIS, which are similar to those in the Yucca Mountain FEIS, are approximately 3 non-radiological traffic fatalities, and approximately 3 worker latent cancer fatalities and 1 general public latent cancer

² DOE estimated that the potential health effects to the general public from a severe transportation accident were greater for the mostly rail scenario (5 latent cancer fatalities) than the mostly legal-weight truck scenario (1 latent cancer fatality) due to the greater amounts of radioactive materials that could be released from a rail cask in such an accident. However, the chances of a severe transportation accident were estimated to be extremely rare, *i.e.* about 3 chances in 10 million per year. 69 Fed. Reg. at 18559.

fatality from routine (incident-free) exposures from cask loading/unloading and shipping. See *Draft Repository SEIS* at pages 6-18 and 6-16, respectively. Estimates for the mostly legal weight truck scenario are not available in the Draft Repository SEIS because DOE only considered impacts from the mostly rail scenario following the selection of the mostly rail scenario announced in the Record of Decision.

As part of implementing the mostly rail scenario nationally and in the State of Nevada, the DOE recognized that it would need to construct a rail line to connect the repository site to an existing rail line in the State of Nevada. The proposed rail line in this application is designed to meet that need and enable the DOE to use a mostly rail scenario for transportation nationally and in the State of Nevada. Thus, based on DOE's consideration of the above factors, the proposed rail line is necessary and in the public interest to safely and securely transport the nation's spent nuclear fuel and high-level radioactive waste to the proposed repository at the Yucca Mountain site.

3. The rail line would enable DOE to ship construction materials for the construction of the repository to the Yucca Mountain site

The primary construction materials for the proposed repository at Yucca Mountain would be concrete, steel, and copper. During the construction period, the estimated use of concrete would be about 320,000 cubic meters (420,000 cubic yards). See *Draft Repository SEIS* at 4-85. The amount of cement required would be about 130,000 metric tons (about 140,000 tons). *Id.* The average yearly concrete demand for the construction period would be about 65,000 cubic meters (about 85,000 cubic yards). *Id.* DOE would also need as much as 280,000 metric tons (310,000

tons) of carbon steel for uses that would include rebar, piping, vent ducts, and track. *Id.*

Additionally, DOE would need about 670 metric tons (740 tons) of copper for uses that would include electrical cables. *Id.*

In order to transport the primary construction materials, materials necessary for day-to-day operations of the rail line and the repository, waste materials for disposal, as well as other supplies for the repository and support facilities, DOE estimates transporting up to 29,000 railcars on the proposed rail line during its operations phase. The proposed rail line is necessary and in the public interest for DOE to ship considerable quantities of construction materials and supplies to the proposed repository at Yucca Mountain.

4. Common carriage rail service would promote economic development and services to rural areas of the State of Nevada

In addition to serving DOE's need to transport spent nuclear fuel, high-level radioactive waste, and non-radioactive shipments, DOE's preferred alternative is to make the rail line available for common carriage rail service by commercial shippers. As discussed below in sections 1150.4(e) and 1150.4(g)(1), the rail line would provide service to the communities in the State of Nevada of Panaca, Caliente, Tonopah, Goldfield, and Beatty. With the exception of Caliente, the other communities do not presently have rail service.

As discussed above in section 1150.4(b), Nye County and the DOE independently conducted surveys of potential shippers in these communities and estimated the potential demand for commercial freight shipments along the proposed rail line. The DOE estimate of total

commercial freight demand, which was similar to the Nye County mid-range estimate, predicts approximately 8 commercial train shipments per week (approximately 222 carloads) along the proposed rail line.

In addition to the public benefits from shipping along the rail line, construction and operation of the rail line will provide residents in the nearby counties and communities with employment opportunities as well as a greater customer base for local businesses. DOE estimates that about 1,800 workers per year will be needed for the construction of the rail line. While this number exceeds the amount of labor available in Lincoln, Nye, and Esmeralda counties, these counties would be relied on to provide labor and services for the construction of the railroad. *Draft Rail Alignment EIS* at 2-265. The operation of the railroad would also provide employment opportunities, at facilities such as the proposed Rail Interchange yard, the proposed Operations Center, and the proposed Maintenance-of-Way facility. In addition, area businesses would benefit from the influx of workers necessary for the construction and operation of the railroad.

DOE has examined socioeconomic impacts of rail line construction and operation in depth in Chapter 4 of the Draft Rail Alignment EIS. DOE concluded that potential impacts to socioeconomics included but were not limited to:

- Population increases in all counties in the region of influence during the construction and operations phases;
- Employment increases in all counties in the region of influence during the construction and operations phases;
- Real disposable income increases in all counties in the region of influence during the construction and operations phases;
- Gross regional product increases in all counties in the region of influence during the construction and operations phases; and

- State and local government spending increases in all counties in the region of influence during the construction and operations phases.

Draft Rail Alignment EIS at 4-285 – 4-286. Thus, the proposed rail line is necessary and in the public interest by making common carriage rail service available to businesses, providing employment opportunities to area residents during the construction and operations phases of the rail line, and increasing the customer base of local businesses in counties in the region of influence of the proposed rail line.

§ 1150.4(d) **Map (Exhibit C)**

Please refer to Exhibit C for the following map:

“Area to be Served by Rail Line to Yucca Mountain”

§ 1150.4(e) **Counties and cities to be served and availability of other rail service; connecting railroads**

The rail line would connect to the existing Union Pacific Rail Road near Caliente, Nevada, and would traverse Lincoln, Nye, and Esmeralda counties before entering the Nevada Test Site. With the exception of Caliente, none of the communities located on or near the line currently have rail service. The cities potentially to be served by the rail service include Panaca, Caliente, Tonopah, Goldfield, and Beatty. DOE estimates approximately 17 DOE shipments per week (spent nuclear fuel, high-level radioactive waste, non-radioactive materials) and 8 commercial shipments per week (222 carloads). Terms with Union Pacific have not been negotiated at this time.

§ 1150.4(f) Time schedule

DOE anticipates that it would take a minimum of 4 years to construct the railroad. Construction would begin with the construction of water wells, construction camps, and quarries.

Construction would require the procurement of concrete ties and rail for track construction, as well as steel for bridge construction. Approximately one month after beginning construction and while these previous activities would still be occurring, DOE anticipates that, subject to availability of necessary funds, construction of the rail roadbed, culverts, bridges, and grade-separated crossings would begin simultaneously at multiple points along the rail alignment. Near the start of Year 2 of construction, quarries would begin to produce ballast, and stockpiling of rails would begin. Shortly thereafter, track construction would begin and would move sequentially along the rail alignment toward the Yucca Mountain site. Construction would begin on signals and communications structures shortly after the end of Year 1.

Although DOE anticipates that construction would take a minimum of approximately 4 years, there is the possibility Congressional appropriations would not be sufficient to complete construction in 4 years and that additional time would be required. For bounding purposes, DOE has assumed in its Draft Rail Alignment EIS a construction schedule up to 10 years. The construction sequence under a 10-year schedule would be similar to the 4-year schedule, except that under the 10-year schedule, construction of the rail roadbed would occur sequentially, starting at the beginning of the rail alignment and moving toward Yucca Mountain.

§ 1150.4(g) **Construction of a new line**

§ 1150.4(g)(1) **Approximate area to be served by the line**

The rail line would provide new service for more than 300 miles across Nye, Esmerelda, and Lincoln counties, through rural areas of Nevada and provide service to communities including Panaca, Caliente, Tonopah, Goldfield and Beatty.

§ 1150.4(g)(2) **Existing and prospective industries in the area**

Potential commercial freight shipments would include several local commodities including stone, nonmetallic minerals, petrochemicals, and non-radioactive waste materials. Businesses that were interviewed in studies to identify potential commercial use of the rail line are listed below.

Farland Refinery Corp is currently operating the Eagle Springs oil refinery facility, located approximately 100 miles east of Tonopah, and also has a small terminal in Tonopah where it stores petroleum-related product.

Natural Pozzolan is developing a facility to mine pozzolan (a cement additive) along US 93 north of Pioche.

Wilkin Mining and Trucking operates a concrete batch plant in Caliente and a crushing plant near Panaca. There is the potential that the firm would exploit perlite in the Panaca area and ship outgoing product by rail.

Badger Mining operates a facility in the Amargosa Valley (Ash Meadows), where it produces zeolite.

Chemetall Foote runs an operation in Silver Peak, Nevada that mines lithium carbonate.

Cind-R-Lite operates a cinder block mine along US 95, near the junction with Highway 373.

D&H Mining operates a landscape rock quarry located along the rail alignment in the Beatty Wash area.

IMV Nevada is operating a mine and processing facility in the Lathrop Wells/Amargosa Valley area. Its specialty product is sepiolite.

Nevada Western Silica Corporation owns the mining claim for a large, high grade silica deposit near Lida Junction, south of Goldfield in Esmeralda County.

US Ecology operates a hazardous waste treatment and disposal facility along US 95, approximately 14 miles southeast of Beatty.

§ 1150.4(g)(3) Crossings required of other rail lines

The proposed rail line would not cross any existing rail lines.

§ 1150.5 OPERATIONAL DATA

An operator for the rail line has not been selected at the time of this application. Once an operator has been selected, an operating plan would be developed that includes more detailed traffic projections studies; a schedule of operations; information about the crews to be used and where employees would be obtained; the rolling stock requirements and where it would be obtained; information about the operating experience and record of the operator unless it is an operating railroad; any significant change in patterns of service; any associated discontinuance or abandonments; and expected operating economies.

General statements regarding operations of anticipated DOE and common carriage trains are listed below.

1. Operation of spent nuclear fuel and high-level radioactive waste trains on the Caliente Rail Line

Union Pacific Railroad trains carrying casks of spent nuclear fuel and high-level radioactive waste would depart the Union Pacific Railroad Mainline near Caliente and proceed along the new railroad to a Staging Yard north of Caliente (See Exhibit C). At the Staging Yard, Union Pacific Railroad locomotives would uncouple from cask cars and return to the mainline. The cask cars would be inspected in accordance with Federal Railroad Administration regulations and then coupled to Caliente Rail Line operated dedicated trains, which would consist of two or three 4,000-horsepower diesel-electric locomotives followed by a buffer car; one to five cask cars followed by another buffer car; and one escort car carrying security personnel. Trains would depart the Staging Yard and proceed along the railroad to the Rail Equipment

Maintenance Yard located at Yucca Mountain. The Rail Equipment Maintenance Yard would serve as the termination point of the railroad and the staging area for delivery of loaded cask cars to be accepted by the Yucca Mountain Repository. Casks would then be transferred to control of the geologic repository operations area for receipt inspection and acceptance.

Empty casks would be transferred back to railroad control, and before they were returned to the Staging Yard for onward shipment, could be sent to a Cask Maintenance Facility for testing, inspection, maintenance in accordance with the NRC Certificate of Compliance, minor decontamination, and routine repair of the casks.

2. Operation of trains transporting freight to support repository construction

Freight trains carrying construction and other materials, such as fuel oil and empty waste packages, would arrive in Nevada via the Union Pacific Railroad Mainline and proceed directly to the Interchange Yard. Once at the Interchange Yard, Union Pacific Railroad locomotives may uncouple from their freight cars on the interchange tracks. Caliente Rail Line locomotives would then be coupled with the freight cars to transport the materials along the rail line to the Rail Equipment Maintenance Yard at the Yucca Mountain site. The same level of security necessary for railcars carrying spent nuclear fuel or high-level radioactive waste would not be necessary for railcars carrying construction or other materials. Therefore, no escort cars would be required for trains transporting construction or other materials.

3. Operation of common carrier trains

The commercial trains (not including the locomotive) could consist of up to 60 cars and could be approximately 1,100 meters (3,600 feet) long. Depending on the weight of the train, three or four locomotives could be required. Commercial trains would haul a range of products to and from businesses, including stone and other nonmetallic minerals, oil and petroleum products, and waste materials. Commercial rail cars would also be hauled in trains carrying materials related to the construction (e.g. reinforcing steel, cement) and operation (e.g. waste packages, fuel oil) of the repository. The operating characteristics of these commercial trains cannot be accurately defined at this time.

§ 1150.6 FINANCIAL INFORMATION

§ 1150.6(a) Proposed financing of construction

The Nuclear Waste Fund was established by the NWPA. See 42 U.S.C. § 10222. At present the value of the Nuclear Waste Fund is approximately \$21.6 billion. See Exhibit E/F. The Nuclear Waste Fund will be used to fund the construction of the rail line, subject to yearly Congressional appropriations.

§ 1150.6(b) Balance sheet and income statement (Exhibits E-F)

Exhibit E/F provides financial information regarding the Nuclear Waste Fund, including balance sheets and income statements for DOE OCRWM for fiscal years 2005-2006 and 2006-2007.

§ 1150.6(c) Present value determination of project costs

A summary of estimated costs associated with the proposed rail construction are shown in Table 3 below. The estimate does not include costs associated with mitigation, ownership, operations, abandonment, rolling stock and casks, schedule-related costs, or Yucca Mountain Project program or nuclear material requirements.

Table 3—Summary of Cost Estimate - Caliente rail alignment ^a

Cost Component	Cost Estimate	
	2005 Dollars	2008 Dollars ^b
Alignment Construction including Excavation, Engineered Fill, Over/Underpass, Bridges, Drainage Structures and Water Requirements for Construction	823,798,000	972,905,438
Trackwork	478,690,000	565,332,890
Signals and Communications	193,474,000	228,492,794
Other Costs	4,965,000	5,863,665
Total Alignment Construction Costs	1,500,927,000	1,772,594,787
Contingency	360,221,000	425,421,001
Design & Engineering, Construction Management	132,972,000	147,306,382
Program Management	63,344,000	70,172,483
Right-of-Way (ROW) Acquisition	4,299,000	5,077,119
Total Estimated Alignment Cost	2,061,763,000	2,420,571,772
<i>Facilities: UP Railroad Interchange Yard; CRC Staging Yard, EOL Yard with Access Track and CMF Access Tracks, and CRC MOW Facilities</i>		
Total Facilities Construction Cost	89,849,000	97,935,410
Contingency and Mobilization	29,651,000	35,017,831
Development Costs (Engineering, Construction Management; Geotechnical)	7,190,000	7,965,082
Program Costs	2,696,000	2,986,629
ROW Acquisition	1,700,000	2,007,700
Total Facility Cost Estimate	131,086,000	145,912,652
Total CRC Construction Phase Cost Estimate	2,192,849,000	2,566,484,424

a. Source: Comparative Cost Estimates, Caliente Rail Corridor, Summary Report, July 03, 2007

b. 2008 dollars reflect cost escalation from 2005 cost estimates

§ 1150.6(d) **Projected net income, based upon traffic projections**

The DOE would not construct the rail line with a profit-making motive. The DOE's preferred alternative is for the rail line to be operated as a common carriage rail line, and DOE anticipates that commercial shippers who utilize the rail line will pay standard rates for such usage, as established by the Board. At this time DOE is not projecting net income that will result from the use of the rail line by other shippers. Traffic projections for use of the rail line by shippers other than DOE are discussed above in §§ 1150.4(b), 1150.4(g)(2) and 1150.5.

§ 1150.7 **ENVIRONMENTAL AND ENERGY DATA**

Exhibit H consists of the Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS. It is available online at: http://www.ocrwm.doe.gov/transport/draft_eis/index.shtml.

It is also available in hard copy at the:

DOE Public Reading Room
2341 Postal Drive
Pahrump, Nevada 89048
(775) 751-7480

Documents also can be ordered by calling the OCRWM toll-free information line at 1-800-225-6972.

§ 1150.8 **ADDITIONAL SUPPORT**

Exhibit I— Secretary of Energy's Transmittal Letter to President George W. Bush, and Secretary of Energy's Recommendation Regarding the Suitability of the Yucca Mountain Site for a Repository Under the Nuclear Waste Policy Act of 1982

Exhibit J— *Rail Transportation Economic Impact Evaluation & Planning*, Wilber Smith and Associates 2005

Exhibit K— *Shared Use Option: Commercial Traffic Estimates*, Ang-Olson and Gallivan 2007

Exhibit L— Presidential Letter to Congress

Exhibit M— Selected Public Comments in Support of Shared Use from the 2004 Scoping Process

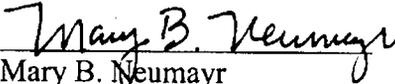
§ 1150.9 **NOTICE**

In order to provide notice under the requirements of 49 C.F.R. § 1150.10(f), DOE will publish a summary of this Application in a newspaper of general circulation in each county in which the line is located. This summary is attached to this Application as Exhibit N.

Conclusion

In conclusion, DOE respectfully requests that the Board grant DOE a Certificate of Public Convenience and Necessity to construct and operate the proposed Caliente Rail Line.

Respectfully submitted,


Mary B. Neumayr
Deputy General Counsel
for Environment & Nuclear Programs

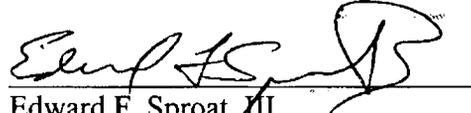
**SIGNATURES, OATHS, AND CERTIFICATIONS
OF APPLICANT'S EXECUTIVE OFFICER
(SECTION 1150.10(c))**

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

Finance Docket No. 35106

UNITED STATES DEPARTMENT OF ENERGY

Edward F. Sproat, III, being duly sworn, deposes and says that he is Director of the Department of Energy's Office of Civilian Radioactive Waste Management, applicant herein; that he is an executive officer duly authorized to sign, to verify, and to file this Application on behalf of the United States Department of Energy; that he has written and detailed knowledge of the matters contained in this Application; and that the statements made in the Application are true and correct to the best of his knowledge and belief.


Edward F. Sproat, III

Finance Docket No. 35106

EXHIBIT A
Resolution of Stockholders or Directors
(Not Applicable)

Finance Docket No. 35106

EXHIBIT B

Relevant Agreements Regarding Terms, Conditions, or Consideration
(Not Applicable)

Finance Docket No. 35106

EXHIBIT C

Map

Area to be Served by Rail Line to Yucca Mountain

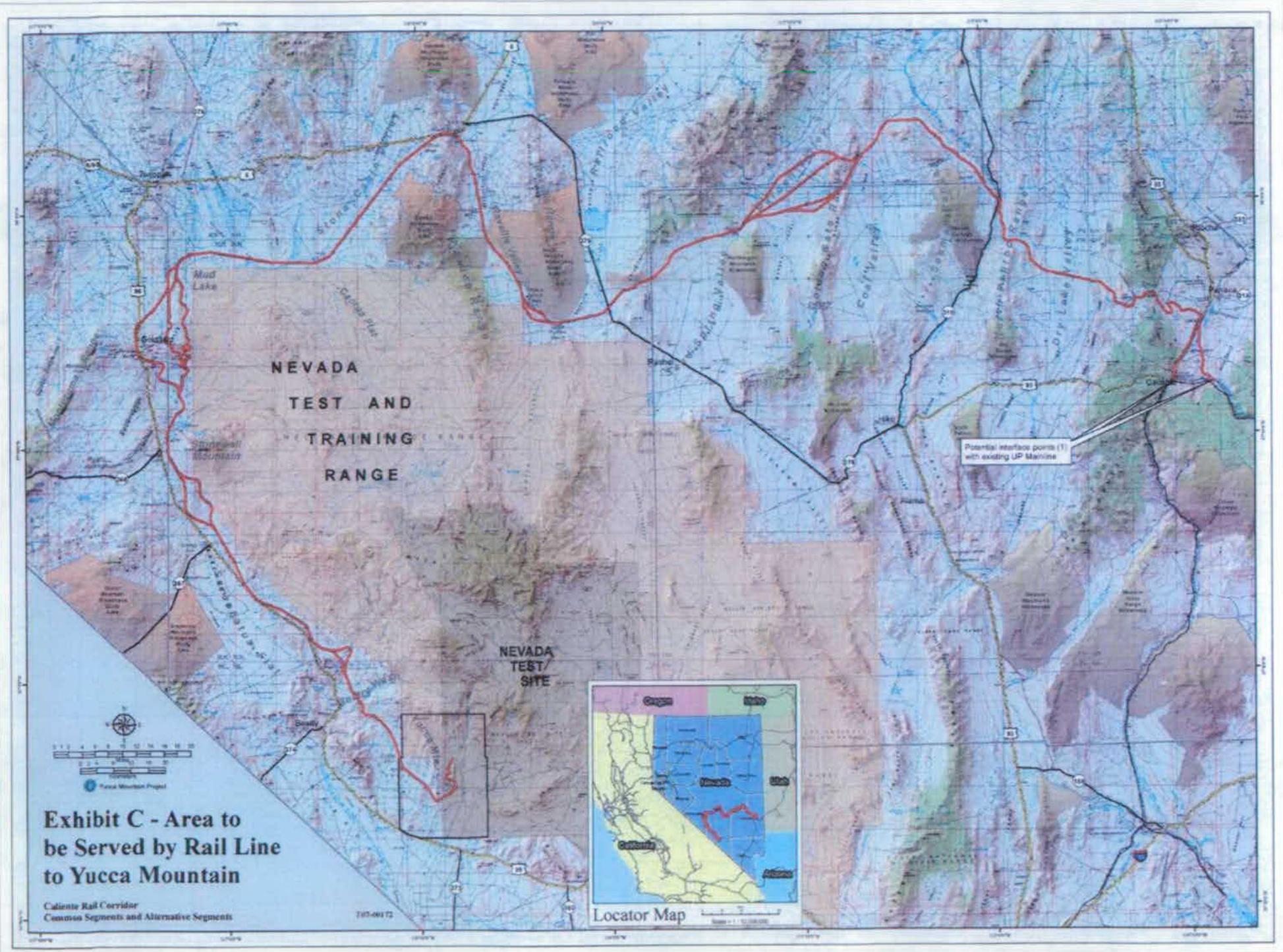


Exhibit C - Area to be Served by Rail Line to Yucca Mountain

Caliente Rail Corridor
Common Segments and Alternative Segments

7107-001 72



Potential interface points (1) with existing UP Mainline

Finance Docket No. 35106

EXHIBIT D
Operating Plan
(Not Applicable at this time)

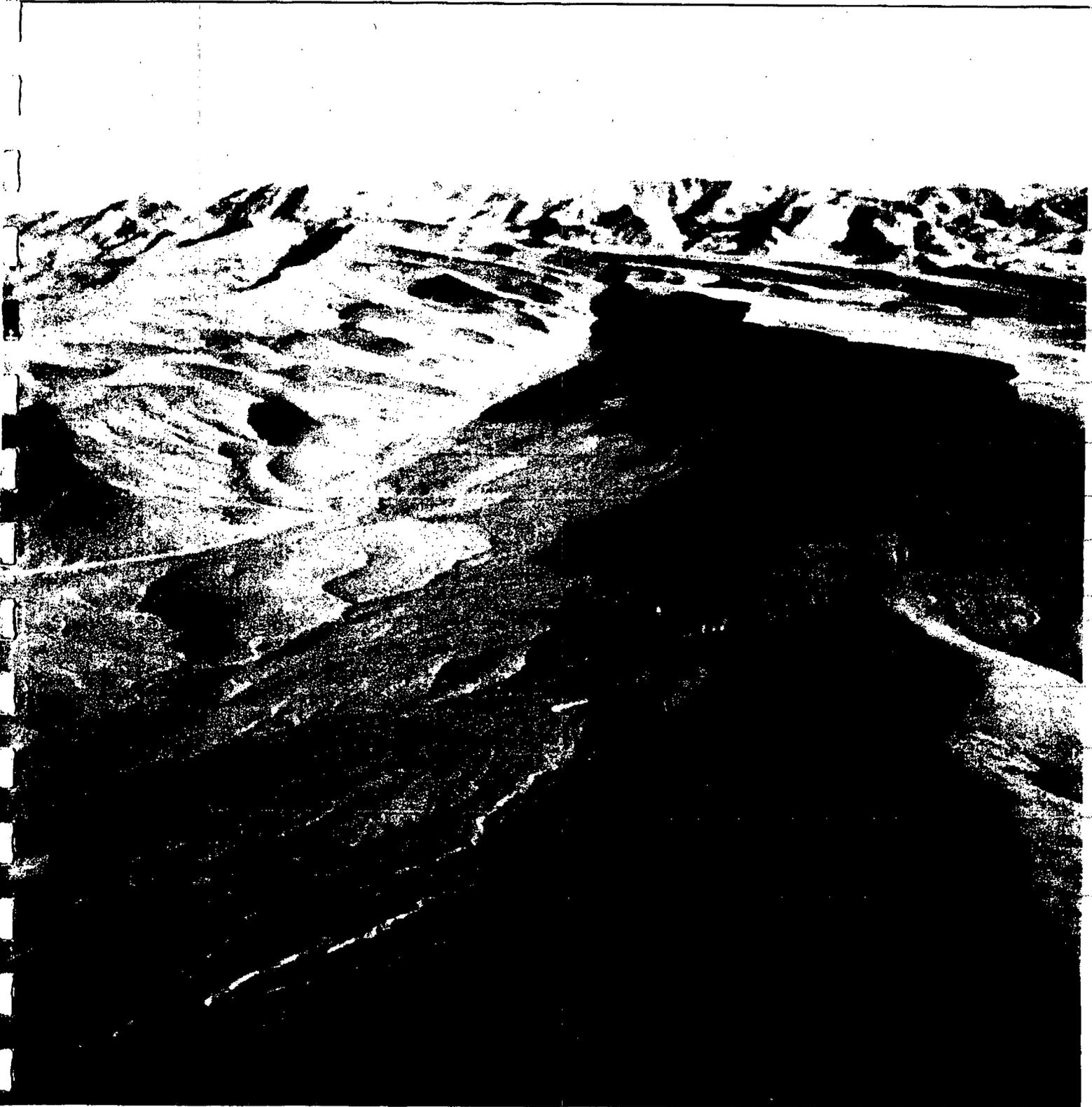
Finance Docket No. 35106

EXHIBIT E/F

Balance Sheet / Income Statement
For Fiscal Years 2005-2006 and 2006-2007

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**Annual Financial Report
Years Ended September 30, 2006 and 2005**



**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**Annual Financial Report
Years Ended September 30, 2006 and 2005**

Table of Contents

	Page
Overview	
Reporting Entity	1
Organization Chart	2
Program General Goal	3
Financial Performance	5
Analysis of Systems, Controls and Legal Compliance	6
Detailed Performance Results	8
Independent Auditors' Report	10
Financial Results	
Balance Sheets	22
Statements of Net Costs	23
Statements of Changes in Net Position	24
Statements of Budgetary Resources	25
Statements of Financing	26
Notes to Financial Statements	27
Required Supplementary Stewardship Information for Research and Development	40
Supplementary Information – Schedule I	41
Schedule of Cumulative Net First and Second Repository Costs	
Supplementary Information – Schedule II	42
Schedule of Cumulative Revenues and Deferred Revenue	

OVERVIEW

Reporting Entity

The Nuclear Waste Policy Act (NWPA) of 1982 (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the U.S. Department of Energy (Department). OCRWM's mission is to manage and dispose of the nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). OCRWM provides leadership in developing and implementing strategies to accomplish this mission that ensure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

The Nuclear Waste Policy Amendments Act of 1987 (Title V, Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a candidate site to determine if it was suitable for a repository for SNF and HLW.

The characterization of the Yucca Mountain Site has been completed. On February 14, 2002, the Secretary of Energy recommended the site to the President for development of a nuclear waste repository. On February 15, 2002, the President recommended the site to Congress. On May 8 and July 9, 2002, the House of Representatives and the Senate, respectively, passed a resolution approving the site recommendation. On July 23, 2002, the President signed into law the Congressional Joint Resolution designating Yucca Mountain as the site for the Nation's first SNF and HLW repository. At that point, the focus of the Yucca Mountain Project changed to the activities associated with the Nuclear Regulatory Commission (NRC) licensing process for construction and receiving and possessing waste. The Waste Acceptance Storage and Transportation Project focus changed to the development of a national waste transportation capability.

In Fiscal Year 2006 a new Director, Mr. Edward F. Sproat, III was appointed by the President and approved by Congress. During the Congressional hearing four new strategic objectives were established. A summary of the four strategic objectives are:

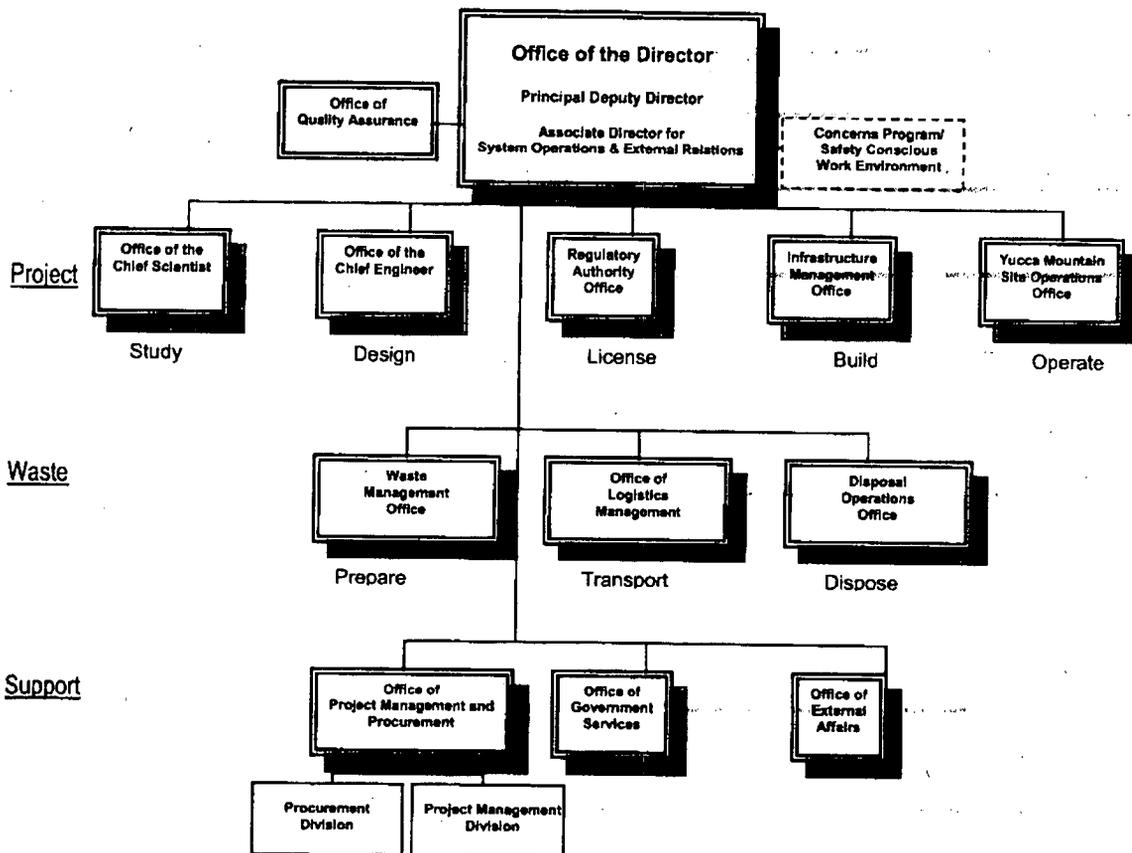
1. To submit a high-quality and docketable license application to the Nuclear Regulatory Commission no later than June 30, 2008.
2. To design, staff, and train the OCRWM organization such that it has the skills and culture needed to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness.
3. To address the Federal Government's mounting liability associated with unmet contractual obligations to move spent fuel from nuclear plant sites.
4. To develop and begin implementation of a comprehensive national spent fuel transportation plan that accommodates state, local and tribal concerns and input to the greatest extent possible.

In addition, during FY 2006 OCRWM's request for reorganization was approved by the Secretary. The approved organizational chart is provided below.

In FY 2006 the program accomplishments included the completion of conceptual design and other relevant documents to update Conceptual Design (CD-1) for a canisterized fuel receipt based system and request CD-1 approval from the acquisition executive; providing specification for developing Transportation Aging and Disposal (TAD) canister; and reducing the ratio of total administrative overhead cost to total program costs by 10 percent from the FY 2006 baseline ratio.

As of September 30, 2006, OCRWM employed a staff of 2,099 full-time equivalents (FTE). This included 166 OCRWM Federal FTE, 34 FTE at other Headquarters offices, 3 Federal FTE at the Department of Energy NNSA/Nevada Site Office, 36 U.S. Geological Survey FTE, and 2,016 contractor FTE, including employees of national laboratories.

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT



PROGRAM GENERAL GOAL: NUCLEAR WASTE

License and construct a permanent repository for nuclear waste at Yucca Mountain and begin acceptance of waste.

How We Serve the Public

The construction and operation of new commercial nuclear power plants allows the United States to maintain a diverse energy portfolio and improves our energy security by successfully opening and operating a repository at Yucca Mountain for the disposal of commercial spent nuclear fuel.

Performance Against Key Targets

During FY 2006:

- Revised the project conceptual design report to adopt a primarily canister-based approach for handling commercial spent nuclear fuel to enable more efficient repository surface facility construction and simplify repository operations.
- Received Energy Systems Acquisition Advisory Board approval of a revised critical-decision-1 to proceed with the canister-based approach and prepare for critical-decision -2.
- Issued a revised Program schedule to submit a license application to the NRC by June 30, 2008, and begin initial operations by 2017.
- Designated Sandia National Laboratory as the lead laboratory to coordinate and organize all scientific work on the Yucca Mountain Project. Sandia will develop the total system performance assessment in order to strengthen and enhance long-term performance assessment by reducing model uncertainties and conservatisms. The laboratory will also review the existing infiltration model and prepare a new model to be used as part of the technical basis for the license application.
- Initiated operational planning activities in coordination with responsible Federal agencies while leveraging existing Departmental expertise in materials shipment to identify the long-lead logistical planning, rolling stock and hardware acquisition strategies, ancillary communication, traffic management and proactive technologies to enable the efficient, safe, and secure transport of radioactive materials by 2017.

During FY 2005:

- Focused on finalizing the draft license application and related actions, including: (1) completing total system performance assessment calculations and the final report, and (2) improving the design of the waste package, surface facilities, and subsurface facilities.
- The Department decided that the draft license application should not be submitted until issues including fuel oxidation, the Environmental Protection Agency's (EPA) radiation standard, and the infiltration model have been resolved. While this decision resulted in the Department not meeting the target as scheduled, resolution of the issues will enable the

Department to submit a defensible license application to construct and operate a permanent repository for nuclear waste.

- Completed indexing of approximately 98 percent of the Department's collection of documentary evidence material on the Licensing Support Network (LSN). The LSN is an internet-based document repository that has been established to support the application for a license to construct the Yucca Mountain repository. NRC regulations (10 CFR 2, Subpart J) require the Department and all other participants in the licensing proceedings to produce their relevant documents on the LSN. The Department was in the process of providing its remaining documents and completing various internal validations of its document production on the LSN when NRC's Atomic Safety and Licensing Board's Pre-License Application Presiding Board ordered the Department to produce copies of the draft license application on the LSN. The Department has appealed this order to the NRC. The Department will not certify its LSN collection until NRC has issued a decision on the appeal of this order.
- Completed the field studies, analysis, and conceptual engineering required to support the issuance of a draft Environmental Impact Statement (EIS) for the Nevada rail line. This achievement is crucial for establishing the detailed approach, timetable, costs, and capabilities for transporting the nuclear waste from an existing rail line in Nevada to the repository. The data was incorporated into the draft EIS for internal review in August 2005.

External Factors

The opening date of the Yucca Mountain repository will also depend on resolution of a number of external factors, including:

- **Regulatory Requirements:** The *Nuclear Policy Act*, as amended, requires that a repository at Yucca Mountain, Nevada, must be licensed by the NRC, which will base its review of the Department's license application submittal against its licensing requirements, including radiation protection standards issued by the Environmental Protection Agency (EPA). The EPA regulations have not yet been finalized. As a license applicant, the Department must also have its Licensing Support Network certification accepted by the NRC six months prior to the license application submittal.
- **Litigation:** Any actions by the Department or other agencies that advance either the repository or transportation, e.g., environmental impact statements are likely to be challenged in the courts.
- **Legislation:** Proposed legislation has been introduced that contains a number of provisions, to facilitate the licensing, construction and operation of a repository at Yucca Mountain. These provisions will permit the Department to accelerate fulfillment of its responsibilities, without diminishing the protection currently afforded workers, members of the public and the environment.

FISCAL YEAR FY 2006 and 2005 FINANCIAL PERFORMANCE

OCRWM is required by the Nuclear Waste Fund (NWF) to recover the full cost of the Program. The Program's total cost was estimated in the OCRWM 2006 Total System Life Cycle Cost report.

Program funding comes from the NWF and the Defense Nuclear Waste Disposal Appropriation (DNWDA). The NWF consists of fees paid by the owners and generators of SNF from commercial reactors, in accordance with provisions of their contracts with the Department for disposal services. NWF assets in excess of those authorized by Congress to pay program costs are invested in U.S. Treasury securities. The DNWDA was established by the Congress in lieu of direct payment of fees by the Department into the NWF, to pay for the disposal costs of the HLW resulting from atomic energy defense activities and other Department-managed nuclear materials. As of September 30, 2006, cumulative revenue from fees and the DNWDA, totaled approximately \$18.209 billion, and cumulative interest earnings and other revenue totaled approximately \$12.622 billion. Cumulative expenditures from appropriations and amounts authorized by Congress, including direct appropriations to the NRC, the now defunct Office of the Nuclear Waste negotiator, and the Nuclear Waste Technical Review Board, totaled approximately \$9.729 billion.

As of September 30, 2006, the U.S. Treasury securities held by OCRWM had a market value of \$19.346 billion compared to \$18.521 billion at the end of Fiscal Year 2005. Investment income and net gains on the sale of securities totaled \$933.320 million and \$881.502 million for Fiscal Years 2006 and 2005, respectively.

OCRWM's primary financial goal is to ensure that future spending needs can be met. Therefore, OCRWM relies on the asset-liability matching approach to investing used by pension funds and insurance companies. By matching investments to anticipated funding requirements, OCRWM reduces the risk that changes in interest rates will adversely affect the fee adequacy balance, ensures that identified spending projections will be met, and makes investments at the most favorable rates currently available.

The financial performance measure established by OCRWM for FY 2006 and FY 2005 related to the performance of its investments in U.S. Government securities:

- To reallocate existing investments and invest any additional surpluses to match the Program's cumulative profile for FY 2005 and FY 2006 through 2033 and 2035, respectively.

RESULTS: As of September 30, 2006, the NWF held investments with a market value of \$19.346 billion to provide for estimated gross program life-cycle liabilities of \$20.505 billion. Although most of the investments have a duration of 24 years or less, the NWF has placed recent income surpluses in 25-years and 26-years duration securities after the Treasury resumed issuance of 30-year bonds. New investments during FY 2006 were made in securities with the longest available duration and assets are now in place to fund the next 28 years.

ANALYSIS OF SYSTEMS, CONTROLS AND LEGAL COMPLIANCE

Analysis of systems, controls and legal compliance is performed, reported and audited at the Departmental level. The results of these reviews and assessments are incorporated in the Department's Performance and Accountability Report. A management significant issue, Nuclear Waste Disposal, was reported by OCRWM for both FY 2006 and FY 2005 and is described below.

Federal Managers' Financial Integrity Act

The *Federal Managers' Financial Integrity Act (FMFIA)* of 1982 requires that agencies establish internal control and financial systems to provide reasonable assurances that the integrity of Federal programs and operations are protected. Furthermore, it requires that the head of the agency provide an annual assurance statement on whether the agency has met this requirement and whether any material weaknesses exist.

In response to the FMFIA, the Department developed an internal control program which holds managers accountable for the performance, productivity, operations and integrity of their programs through the use of management controls. Annually, senior managers at the Department are responsible for evaluating the adequacy of the internal controls surrounding their activities and determining whether they conform to the principles and standards established by the Office of Management and Budget (OMB) and the Government Accountability Office. The results of these evaluations and other senior management information are used to determine whether there are any internal control problems to be reported as material weaknesses. The Departmental Internal Control and Audit Review Council, the organization responsible for oversight of the Management Control Program, makes the final assessment and decision for the Department.

Significant Issue - Nuclear Waste Disposal

Construction of a repository for the disposal of spent nuclear fuel and high-level radioactive waste, authorized under the NWPA, at Yucca Mountain, Nevada, has been delayed because of external factors and program adjustments. Funding shortfalls and the scientific and technical challenges encountered in this first-of-a-kind endeavor to develop a disposal system that must potentially endure a compliance period of a million years have complicated the steady progress necessary to achieve previously published milestones. Finalizing the EPA radiation protection standards and addressing the licensing requirements of the NRC to submit a license application are the key to achieving the new milestones published in July 2006.

Actions Taken and Remaining

The introduction of the *Nuclear Fuel Management and Disposal Act*, April 2006, seeks to provide stability, clarity and predictability to the Yucca Mountain Project. The proposed legislation addresses many of the uncertainties that are currently beyond the control of the Department and have the potential to significantly delay the opening date for the repository. The most important factor is the enactment of a provision that will facilitate Congressional funding needed to implement the Project.

The program adopted a primarily canister-based approach for handling commercial spent nuclear fuel. The revised approach enabled deployment of necessary surface and sub-surface facilities in a manner that could accommodate future funding and income streams and enhances repository operations and performance.

In January 2006, the Department designated Sandia National Laboratories the lead laboratory to coordinate and organize all scientific work on the Project. Sandia National Laboratories will also review the existing infiltration model and prepare a new model to be used as part of the technical basis for the license application.

The Program is implementing management controls in accordance with DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and performance metrics required under the Department's performance and accountability report system and OMB reporting requirements to ensure it achieves its revised milestones. Additionally, the Program is proceeding to certify its earned value management system, which will be in place prior to critical decision-2, Approve Performance Baseline.

Expected Completion

Submittal of a license application to the NRC by June 30, 2008; construction authorization from the NRC by 2011; and receipt of a license amendment from the NRC to receive and possess nuclear materials by 2017.

DETAILED PERFORMANCE RESULTS

<u>FY06</u>	<u>FY05</u>	<u>FY04</u>	<u>FY03</u>	Program Goal: Civilian Radioactive Waste Manage and dispose of high-level radioactive waste and spent nuclear fuel in a manner that protects health, safety and the environment; enhances national and energy security; and merits public confidence.
G	R	G	R	
<p><i>Results:</i> The combination of achieving the Modified Critical Decision -1 Package and Reduced Management Program Funding targets will directly contribute to the Office of Civilian Radioactive Waste Management (OCRWM) submitting a docketable License Application (LA) by June 30, 2008. The draft rail alignment environmental impact statement is rescheduled to be published in the Federal Register by June 2007. The submission and approval of an LA is critical if OCRWM is going to meet the 2017 waste acceptance date at Yucca Mountain.</p>				

FY 2006 Annual Targets

<u>FY06</u>	<u>FY05</u>	<u>FY04</u>	<u>FY03</u>	Modified Critical Decision-1 (CD-1) Package. Submit for Energy Systems Acquisition Advisory Board (ESAAB) approval a modified critical decision-1 package that describes the design and operating plan for the repository, and provides a schedule for license application completion and docketing. (RW GG 7.25.1)
G	NA	NA	NA	
<p><i>Results:</i> The Energy Systems Acquisition Advisory Board convened on July 6, 2006 and approved the Office of Civilian Radioactive Waste Management (OCRWM) CD-1 proposal for changes to the repository operational concept and facilities. The new direction will address the technical challenges with handling commercial spent nuclear fuel in dry transfer cells. The benefits of the new direction include reduced worker exposure to radiation at the Yucca Mountain site and maximized use of existing utility infrastructure. These improvements will help support a successful License Application submission on June 30, 2008, and ultimately Yucca Mountain's waste acceptance in 2017.</p> <p><i>Supporting Documentation:</i> The CD-1 package that is submitted to ESAAB.</p>				

<u>FY06</u>	<u>FY05</u>	<u>FY04</u>	<u>FY03</u>	Environmental Impact Statement. Publish draft rail alignment environmental impact statement (EIS) in the Federal Register. (RW GG 7.25.2)
R	G	NA	NA	
<p><i>Results:</i> Due to litigation regarding the Department's Environmental Impact Statement (EIS) for Yucca Mountain, the draft rail alignment EIS was not published in the Federal Register in FY 2006. The Department is currently expanding the scope of the draft rail alignment EIS to include the study of a new corridor, the Mina Rail Corridor, as an alternative in addition to the previously proposed Caliente Rail Corridor. The updated draft rail alignment EIS will be published in the Federal Register by June 2007. This will enable the Department to produce a final EIS that will be incorporated into the License Application (LA) submission on June 30, 2008. The LA will allow the Department to stay on schedule and achieve waste acceptance at Yucca Mountain in 2017.</p> <p><i>Supporting Documentation:</i> Federal Register Notice "Amended Notice of Intent to Expand the Scope of the Environmental Impact Statement for the Alignment, Construction, and Operation of a Rail Line to a Geological Repository at Yucca Mountain, Nye County, NV," Vol. 71, No. 198, Friday, October 13, 2006. pp. 60484-60490</p> <p><i>Action Plan:</i> The Department is currently expanding the scope of the draft rail alignment EIS to include the study of a new corridor, the Mina Rail Corridor, as an alternative in addition to the previously proposed Caliente Rail Corridor. The Department has extended the public comment period to December 12, 2006, which will provide the opportunity for the public to meet with project officials and to discuss issues concerning the newly proposed Mina Rail Corridor. The updated EIS will be published in the Federal Register by June 2007.</p>				

<u>FY06</u>	<u>FY05</u>	<u>FY04</u>	<u>FY03</u>	
G	G	NA	NA	<p>Reduce Management Program Funding. Reduce the ratio of program direction/contractor management program funding to total program funding by 10 percent from the FY 2005 baseline ratio of 0.274. (RW GG 7.25.3)</p>
<p><i>Results:</i> The Office of Civilian Radioactive Waste Management (OCRWM) surpassed its target by maintaining its FY 2006 ratio of administrative costs to total program costs at .220 (\$101,622,166/\$462,615,987); which is a 20 percent reduction from the FY 2005 ratio of .274. The management program funding is essentially the general and administrative (G&A) costs. By reducing the G&A costs, the Office of Civilian Radioactive Waste Management (OCRWM) can dedicate a greater portion on the total program funding to direct activities which support a successful submission of the License Application (LA). The LA will allow OCRWM to stay on schedule and achieve waste acceptance at Yucca Mountain in 2017. The baseline for administrative overhead rate is currently being validated. Further, the creation of a common approach for calculating total administrative overhead costs in applied R&D programs within the Department will allow some measure of comparability among program offices.</p> <p><i>Supporting Documentation:</i> OCRWM monthly cost performance reports</p>				

Legend for FY 2006 Annual Targets:

G-Green Y-Yellow R-Red NA-Not Applicable

Status of Unmet FY 2005 Performance Targets

Performance Target - Complete draft License Application documents incorporating improvements in safety analysis and design

A draft license application will be available for Departmental review no later than March 2008. On July 19, 2006, the Department announced that it will submit a license application to the NRC no later than June 30, 2008.



KPMG LLP
2001 M Street, NW
Washington, DC 20036

Independent Auditors' Report

United States Department of Energy
Office of Civilian Radioactive Waste Management:

We have audited the accompanying balance sheets of the Office of Civilian Radioactive Waste Management (OCRWM) as of September 30, 2006 and 2005, and the related statements of net cost, changes in net position, budgetary resources, and financing (hereinafter referred to as "financial statements") for the years then ended. The objective of our audits was to express an opinion on the fair presentation of these financial statements. In connection with our fiscal year 2006 and 2005 audits, we also considered the OCRWM's internal controls over financial reporting and tested the OCRWM's compliance with certain provisions of applicable laws, regulations, and contracts that could have a direct and material effect on these financial statements.

SUMMARY

As stated in our opinion on the financial statements, we concluded that the OCRWM's financial statements as of and for the years ended September 30, 2006 and 2005, are presented fairly, in all material respects, in conformity with U.S. generally accepted accounting principles.

Our report emphasizes that the OCRWM is involved as a defendant in several matters of litigation relating to inability to accept waste by January 31, 1998, the date specified in the Nuclear Waste Policy Act of 1982, as amended.

Our report also emphasizes that the OCRWM changed its method of reporting earmarked funds in fiscal year 2006.

Our consideration of internal controls over financial reporting, Required Supplementary Stewardship Information, and performance measures in fiscal years 2006 and 2005 resulted in Financial Management and Reporting Controls being identified as a reportable condition. We consider this reportable condition to be a material weakness.

The results of our tests of compliance with certain provisions of laws, regulations, and contracts for fiscal years 2006 and 2005, exclusive of those referred to in the *Federal Financial Management Improvement Act of 1996* (FFMIA), disclosed no instances of noncompliance or other matters that are required to be reported herein under *Government Auditing Standards* and Office of Management and Budget (OMB) Bulletin Number (No.) 06-03.



The results of our tests of FFMIA for fiscal years 2006 and 2005 disclosed that the OCRWM's financial management systems did not substantially comply with the federal financial management systems and accounting standards requirements as OCRWM's financial management and reporting controls and related supporting data did not support the timely preparation of complete and accurate financial statements. This matter is related to the material weakness in internal controls, described above.

The following sections discuss:

- Our opinion on the OCRWM's financial statements;
- Our consideration of the OCRWM's internal controls over financial reporting;
- Our tests of the OCRWM's compliance with certain provisions of applicable laws, regulations, and contracts;
- Management's responsibilities; and
- Our responsibilities.

OPINION ON THE FINANCIAL STATEMENTS

We have audited the accompanying balance sheets of the OCRWM as of September 30, 2006 and 2005, and the related statements of net cost, changes in net position, budgetary resources, and financing, for the years then ended.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the OCRWM as of September 30, 2006 and 2005, and its net costs, changes in net position, budgetary resources, and reconciliation of net costs to budgetary obligations for the years then ended, in conformity with U.S. generally accepted accounting principles.

As discussed in Note 9 and Note 12 to the financial statements, the OCRWM is involved as a defendant in several matters of litigation relating to its inability to accept waste by the January 31, 1998 date specified in the Nuclear Waste Policy Act of 1982, as amended.

As discussed in Note 2 to the financial statements, the OCRWM changed its method of reporting earmarked funds in fiscal year 2006 to adopt the provisions of Federal Accounting Standards Advisory Board's Statement of Federal Financial Accounting Standards No. 27, *Identifying and Reporting Earmarked Funds*.

The information in the Overview and Required Supplementary Stewardship Information sections is not a required part of the financial statements, but is supplementary information required by U.S. generally accepted accounting principles. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of this information. However, we did not audit this information and, accordingly, we express no opinion on it.



Our audits were conducted for the purpose of forming an opinion on the financial statements taken as a whole. The supplementary information included in Supplementary Information – Schedules I and II for the years ended September 30, 2006, is presented for purposes of additional analysis and is not a required part of the financial statements. Such information has been subjected to the auditing procedures applied in the audits of the financial statements and, in our opinion, is fairly stated in all material respects in relation to the financial statements taken as a whole.

We have also previously audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of OCRWM as of and for the years ended September 30, 1983 through September 30, 2004 (none of which are presented herein), and we expressed unqualified opinions on those financial statements. The supplementary information included in Schedules I and II related to OCRWM's financial statements as of and for the years ended September 30, 1983 through September 30, 2004 was subjected to auditing procedures applied in the audits of those financial statements and, in our opinion, is fairly stated in all material respects in relation to the financial statements from which it has been derived.

INTERNAL CONTROL OVER FINANCIAL REPORTING

Our consideration of internal control over financial reporting would not necessarily disclose all matters in the internal control over financial reporting that might be reportable conditions. Under standards issued by the American Institute of Certified Public Accountants, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal control over financial reporting that, in our judgment, could adversely affect the OCRWM's ability to record, process, summarize, and report financial data consistent with the assertions by management in the financial statements.

Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements caused by error or fraud, in amounts that would be material in relation to the financial statements being audited, may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. Because of inherent limitations in internal control, misstatements due to error or fraud may nevertheless occur and not be detected.

In our fiscal year 2006 and 2005 audits, we noted certain matters involving internal control over financial reporting and its operation that we consider to be a reportable condition. The following reportable condition, described in more detail in Exhibit I, is considered to be a material weakness.

Financial Management and Reporting Controls – Our work for fiscal year 2005 identified deficiencies in the OCRWM's financial management and reporting controls that precluded the OCRWM from preparing its fiscal year 2005 financial statements and supporting documentation in a

complete, accurate, and timely manner. The OCRWM financial management and reporting is substantially supported by the Department of Energy (Department) through the use of its accounting systems and accounting staff. Due primarily to issues resulting from the Department of Energy's implementation of its new accounting system and attrition associated with the reorganization and consolidation of the Department's finance and accounting services organization, the OCRWM was unable to develop adequate reporting and other internal controls essential to the deployment of the new system and preparing timely financial statements. In addition to impairing the OCRWM's financial reporting, the lack of these critical controls detracted from the ability of the accounting staff to complete routine accounting reconciliations and impacted the ability of the OCRWM's officials to manage their programs and monitor the status of obligations.

We found during our work on the fiscal year 2006 financial statements that the Department had made extensive progress in correcting many of the issues we identified in fiscal year 2005, but still experienced significant delays preparing the OCRWM's fiscal year 2006 and 2005 financial statements, footnotes and supporting documentation. The Department continued to be unable to develop adequate reporting and other internal controls essential to the deployment of the new system as it related to the timely preparation of the OCRWM's financial statements. In addition to impairing the OCRWM's financial reporting, the lack of these critical controls continued to detract from the ability of the accounting staff to complete routine accounting reconciliations and impacted the ability of the OCRWM's officials to manage their programs and monitor the status of obligations. Continued action to address these weaknesses is needed to correct the OCRWM's financial management and reporting problems and to improve the ability of program officials to monitor and control obligations and expenditures.

INTERNAL CONTROLS OVER REQUIRED SUPPLEMENTARY STEWARDSHIP INFORMATION AND PERFORMANCE MEASURES

Under OMB Bulletin No. 06-03 the definition of material weaknesses is extended to other controls as follows. Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements caused by error or fraud, in amounts that would be material in relation to the Required Supplementary Stewardship Information or material to a performance measure or aggregation of related performance measures, may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. Because of inherent limitations in internal control, misstatements due to error or fraud may nevertheless occur and not be detected.



Our consideration of the internal control over the Required Supplementary Stewardship Information and the design and operation of internal control over the existence and completeness assertions related to key performance measures would not necessarily disclose all matters involving the internal control and its operation related to Required Supplementary Stewardship Information or the design and operation of the internal control over the existence and completeness assertions related to key performance measures that might be reportable conditions.

In our fiscal year 2006 and 2005 audits, we noted no matters involving the internal control and its operation related to Required Supplementary Stewardship Information that we considered to be material weaknesses as defined above.

Further, in our fiscal year 2006 and 2005 audits, we noted no matters involving the design and operation of the internal control over the existence and completeness assertions related to key performance measures that we considered to be material weaknesses as defined above.

COMPLIANCE AND OTHER MATTERS

The results of our tests of compliance with certain provisions of other laws and regulations for fiscal years 2006 and 2005, exclusive of those referred to in FFMIA, disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 06-03.

The results of our tests of FFMIA for fiscal years 2006 and 2005 disclosed that the OCRWM's financial management systems did not substantially comply with the federal financial management systems and accounting standards requirements, discussed in the Responsibilities section of this report, which prevented the OCRWM from preparing timely and accurate financial statements and supporting data for audit. This matter is related to the material weakness in internal controls, described in the Internal Control over Financial Reporting section of this report. Our related recommendations are presented in Exhibit I.

The results of our tests of FFMIA disclosed no instances in which the OCRWM's financial management systems did not substantially comply with requirements of applying the United States Government Standard General Ledger at the transaction level.

* * * * *

RESPONSIBILITIES

Management's Responsibilities.

Management is responsible for the financial statements, including:



- Preparing the financial statements in conformity with U.S. generally accepted accounting principles;
- Preparing the Overview (including the performance measures), and the Required Supplementary Stewardship Information;
- Establishing and maintaining effective internal control; and
- Complying with laws, regulations, and contracts applicable to the OCRWM, including FFMIA.

In fulfilling this responsibility, management is required to make estimates and judgments to assess the expected benefits and related costs of internal control policies.

Auditors' Responsibilities. Our responsibility is to express an opinion on the fiscal year 2006 and 2005 financial statements of the OCRWM based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and OMB Bulletin No. 06-03. Those standards and OMB Bulletin No. 06-03 require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the OCRWM's internal control over financial reporting. Accordingly, we express no such opinion.

An audit also includes:

- Examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements;
- Assessing the accounting principles used and significant estimates made by management; and
- Evaluating the overall financial statement presentation.

We believe that our audits provide a reasonable basis for our opinion.

In planning and performing our fiscal year 2006 and 2005 audits, we considered the OCRWM's internal control over financial reporting by obtaining an understanding of the OCRWM's internal control, determining whether internal controls had been placed in operation, assessing control risk, and performing tests of controls in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements. We limited our internal control testing to those controls



necessary to achieve the objectives described in *Government Auditing Standards* and OMB Bulletin No. 06-03. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*. The objective of our audit was not to provide an opinion on the OCRWM's internal control over financial reporting. Consequently, we do not provide an opinion thereon.

As required by OMB Bulletin No. 06-03, in our fiscal year 2006 and 2005 audits, we considered the OCRWM's internal control over the Required Supplementary Stewardship Information by obtaining an understanding of the OCRWM's internal control, determining whether these internal controls had been placed in operation, assessing control risk, and performing tests of controls. We limited our testing to those controls necessary to test and report on the internal control over Required Supplementary Stewardship Information in accordance with OMB Bulletin 06-03. However, our procedures were not designed to provide an opinion on internal control over the Required Supplementary Stewardship Information and, accordingly, we do not provide an opinion thereon.

As further required by OMB Bulletin No. 06-03, in our fiscal year 2006 and 2005 audits, with respect to internal control related to performance measures determined by management to be key and reported in the Overview, we obtained an understanding of the design of internal controls relating to the existence and completeness assertions and determined whether these internal controls had been placed in operation. We limited our testing to those controls necessary to test and report on the internal control over key performance measures in accordance with OMB Bulletin 06-03. However, our procedures were not designed to provide an opinion on internal control over reported performance measures and, accordingly, we do not provide an opinion thereon.

As part of obtaining reasonable assurance about whether the OCRWM's fiscal year 2006 and 2005 financial statements are free of material misstatement, we performed tests of the OCRWM's compliance with certain provisions of laws, regulations, and contracts, noncompliance with which could have a direct and material effect on the determination of the OCRWM financial statement amounts, and certain provisions of other laws and regulations specified in OMB Bulletin No. 06-03, including certain provisions referred to in FFMIA. We limited our tests of compliance to the provisions described in the preceding sentence, and we did not test compliance with all laws, regulations, and contracts applicable to the OCRWM. However, providing an opinion on compliance with laws, regulations, and contracts was not an objective of our audit and, accordingly, we do not express such an opinion.

Under OMB Bulletin No. 06-03 and FFMIA, we are required to report whether the OCRWM's financial management systems substantially comply with (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, and (3) the United States Government Standard General Ledger at the



transaction level. To meet this requirement, we performed tests of compliance with FFMIA Section 803(a) requirements.

RESTRICTED USE

This report is intended solely for the information and use of the OCRWM's and Department's management, the Department's Office of Inspector General, OMB, the U.S. Government Accountability Office, and the U.S. Congress and is not intended to be and should not be used by anyone other than these specified parties.

KPMG LLP

October 15, 2007

Independent Auditors' Report
Exhibit I – Material Weakness
Financial Management and Reporting Controls

We identified a material weakness in OCRWM's financial management and reporting controls that delayed the OCRWM from preparing its fiscal year 2006 and 2005 financial statements and supporting documentation in a complete, accurate, and timely manner. Under the current financial reporting structure, the OCRWM is dependent on the Department's office of the Chief Financial Officer (CFO) for preparation of the OCRWM's financial statements and footnotes through the use of the Department's accounting systems and accounting staff.

The Department encountered a number of challenges resulting from the fiscal year 2005 implementation of its new accounting system, the Standard Accounting and Reporting System (STARS), consolidation and realignment of its financial and accounting services organization, and the adoption of a new chart of accounts. Specifically, in October 2004, the Department centralized certain operations previously performed by multiple field offices and accounting service centers and restructured its overall financial and accounting services organization. These changes, coupled with higher than normal attrition, had a negative impact on the financial accounting staffing levels and skills mix throughout the Department. Shortly thereafter, in April 2005, the Department implemented STARS and a new chart of accounts.

While the Department conducted extensive STARS pre-deployment testing, it encountered implementation issues related to converting data from its legacy accounting system, developing new accounting processes to effectively use the new system, and identifying related reporting requirements. The Department's new financial and accounting services organization was unable to fully address many of these implementation issues prior to September 30, 2005. Reports needed for management, control, and audit purposes were not available following STARS deployment, and a number of system reconciliations remained incomplete. Furthermore, new STARS-specific accounting processes had not been fully documented, and operational control procedures were not yet being performed routinely. Problems resulting from the lack of these critical controls significantly delayed preparation of the OCRWM's fiscal year 2005 financial statements and supporting data, and impacted the ability of management officials to monitor and control their budgets. The Department recognized these issues and classified financial control and reporting as a reportable problem in its *Federal Managers' Financial Integrity Act* assurance statement for fiscal year 2005, and as a non-compliance matter in its *Federal Financial Management Improvement Act* reporting. Because of the Department's remediation efforts to resolve these issues, the Department was unable to devote personnel specifically to establish policies and procedures that ensure the preparation of the OCRWM's fiscal year 2005 financial statements and footnotes in a complete, accurate, and timely manner.

We found during our work on the fiscal year 2006 financial statements that the Department had made extensive progress in correcting many of the issues we identified in fiscal year 2005, but still experienced significant delays preparing the OCRWM's fiscal year 2006 and 2005 financial statements and footnotes. We determined that the Department continued to have ~~had limited staff available to~~ devote attention to developing the policies and procedures specific to the preparation of the OCRWM's financial statements and footnotes.

Specifically, we noted the following issue areas:

Development of financial reporting policies and procedures -- The Department's office of the CFO experienced a higher than normal attrition rate that significantly impacted its ability to timely preparing the OCRWM's fiscal year 2006 and 2005 financial statements using information generated by the STARS. Specifically, we found that the Department's office of the CFO did not have a sufficient number of personnel with the requisite financial accounting background, knowledge, and expertise, to both (i) establish, and (ii) effectively manage the financial reporting needs for the OCRWM.

Obligations, budget execution and funds control -- Our work on the fiscal year 2005 obligations found unreconciled differences between the general ledger, subsidiary modules, and various other information systems used to manage obligation and cost data. Some field organizations entered and controlled obligations using separate information systems (feeder systems) that interface with the STARS purchase order module, while others recorded obligation data directly in the purchase order module. Some sites summarized transactions for posting in a manner that prevented the obligation data in STARS from being readily traced or reconciled to source documents. In addition, because the sites had not fully developed control procedures unique to their feeder systems and data entry methods, they could not ensure the accuracy of obligation data through timely reconciliation to the STARS general ledger totals. STARS data is needed for official funds control purposes. Without routine reconciliations, there is significant risk that the obligations reported in the OCRWM's financial statements may be misstated and that field office and program managers may be using incomplete or inaccurate data for financial management decisions. Field offices also reported that they could not identify and resolve some differences between STARS and contract file data. Because of the unexplained differences, several field offices expressed concerns regarding the accuracy of their uncosted and unpaid obligations balances, which adversely affected their ability to monitor and control their budgets. These and other program officials also expressed concerns regarding incorrect conversion of legacy system data, potential funds distribution errors, and inappropriate accrual of interest penalties. Finally, a number of program officials said that they needed additional training in using available reporting tools to monitor obligations and expenditures.

Our work on the OCRWM's fiscal year 2006 obligations found that the Department had resolved the issues we identified during our test work on the fiscal year 2005 obligations.

Reconciling disbursements and collections – The Department had difficulty reconciling its disbursement and collection activity, including that of the OCRWM, with the U.S. Treasury's records beginning April 2005 through September 30, 2005. These payment reconciliation issues have significantly complicated and delayed efforts to verify the accuracy of the Fund Balance with Treasury account. Because of these difficulties, the Department's submissions to Treasury and OMB as of June 30, 2005, were based on estimated disbursement data. In September 2005, corrected SF-224s, *Monthly Statement of Transactions*, were submitted to Treasury for the period April through June 2005. The Department was unable to timely complete its September 2005 Fund Balance with Treasury reconciliation until November 4, 2005.

Our work on the OCRWM's fiscal year 2006 financial statements found that the Department had resolved the reconciliation issues discussed above.

Integrated contractor trial balances – A number of unreconciled differences existed between STARS and the separate financial systems maintained by the Department's integrated contractors for fiscal year 2005 that related to the OCRWM. A task force formed to identify and resolve these differences found that they resulted from errors in data conversion and incomplete reconciliation and cross-walk instructions. While the Department believed that substantially all of the remaining differences resulted from misclassifications of data between contractors and field office reporting units - misclassifications that do not affect the accuracy of the consolidated financial statements - it had not completed most of the reconciliations for individual contractors, and the effect of the remaining corrections on the OCRWM financial statements was not known.

Our work on the OCRWM's fiscal year 2006 financial statements found that the Department had resolved the identified integrated contractor trial balance reconciliation issues and implemented routine reconciliations.

Reconciliation of data – Data conversion and operational problems created out-of-balance conditions between the STARS purchase order, accounts payable, and accounts receivable modules and the general ledger. The Department identified a number of reconciling differences and adjustments, but had not completed reconciliations of all modules to the general ledger as of September 30, 2005. In addition, the Department reported that several hundred fiscal year 2005 general ledger posting errors identified by STARS edit routines were unresolved. Although the Department implemented system changes to prevent many of these errors from recurring, it did not complete its review and correction of unresolved errors until after September 30, 2005. The Department requires field offices to resolve many of these errors, but staffing levels were not adequate to complete the work for timely and accurate preparation of the OCRWM's fiscal year 2005 financial statements. Prompt

resolution of data posting errors is an essential component of financial data integrity, and its absence could make the safeguards against misappropriation or unauthorized use of funds less effective.

Our work on the fiscal year 2006 financial statements found that the Department had resolved the above data reconciliation issues.

Recommendations:

We recommend that the Director of OCRWM ensure that the Department's CFO hire and or allocate existing personnel with the requisite financial accounting background, knowledge, and expertise, to both (i) establish, and (ii) effectively manage the financial reporting needs for the OCRWM.

Management's Response:

The Department concurs with the recommendation and actions have already been taken to address this condition. Specifically, in May 2007, the Department added to the resources supporting OCRWM financial reporting by hiring an accountant dedicated solely to financial reporting for OCRWM. Resolution of the Department's material weaknesses related to the implementation of a new accounting system in April 2005 and the addition of personnel within the CFO has corrected this financial reporting weakness. The CFO has demonstrated the requisite financial accounting background, knowledge, and expertise to address OCRWM's financial reporting with the completion of all required financial reporting for prior years including the FY 2005/2006 financial statements and through all interim reporting to date for FY 2007.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Balance Sheets

As of September 30, 2006 and 2005
(Dollars in thousands)

	2006	2005
ASSETS		
Intragovernmental		
Fund Balance with Treasury ^(Note 3)	\$ 66,359	\$ 19,412
Investments, Net ^(Note 4)	17,952,783	16,512,346
Accounts Receivable:		
Receivables from Defense Fees and Interest ^(Note 7)	-	764,503
Utilities ^(Note 5)	11,782	11,532
Accrued Investment Interest ^(Note 4)	48,952	53,849
Other Accounts Receivable	137	86
Other Intragovernmental Assets	147	203
Total Intragovernmental Assets	<u>\$ 18,080,160</u>	<u>\$ 17,361,931</u>
Accounts Receivable:		
Utilities ^(Note 5)	3,153,382	3,023,490
Other Accounts Receivable	21	17
General Property, Plant, and Equipment, Net ^(Note 6)	10,581	10,128
Other Assets	995	584
Total Assets	<u><u>\$ 21,245,139</u></u>	<u><u>\$ 20,396,150</u></u>
LIABILITIES		
Intragovernmental:		
Accounts Payable ^(Note 8)	\$ 9,563	\$ 8,628
Deferred Revenue ^(Note 10)	293,896	769,188
Other Liabilities	354	277
Total Intragovernmental Liabilities	<u>\$ 303,813</u>	<u>\$ 778,093</u>
Accounts Payable	37,762	78,047
Deferred Revenue ^(Note 10)	20,821,447	19,500,890
Pension and Other Actuarial Liabilities	11,529	10,205
Other Liabilities	19,538	14,821
Commitments and Contingencies ^(Note 9)	6,717,598	5,222,852
Total Liabilities ^(Note 8)	<u>\$ 27,911,687</u>	<u>\$ 25,604,908</u>
NET POSITION		
Unexpended Appropriations - Other Funds	51,050	14,094
Cumulative Results of Operations - Other Funds	<u>(6,717,598)</u>	<u>(5,222,852)</u>
Total Net Position	<u>\$ (6,666,548)</u>	<u>\$ (5,208,758)</u>
Total Liabilities and Net Position	<u><u>\$ 21,245,139</u></u>	<u><u>\$ 20,396,150</u></u>

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Statements of Net Costs

For the Years Ended September 30, 2006 and 2005

(Dollars in thousands)

	2006	2005
First Repository Costs	\$ 311,830	\$ 359,362
All Other Program Costs:		
Program Support	\$ 121,007	\$ 112,974
Transfers of Appropriations (Note 7)	49,229	71,649
Waste Acceptance, Storage and Transportation	34,061	49,139
Imputed and Other Costs	1,909	1,879
Total All Other Program Costs	\$ 206,206	\$ 235,641
Total First Repository and Other Program Costs	\$ 518,036	\$ 595,003
Less Earned Revenues (Note 10)	(516,127)	(593,124)
Net First Repository Costs	\$ 1,909	\$ 1,879
Estimated liability for waste acceptance obligations	\$ 1,602,091	\$ 3,303,333
Net cost of operations	\$ 1,604,000	\$ 3,305,212

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Statements of Changes in Net Position

For the Years Ended September 30, 2006 and 2005

(Dollars in thousands)

	Consolidated 2006	2005
CUMULATIVE RESULTS OF OPERATIONS:		
Beginning Balance	\$ (5,222,852)	\$ (1,919,519)
Other Financing Sources:		
Imputed Financing from Costs Absorbed by Others	\$ 109,254	\$ 1,879
Total Other Financing Sources	<u>\$ 109,254</u>	<u>\$ 1,879</u>
Net Cost of Operations	<u>(1,604,000)</u>	<u>(3,305,212)</u>
Net Change	<u>\$ (1,494,746)</u>	<u>\$ (3,303,333)</u>
Ending Balance - Cumulative Results of Operations	<u>\$ (6,717,598)</u>	<u>\$ (5,222,852)</u>
UNEXPENDED APPROPRIATIONS:		
Beginning Balance	\$ 14,094	\$ 48,076
Budgetary Financing Sources Related to Appropriations:		
Appropriations Received (Note 2)	\$ 350,000	\$ 231,000
Other Adjustments	(3,500)	(1,848)
Appropriations Used	<u>(309,544)</u>	<u>(263,134)</u>
Total Budgetary Financing Sources Related to Appropriations	<u>\$ 36,956</u>	<u>\$ (33,982)</u>
Ending Balance Unexpended Appropriations	<u>\$ 51,050</u>	<u>\$ 14,094</u>
Total Net Position	<u>\$ (6,666,548)</u>	<u>\$ (5,208,758)</u>

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**Statements of Budgetary Resources
For the Years Ended September 30, 2006 and 2005
(Dollars in thousands)**

	2006	2005
BUDGETARY RESOURCES		
Unobligated balance, Brought Forward, October 1	\$ 24,266	\$ 13,179
Recoveries of Prior Year Unpaid Obligations	-	8
Budget Authority:		
Appropriations	\$ 450,000	\$ 649,227
Spending Authority from Offsetting Collections:		
Earned:		
Collected	1,326	-
Subtotal	\$ 451,326	\$ 649,227
Nonexpenditure Transfers, Net, Anticipated and Actual	-	(77,649)
Temporarily not Available Pursuant to Public Law	(1,000)	(3,346)
Permanently Not Available	(3,500)	(1,848)
Total Budgetary Resources	<u>\$ 471,092</u>	<u>\$ 585,571</u>
STATUS OF BUDGETARY RESOURCES		
Obligations Incurred:		
Direct	\$ 346,164	\$ 230,951
Exempt from Apportionment	112,186	330,354
Total Obligations Incurred	\$ 458,350	\$ 561,305
Unobligated Balance:		
Apportioned	347	10
Exempt from Apportionment	12,395	24,256
Total Status of Budgetary Resources	<u>\$ 471,092</u>	<u>\$ 585,571</u>
CHANGE IN OBLIGATED BALANCE		
Obligated Balance, Net:		
Unpaid Obligations, Brought Forward, October 1	\$ 279,309	\$ 234,943
Total Unpaid Obligated Balance, Net, October 1		
Obligations Incurred	458,350	561,305
Less: Recoveries of Prior Year Unpaid Obligations, Actual	-	(8)
Less: Gross Outlays	(500,962)	(516,931)
Obligated Balance, Unpaid Obligations, Net, End of Period:	<u>\$ 236,697</u>	<u>\$ 279,309</u>
NET OUTLAYS		
Gross Outlays	\$ 500,962	\$ 516,931
Less: Offsetting collections	(1,326)	-
Less: Distributed Offsetting Receipts	(1,293,194)	(1,885,151)
Net Outlays	<u>\$ (793,558)</u>	<u>\$ (1,368,220)</u>

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Statements of Financing

For the Years Ended September 30, 2006 and 2005
(Dollars in thousands)

	2006	2005
RESOURCES USED TO FINANCE ACTIVITIES:		
Budgetary Resources Obligated:		
Obligations Incurred	\$ 458,350	\$ 561,305
Less: Spending Authority from Offsetting Collections and Recoveries	<u>(1,326)</u>	<u>(8)</u>
Obligations, Net of Offsetting Collections and Recoveries	<u>\$ 457,024</u>	<u>\$ 561,297</u>
Offsetting Receipts:		
Fees for Disposal of Spent Nuclear Fuel	\$ (751,537)	\$ (736,070)
Earnings on Investments	(541,656)	(1,149,077)
Other Offsetting Receipts	<u>(1)</u>	<u>(4)</u>
Total Offsetting Receipts	<u>\$ (1,293,194)</u>	<u>\$ (1,885,151)</u>
Net Obligations	<u>\$ (836,170)</u>	<u>\$ (1,323,854)</u>
Other Resources:		
Imputed Financing from Costs Absorbed by Others	\$ 109,254	\$ 1,879
Other:		
Offsetting Receipts, Deferred	\$ 1,723,720	\$ 2,157,364
Defense Fees and Related Interest	-	134,581
Adjustment for Department of Energy Appropriation	<u>(309,544)</u>	<u>(263,292)</u>
Total Other	<u>\$ 1,414,176</u>	<u>\$ 2,028,653</u>
Net Other Resources Used to Finance Activities	<u>\$ 1,523,430</u>	<u>\$ 2,030,532</u>
Total Resources Used to Finance Activities	<u>\$ 687,260</u>	<u>\$ 706,678</u>
RESOURCES USED TO FINANCE ITEMS NOT PART OF THE NET COST OF OPERATIONS:		
Change in Resources Obligated for Goods/Services/Benefits Ordered But Not Yet Provided	\$ 4,266	\$ (46,032)
Resources that Finance the Acquisition of Assets	(2,935)	(806)
Resources that Fund Expenses Recognized in Prior Periods	(1,831)	(866)
Other Resources and Adjustments	<u>20,604</u>	<u>-</u>
Total Resources Used to Finance Items Not Part of the Net Cost of Operations	<u>\$ 20,104</u>	<u>\$ (47,704)</u>
Total Resources Used to Finance the Net Cost of Operations	<u>\$ 707,364</u>	<u>\$ 658,974</u>
NET COST ITEMS THAT DO NOT REQUIRE OR GENERATE RESOURCES IN CURRENT PERIOD:		
Increases in Unfunded Liability Estimates	\$ 1,502,423	\$ 3,308,313
Components Not Requiring or Generating Resources:		
Depreciation and Amortization	\$ (657,677)	\$ (509,689)
Revaluation of Assets and Liabilities	(10)	(388)
Other	<u>51,900</u>	<u>(151,998)</u>
Total Components Not Requiring or Generating Resources	<u>\$ (605,787)</u>	<u>\$ (662,075)</u>
Total Net Cost Items That Do Not Require or Generate Resources in Current Period	<u>\$ 896,636</u>	<u>\$ 2,646,238</u>
NET COST OF OPERATIONS	<u>\$ 1,604,000</u>	<u>\$ 3,305,212</u>

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(1) Legislative Background

The Nuclear Waste Policy Act of 1982 (NWPA) was signed into law on January 7, 1983. The NWPA establishes a framework for the financing, siting, licensing, operating and decommissioning of one or more mined geologic repositories for the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) which is to be carried out by the Department of Energy's (Department) Office of Civilian Radioactive Waste Management (OCRWM). In addition, the NWPA contains other provisions including:

- Assigning responsibility for the full payment of disposal costs to the owners and generators of SNF and HLW and creating a special Nuclear Waste Fund (NWF) within the Department of Treasury of the United States for the collection of fees related to such costs;
- Providing for contracts between the Department and the owners and generators of SNF and HLW pursuant to which the Department is to take title to the SNF or HLW as expeditiously as possible, following commencement of repository operations and, in return for payment of fees established by the NWPA, to begin disposal of the SNF or HLW not later than January 31, 1998; and
- Requiring evaluation of the use of civilian disposal capacity for the disposal of HLW resulting from atomic energy defense activities (defense waste). In April 1985, the President notified the Department of his determination that a separate defense waste repository was not necessary and directed the Department to proceed with arrangements for disposal of such waste. Fees, equivalent to those paid by commercial owners, must be paid for this service by the Federal Government to the NWF account.

On December 22, 1987, the President signed into law the Budget Reconciliation Act, Subtitle A of Title V, of which contained amendments to the NWPA. The legislation directed the Department to characterize only the Yucca Mountain site in Nevada as a candidate site for the first repository. The legislation also provided for the termination of site-specific activities at all candidate sites other than the Yucca Mountain site, within 90 days of enactment, and for phasing out, not later than six months after enactment, all research programs in existence that were designed to evaluate the suitability of crystalline rock as a potential repository host medium. In the event that the Yucca Mountain site proves unsuitable for use as a repository, the legislation requires the Department to terminate site-specific activities and report to Congress.

(2) Significant Accounting Policies

Basis of Presentation – These financial statements have been prepared to report the financial position and results of operations of OCRWM and include all activity related to OCRWM, including the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation, used for the disposal of SNF and HLW. The financial statements have been prepared from the books and records of the Department for OCRWM in accordance with accounting principles generally accepted in the United States of America as applicable to Federal entities.

Basis of Accounting – OCRWM's financial statements are prepared using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred without regard to receipt or payment of cash. OCRWM also uses budgetary accounting to facilitate compliance with legal constraints and to monitor its budget authority.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

Revenue Recognition – Fees, related accrued interest, and investment income are recognized as exchange (earned) revenue to the extent of expenses incurred, subject to Congressional authorization as discussed below. Fees billed, related accrued interest, and investment income in excess of current expenses are deferred.

The NWPA requires the civilian owners and generators of nuclear waste to pay their share of the full cost of the Civilian Radioactive Waste Management Program (Program) and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A one-time fee (see Note 5) was recorded by OCRWM as of April 7, 1983, related to the disposal of SNF generated prior to that date. Fees recognized by OCRWM are based upon kWh of electricity generated and sold by civilian nuclear reactors on and after April 7, 1983.

Fees associated with the disposal of the Department's SNF and HLW are also recognized as the related costs are incurred and allocated. To estimate the share of the total Program costs that should be allocated to the Department, the methodology announced by the Department in the Federal Register in August 1987 was used. The most recent cost estimate, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program (TSLCC)*, issued in March 2006, of the surrogate single repository system (without interim storage) established the amounts to allocate.

Appropriations – Expenditure authority for OCRWM is provided by two separate appropriations as follows:

- For fiscal years 2006 and 2005, Congress appropriated \$350,000 and \$231,000, respectively, from the Defense Nuclear Waste Disposal Appropriation to be used for nuclear waste disposal activities. Pursuant to the Consolidated Appropriations Acts for fiscal years 2006 and 2005, \$3,500 and \$1,848, respectively, were rescinded.
- For fiscal years 2006 and 2005, Congress authorized \$150,000 and \$346,000, respectively, to be used for nuclear waste disposal activities and remain available until expended. This expenditure authority enables OCRWM to finance activities using the NWF special accounts. Pursuant to the Consolidated Appropriations Acts, for fiscal years 2006 and 2005, \$1,000 and \$3,346, respectively, were rescinded. Of the \$150,000 authorized for fiscal year 2006, \$100,000 was to be derived from the NWF with the remaining \$50,000 funded directly to the Department from Treasury's general fund for use in developing a spent nuclear fuel recycling plan.

Fee payments and investment income are deposited into the NWF account and are made available to the Department through the annual expenditure authority provided by Congress. Investments are made in U.S. Treasury securities from funds in excess of current needs. If, at any time, monies available in the NWF are insufficient to discharge responsibilities under the NWPA, borrowings may be made from the U.S. Treasury. The NWPA limits the OCRWM from incurring expenditures, entering into contracts, and obligating amounts to be expended except as provided in advance by appropriation acts. Appropriated dedicated receipts such as these are excluded from appropriations received on the *Statements of Changes in Net Position*.

Imputed Financing Sources – In certain instances, operating costs of OCRWM are paid out of funds appropriated to other federal agencies. For example, certain costs of retirement programs are paid by the Office of Personnel Management (OPM). When costs directly attributable to OCRWM's operations are paid by other agencies, OCRWM recognizes these amounts on the *Statements of Net Costs*. In addition, these amounts are recognized as imputed financing sources in the *Statements of Changes in Net Position*.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

Earmarked Funds – In fiscal year 2006, OCRWM implemented Statement of Federal Financial Accounting Standards (SFFAS) No. 27, Identifying and Reporting Earmarked Funds, which requires separate identification of earmarked funds on the Balance Sheets, Statements of Changes in Net Position, and other selected footnotes.

Earmarked funds are financed by specifically identified revenues, often supplemented by other financing sources, which remain available over time. These specifically identified revenues and other financing sources are required by statute to be used for designated activities, benefits or purposes, and must be accounted for separately from the Government's general revenues (see Note 11). In certain instances, operating costs of OCRWM are paid out of funds appropriated to other federal agencies. In accordance with the implementation guidance, earmarked funds are not separately identified in FY 2005.

Investments – Investments are in U.S. Treasury securities and are stated at cost net of amortized premiums and discounts as it is the Department's intent to hold the investments to maturity. Premiums and discounts are amortized using the effective interest yield method (see Note 4).

General Property, Plant, and Equipment – Purchases of general property, plant, and equipment (PP&E) exceeding \$50 are capitalized if they have a useful life greater than two years. PP&E is depreciated on a straight-line basis over the estimated useful lives of the assets. Useful lives range from 5 to 30 years. Maintenance costs are borne by OCRWM for equipment either on loan from or shared with other programs.

Accounts Receivable – Payment of accounts receivable will not be complete until OCRWM starts accepting waste, which is currently planned to begin in 2017. Interest is accrued quarterly on the outstanding amount receivable including accrued interest. The interest rate used is the 13-week U.S. Treasury bill rate. An allowance for doubtful accounts related to one-time spent fuel fees has not been recorded as of September 30, 2006 or 2005, as OCRWM is not obligated to accept waste without payment of fees.

Accrued Investment Interest Receivable – Investment interest is accrued on the outstanding investment balance using the applicable interest rate for the investments.

Liabilities – Liabilities represent the amount of monies or other resources that are likely to be paid by OCRWM as the result of a transaction or event that has already occurred. However, no liability can be paid by OCRWM absent an appropriation. Liabilities for which an appropriation has not been enacted are therefore classified in these notes as liabilities not covered by budgetary resources and there is no certainty that the appropriation will be enacted. Also, liabilities other than contracts can be abrogated by the Government acting in its sovereign capacity.

Accrued Annual Leave – Federal employees' annual leave is accrued as it is earned, and the accrual is reduced annually for actual leave taken. Each year, the accrued annual leave balance is adjusted to reflect the latest pay rates and unused annual leave balances. To the extent that current or prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources. Sick leave and other types of non-vested leave are expensed as taken.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

Tax Status – OCRWM, as a part of the Department of Energy, which is a Federal agency, is not subject to federal, state, or local income taxes.

First Repository Costs – For the years ended September 30, 2006 and 2005, first repository costs consist primarily of Yucca Mountain costs. The general goals are that of licensing and construction of a permanent repository for nuclear waste at Yucca Mountain and to begin acceptance of waste at the facility.

Retirement Plans – Federal Employees – There are two primary retirement systems for Federal employees. Employees hired prior to January 1, 1984, may participate in the Civil Service Retirement System (CSRS). On January 1, 1984, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. Most employees hired after December 31, 1983, are automatically covered by FERS and Social Security. Employees hired prior to January 1, 1984, elected to either join FERS and Social Security or remain in CSRS. A primary feature of FERS is that it offers a savings plan to which the Department automatically contributes 1 percent of pay and matches any employee contribution up to an additional 4 percent of pay. For most employees hired since December 31, 1983, OCRWM also contributes the employer's matching share for Social Security. OCRWM does not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities, if any, applicable to its employees. Reporting such amounts is the responsibility of OPM and the FERS. OCRWM does report, as an imputed financing source and a program expense, the difference between its contributions to Federal employee pension and other retirement benefits and the estimated actuarial costs as computed by OPM.

Contractor Employees – OCRWM's primary integrated contractor maintains a defined benefit pension plan under which they promise to pay employees specified benefits, such as a percentage of the final average pay for each year of service. OCRWM's cost under the contract includes reimbursement of annual employer contributions to the pension plans.

Each year an amount is calculated for employers to contribute to the pension plan to ensure the plan assets are sufficient to provide for the full accrued benefits of contractor employees in the event that the plan is terminated. The level of contributions is dependent on actuarial assumptions about the future, such as the interest rate, employee turnover and deaths, age of retirement, and salary progression. OCRWM reports assets and liabilities of these pension plans as if it were the plan sponsor.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(3) Fund Balance with Treasury

A summary of the status of fund balances with the U.S. Treasury for appropriated and special funds as of September 30, 2006 and 2005, are as follows:

Fiscal Year 2006	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	\$ 347	\$ 12,395	\$ 12,742
Obligated balance not yet disbursed			
Undelivered orders	50,703	127,687	178,390
Accounts payable and deposit fund liabilities	6,245	52,062	58,307
Budgetary resources invested in Treasury securities	-	(183,080)	(183,080)
Total FY 2006 Fund balance with Treasury	\$ 57,295	\$ 9,064	\$ 66,359

Fiscal Year 2005

Unobligated budgetary resources			
Available	\$ 10	\$ 24,256	\$ 24,266
Obligated balance not yet disbursed			
Undelivered orders	14,084	168,473	182,557
Accounts payable and deposit fund liabilities	2,079	94,667	96,746
Budgetary resources invested in Treasury securities	-	(284,157)	(284,157)
Total FY 2005 Fund balance with Treasury	\$ 16,173	\$ 3,239	\$ 19,412

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(4) Investments, Net

For the years ended September 2006 and 2005, the NWF received proceeds of \$149,715 and \$2,706,947 respectively, from the sale of securities. For the years ended September 2006 and 2005 realized gains on the sale of securities were \$1,865 and \$29,644, respectively.

Accrued interest receivable on investments, as of September 30, 2006 and 2005, totaled \$48,952 and \$53,849, respectively.

Investments in U.S. Treasury securities held as of September 30 of each year consisted of the following:

	<u>2006</u>	<u>2005</u>
Face Value	\$ 36,482,066	\$ 33,549,362
Unamortized discount, net	(18,529,283)	(17,037,016)
Investments, net	\$ 17,952,783	\$ 16,512,346
Unrealized market gains, net	1,393,390	2,008,314
Investments at fair value	<u>\$ 19,346,173</u>	<u>\$ 18,520,660</u>

(5) Receivables Due from Utilities

Owners and generators of civilian SNF and HLW have entered into contracts with the Department for disposal services and for payment of fees to the NWF.

The NWPA specifies two types of fees to be paid to the NWF for disposal services: (a) a one-time charge per kilogram of heavy metal in solidified SNF or HLW existing prior to April 7, 1983; and (b) a one-mil per kWh fee on all net electricity generated and sold by civilian nuclear power reactors on and after April 7, 1983. The Secretary of Energy shall annually review the adequacy of the fees established. In the event the Secretary of Energy determines either insufficient or excess revenue is being collected, the Secretary of Energy shall propose an adjustment to the fee to ensure full cost recovery. The kWh fees are due when billed. The contracts between the Department and the owners and generators of the waste provide three options for payment of the one-time spent fuel fee, one of which must have been selected by June 30, 1985, or within two years of contract execution. The options were:

1. Payment of the amount due, plus interest earned from April 7, 1983, in 40 quarterly installments with the final payment due on or before the first scheduled delivery of SNF to the Department;
2. Payment of the amount due, plus interest from April 7, 1983, in a single payment anytime prior to the first delivery of SNF to the Department; or
3. Payment of the amount due any time prior to June 30, 1985, or two years after contract execution, in the form of a single payment, with no interest due.

Under options (1) and (2), interest accrues from April 7, 1983, to date of first payment at the 13-week U.S. Treasury bill rate compounded quarterly. Under option (1), beginning with the first payment, interest is calculated at the 10-year Treasury note rate in effect at the time. Two utilities selected option (1); neither has begun making payments.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

In fiscal year 2006, there were no payments or adjustments of one-time spent fuel fees by owners and generators of civilian SNF and HLW.

Accounts receivables from public and intragovernmental utilities at September 30 of each year were as follows:

	<u>2006</u>	<u>2005</u>
Accounts receivable - utilities		
Accounts receivable - intragovernmental utilities		
Kilowatt hour fees	\$ 11,782	\$ 11,532
Accounts receivable - public utilities		
Kilowatt hour fees	\$ 169,301	\$ 167,600
One-time spent nuclear fuel fees:		
Option (1)	\$ 143,531	\$ 143,531
Option (2)	736,958	736,958
Total one-time spent nuclear fuel fees	<u>\$ 880,489</u>	<u>\$ 880,489</u>
Accrued interest on one-time spent nuclear fuel fees:		
Option (1)	\$ 343,322	\$ 322,578
Option (2)	1,760,270	1,652,823
Total accrued interest on one-time spent nuclear fuel fees	<u>\$ 2,103,592</u>	<u>\$ 1,975,401</u>
Total accounts receivable - public utilities	<u>\$ 3,153,382</u>	<u>\$ 3,023,490</u>
Total accounts receivable - utilities	<u>\$ 3,165,164</u>	<u>\$ 3,035,022</u>

(6) General Property, Plant, and Equipment, Net

General property, plant, and equipment and related accumulated depreciation consisted of the following at September 30, 2006 and 2005:

	<u>2006</u>	<u>2005</u>
General property, plant, and equipment	\$ 48,913	\$ 47,632
Less accumulated depreciation	<u>(38,332)</u>	<u>(37,504)</u>
General property, plant, and equipment	<u>\$ 10,581</u>	<u>\$ 10,128</u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(7) Transactions with the Department and Other Federal Government Agencies

The NWPA established OCRWM within the Department to carry out the provisions of the NWPA and created the Nuclear Waste Fund in the U.S. Treasury. The investment and borrowing powers of the NWF are limited to transactions with the U.S. Treasury. In discharging its obligations under the NWPA, the Department contracts for services with numerous contractors including other Federal Government agencies. Further, significant administrative services are provided by the Department.

As of September 30, 2006 and 2005, OCRWM owed other Federal Government agencies \$9,563 and \$8,628, respectively, for services and costs provided to OCRWM. For the years ended September 30, 2006 and 2005, OCRWM incurred costs of \$34,986 and \$40,616, respectively, for services and costs provided by other Federal Government agencies. In addition to these incurred costs, OCRWM made the following Congressional authorized transfers from the NWF to the following entities:

	<u>2006</u>	<u>2005</u>
Nuclear Regulatory Commission	\$ 46,082	\$ 68,498
Nuclear Waste Technical Review Board	3,147	3,151
Total transfers to Other Federal Government Agencies	<u>\$ 49,229</u>	<u>\$ 71,649</u>

OCRWM has entered into Memoranda of Agreement (MOA) with the Department's Office of Environmental Management and the Department's Office of Naval Nuclear Propulsion. The MOA established the terms and conditions for acceptance of Department-owned SNF and HLW (Defense Waste) for disposal. Those estimated liabilities are included in the TSLCC that is used to calculate the estimate of the Department's share of total current and future Program costs for Defense Waste. During FY 2006 assumption changes were made to the calculation and as a result the Department's liability to OCRWM was eliminated as of September 30, 2006.

The Department's Defense Waste total cost share as of September 30, 2006 is estimated to be \$2,642,414, including interest amounting to \$638,232 based on the methodology published in the Federal Register in August 1987. As of September 30, 2006 and 2005, the NWF was due \$0 and \$764,503 from the Department, respectively.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(8) Liabilities Not Covered by Budgetary Resources

A summary of liabilities not covered by budgetary resources as of September 30, 2006 and 2005, is as follows:

	<u>2006</u>	<u>2005</u>
Liabilities not covered by budgetary resources:		
Intragovernmental		
Deferred revenue	\$ 293,896	\$ 769,188
Non-Intragovernmental		
Deferred revenue	20,821,447	19,500,890
Pension and actuarial liabilities	11,529	10,205
Other liabilities	9,890	4,952
Estimated liability for waste acceptance obligation	<u>6,717,598</u>	<u>5,222,852</u>
Total liabilities not covered by budgetary resources	<u>\$ 27,854,360</u>	<u>\$ 25,508,087</u>
Liabilities covered by budgetary resources:		
Intragovernmental		
Accounts payable	\$ 9,563	\$ 8,628
Other liabilities	354	277
Non-Intragovernmental		
Accounts payable	37,762	78,047
Contract holdback	122	122
Other liabilities	<u>9,526</u>	<u>9,747</u>
Total liabilities covered by budgetary resources	<u>\$ 57,327</u>	<u>\$ 96,821</u>
Total Liabilities	<u>\$ 27,911,687</u>	<u>\$ 25,604,908</u>

(9) Commitments and Contingencies

In accordance with the NWPA, the Department entered into contracts with more than 45 utilities in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, the Department has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of this delay.

To date, six suits have been settled involving utilities that collectively produce about 18.6 percent of the nuclear-generated electricity in the United States. Under the terms of the settlement, the Treasury's Judgment Fund paid \$188 million to the settling utilities for delay damages they have incurred through 2006 and will make annual payments to them for future costs as they are incurred. In addition, one case has been tried and a judgment entered (and subsequently affirmed on appeal) under which the utility was awarded no damages based on the court's finding that the utility had incurred no compensable costs as a result of the Government's delay as of the time of trial.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

Fifty-six cases remain pending in the Court of Federal Claims. Liability is probable in these cases, and in many of these cases orders have already been entered establishing the Government's liability and the only outstanding issue to be litigated is ascertaining the amount of damages to be awarded. The industry is reported to estimate that damages for all utilities with which the Department has contracts ultimately will be at least \$50 billion. The Department believes that the industry's estimate is highly inflated, and that the disposition of the 13 cases that have been resolved to date suggests that the Government's ultimate liability is likely to be significantly less than that estimate.

In addition, as previously reported, the Department did not meet its goal of submitting a license application for the Yucca Mountain repository to the NRC by the end of calendar year 2004. The Department has since acknowledged that it will be unable to meet its goal of commencing disposal operations at a repository by 2010, and has projected a new opening date of 2017. Given this revised opening date, OCRWM has estimated damages of approximately \$7 billion.

Under current law, any damages or settlements will be paid out of the Treasury's Judgment Fund, which the Department will not be required to reimburse.

Current and former contractors of OCRWM face a class action lawsuit alleging exposure by contractor employees to toxic dust at the repository. The amount of the damages that may be assessed against the contractors and OCRWM's responsibility for payment are uncertain, and no provision for such damages is included in OCRWM's financial statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(10) Deferred Revenue

As described in Note 2, all fees, both kWh fees and Defense high-level radioactive waste fees, as well as the related interest and investment income, are recognized as revenue to the extent of expenses incurred. Amounts in excess of current expenses are deferred. Deferred revenue at September 30, 2006 and 2005 was as follows:

	2006	2005
Intragovernmental		
Fees billed:		
One-time spent nuclear fuel fees:		
kWh fees	\$ 43,611	\$ 45,406
Defense high-level waste fees	(425,248)	159,020
Defense share advance payments	289,211	-
Interest:		
Income on investments	931,455	851,858
Defense high-level waste fees	(318,922)	16,207
Non-intragovernmental		
Fees billed:		
kWh fees	711,228	688,017
Interest:		
One-time spent nuclear fuel fees	128,192	71,305
Other revenue	1,865	29,644
Total revenues	\$ 1,361,392	\$ 1,861,457
Less earned revenue	(516,127)	(593,124)
Change in deferred revenue	\$ 845,265	\$ 1,268,333
Deferred revenue - beginning balance	20,270,078	19,001,745
Deferred revenue - ending balance	\$ 21,115,343	\$ 20,270,078

Other revenue primarily consists of funds returned and net gains on sale of investments.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(11) Earmarked Funds

	Earmarked Funds	All Other Funds	FY 2006 Consolidated	FY 2005 Consolidated
Balance Sheet as of September 30, 2006				
Assets				
Fund Balance with Treasury	\$ 9,064	\$ 57,295	\$ 66,359	\$ 19,412
Investments, Net	17,952,783	-	17,952,783	16,512,346
Accounts Receivable	3,214,274	-	3,214,274	3,853,477
General Property, Plant, and Equipment, Net	10,626	(45)	10,581	10,128
Other Assets	1,142	-	1,142	787
Total Assets	\$ 21,187,889	\$ 57,250	\$ 21,245,139	\$ 20,396,150
Liabilities and Net Position				
Accounts Payable	\$ 42,623	\$ 4,702	\$ 47,325	\$ 86,675
Deferred Revenue	20,821,447	293,896	21,115,343	20,270,078
Pension and Other Actuarial Liabilities	10,031	1,498	11,529	10,205
Other Liabilities	19,892	-	19,892	14,976
Commitments and Contingencies	-	6,717,598	6,717,598	5,222,852
Unexpended Appropriations	-	51,050	51,050	14,094
Cumulative Results of Operations	-	(6,717,598)	(6,717,598)	(5,222,852)
Total Liabilities and Net Position	\$ 20,893,993	\$ 351,146	\$ 21,245,139	\$ 20,396,028
Statement of Net Costs for the Year Ended September 30, 2006				
Total First Repository and Other Program Costs	\$ 207,077	\$ 310,959	\$ 518,036	\$ 595,003
Less Earned Revenues	(207,077)	(309,050)	(516,127)	(593,124)
Net First Repository Costs	\$ -	\$ 1,909	\$ 1,909	\$ 1,879
Estimated liability for waste acceptance obligations	\$ -	\$ 1,602,091	\$ 1,602,091	\$ 3,303,333
Net cost of operations	\$ -	\$ 1,604,000	\$ 1,604,000	\$ 3,305,212
Statement of Changes in Net Position for the Year Ended September 30, 2006				
Beginning Balance - Cumulative Results of Operations	\$ -	\$ (5,222,852)	\$ (5,222,852)	\$ (1,919,519)
Imputed Financing from Costs Absorbed by Others	-	109,254	109,254	1,879
Other Gains and Losses	-	-	-	-
Net Cost of Operations	-	(1,604,000)	(1,604,000)	(3,305,212)
Ending Balance - Cumulative Results of Operations	\$ -	\$ (6,717,598)	\$ (6,717,598)	\$ (5,222,852)
Beginning Balance - Unexpended Appropriations	\$ -	\$ 14,094	\$ 14,094	\$ 48,076
Appropriations Received	-	350,000	350,000	231,000
Other Adjustments	-	(3,500)	(3,500)	(1,848)
Appropriations Used	-	(309,544)	(309,544)	(263,134)
Ending Balance - Unexpended Appropriations	\$ -	\$ 51,050	\$ 51,050	\$ 14,094
Total Net Position	\$ -	\$ (6,666,548)	\$ (6,666,548)	\$ (5,208,758)

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2006 and 2005

(Dollars in thousands unless otherwise noted)

(12) Subsequent Events

The final budget authority received for FY 2007 was \$100 million below the amount requested. While the OCRWM is still evaluating the impact of the final FY 2007 appropriation in conjunction with the President's FY 2008 request, it is likely but not yet certain, that we will not be able to meet our best-achievable schedule for opening the repository. As a result of these delays, Office of Civilian Radioactive Waste Management's estimate of damages has increased to approximately \$11 billion (unaudited). (see Note 9).

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Required Supplementary Stewardship Information for Fiscal Years ending
September 30, 2006

(Dollars in thousands unless otherwise noted)

Expenses for research and development programs applicable to the Nuclear Waste to conduct activities on the long-term storage of high-level nuclear waste at a permanent underground repository were as follows:

	Direct Cost	Depreciation & Other Managerial Cost	Total Cost
FY 2006 APPLIED			
Environmental Quality	<u>\$259,325</u>	<u>\$3,031</u>	<u>\$262,356</u>
FY 2005 APPLIED			
Environmental Quality	<u>\$143,966</u>	<u>\$1,905</u>	<u>\$145,871</u>
FY 2004 APPLIED			
Environmental Quality	<u>\$65,312</u>	<u>\$1,772</u>	<u>\$67,084</u>
FY 2003 APPLIED			
Environmental Quality	<u>\$75,782</u>	<u>\$1,049</u>	<u>\$76,831</u>
FY 2002 APPLIED			
Environmental Quality	<u>\$62,523</u>	<u>\$2,577</u>	<u>\$65,100</u>
FY 2001 APPLIED			
Environmental Quality	<u>\$60,393</u>	<u>\$3,107</u>	<u>\$63,500</u>
FY 2001 DEVELOPMENT			
Environmental Quality	<u>\$58,662</u>	<u>\$4,738</u>	<u>\$63,400</u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Supplementary Information - Schedule I
Schedule of Cumulative Net First and Second Repository Costs for the
Twenty Four Years Ended September 30, 2006

(Dollars in thousands unless otherwise noted)

First Repository Costs	<u>\$ 6,727,990</u>
All Other Program Costs:	
Program Support	\$ 1,801,391
Transfers of Appropriations	471,868
Waste Acceptance, Storage and Transportation	473,777
Imputed and Other Costs	<u>146,012</u>
Total All Other Program Costs	<u>\$ 2,893,048</u>
Second Repository Costs	<u>\$ 108,896</u>
Total First and Second Repository Costs and Other Program Costs	<u>\$ 9,729,934</u>
Less Earned Revenue	<u>(9,716,084)</u>
Cumulative Net First and Second Repository Costs	<u>\$ 13,850</u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Supplementary Information - Schedule II
Schedule of Cumulative Revenues and Deferred Revenue for the
Twenty Four Years Ended September 30, 2006

(Dollars in thousands unless otherwise noted)

Intragovernmental:

Fees billed:

kWh fees	\$	622,987
One-time spent nuclear fuel fees		174,598
Defense high-level waste fees		2,004,182
Defense share advance payments		289,211

Interest:

Income on investments		9,146,922
Defense high-level waste fees		638,232

Non-intragovernmental:

Fees billed:

kWh fees:		12,943,495
One-time spent nuclear fuel fees		2,174,802

Interest:

One-time spent nuclear fuel fees		2,133,360
----------------------------------	--	-----------

Other revenue

703,638

Total revenues

\$ 30,831,427

Less earned revenue

(9,716,084)

Deferred revenue

\$ 21,115,343

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**



**Annual Financial Report
Years Ended September 30, 2007 and 2006**

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**Annual Financial Report
Years Ended September 30, 2007 and 2006**

Table of Contents

	Page
Overview	
Reporting Entity	1
Organization Chart & Program General Goal	2
Performance Against Key Targets	3
Financial Performance	4
Analysis of Systems, Controls and Legal Compliance	5
Independent Auditors' Report	7
Financial Results	
Balance Sheets	13
Statements of Net Costs	14
Statements of Changes in Net Position	15
Statements of Budgetary Resources	16
Notes to Financial Statements	17
Required Supplementary Stewardship Information for Research and Development	30
Supplementary Information – Schedule I	31
Schedule of Cumulative Net First and Second Repository Costs	
Supplementary Information – Schedule II	32
Schedule of Cumulative Revenues and Deferred Revenue	

OVERVIEW

Reporting Entity

The Nuclear Waste Policy Act (NWPA) of 1982 (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the U.S. Department of Energy (Department). OCRWM's mission is to manage and dispose of the nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). OCRWM provides leadership in developing and implementing strategies to accomplish this mission that ensure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

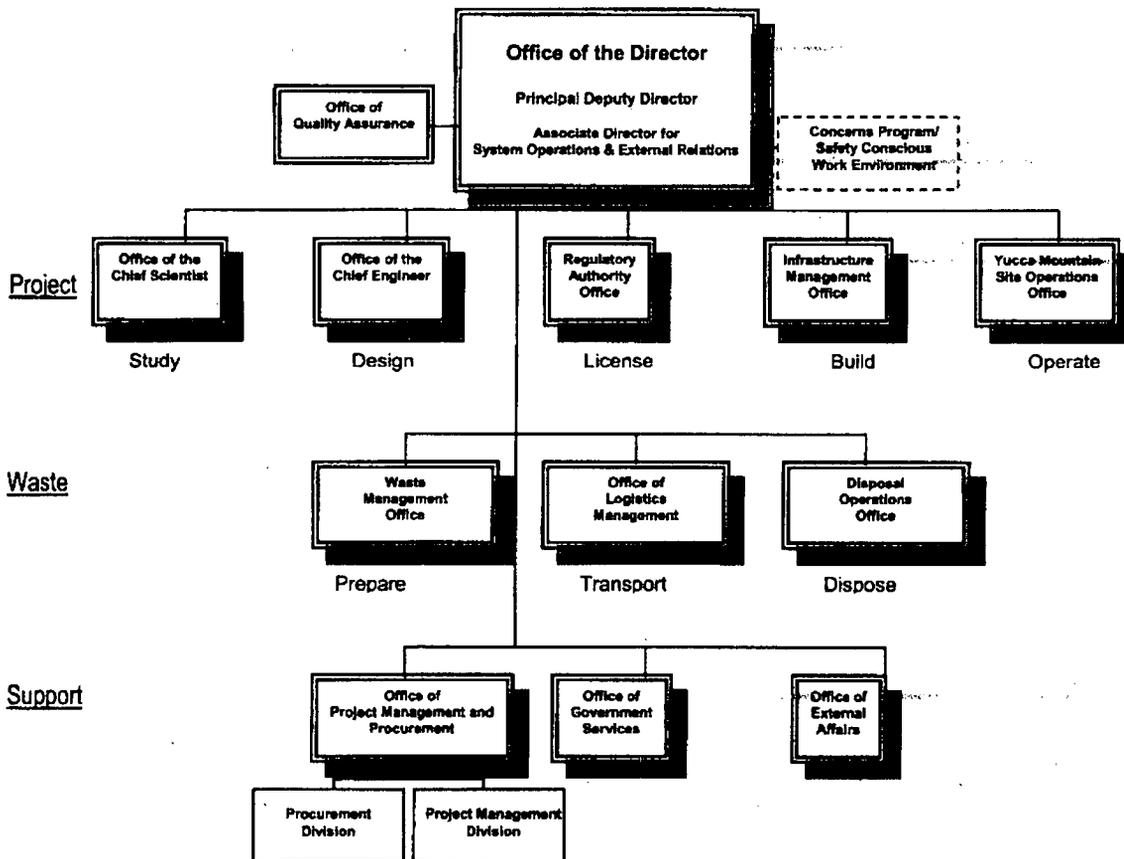
The Nuclear Waste Policy Amendments Act of 1987 (Title V, Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a candidate site to determine if it was suitable for a repository for SNF and HLW.

The characterization of the Yucca Mountain Site has been completed. On February 14, 2002, the Secretary of Energy recommended the site to the President for development of a nuclear waste repository. On February 15, 2002, the President recommended the site to Congress. On May 8 and July 9, 2002, the House of Representatives and the Senate, respectively, passed a resolution approving the site recommendation. On July 23, 2002, the President signed into law the Congressional Joint Resolution designating Yucca Mountain as the site for the Nation's first SNF and HLW repository. At that point, the focus of the Yucca Mountain Project changed to the activities associated with the Nuclear Regulatory Commission (NRC) licensing process for construction and receiving and possessing waste. The Waste Acceptance, Storage, and Transportation Project focus changed to the development of a national waste transportation capability.

The FY 2007 program accomplishment included, completion of a high-quality License Application consistent with the established schedule and content requirements; completing processing of documents and emails dated June 30, 2007 or earlier to be ready for the LSN; publishing a draft Rail Alignment Environmental Impact Statement for public comment; and maintaining total administrative overhead cost in relation to total program cost of less 22%.

As of September 30, 2007, OCRWM employed a staff of 2,308 full-time equivalents (FTE). This included 186 OCRWM Federal FTE, 34 FTE at other Headquarters offices, 3 Federal FTE at the Department of Energy NNSA/Nevada Site Office, 63 U.S. Geological Survey FTE, and 2,022 contractor FTE, including employees of national laboratories.

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT



PROGRAM GENERAL GOAL: NUCLEAR WASTE

License and construct a permanent repository for nuclear waste at Yucca Mountain and begin acceptance of waste.

How We Serve the Public

The construction and operation of new commercial nuclear power plants allows the United States to maintain a diverse energy portfolio and improves our energy security by successfully opening and operating a repository at Yucca Mountain for the disposal of commercial spent nuclear fuel...

Performance Against Key Targets

During FY 2007:

- Two of the 71 License Application sections at the 100% level versus five planned; 23 LA sections have been completed at the 90 % level versus 20 planned; and 70 of the 71 LA sections have been completed at the 50% level, exceeding the planned amount.
- The License Support Network Certification was submitted to the NRC on October 19, 2007.
- The Rail Alignment Environmental Impact Statement (EIS) was approved to be published on September 14, 2007. The Rail Alignment EIS was placed on the OCRWM website.
- OCRWM achieved the milestone of maintaining administrative overhead costs in relation to total program costs of less than 22%

External Factors

The opening date of the Yucca Mountain repository will also depend on resolution of a number of external factors, including:

- **Regulatory Requirements:** The *Nuclear Policy Act*, as amended, requires that a repository at Yucca Mountain, Nevada, must be licensed by the NRC, which will base its review of the Department's license application submittal against its licensing requirements, including radiation protection standards issued by the Environmental Protection Agency (EPA). The EPA regulations have not yet been finalized. As a license applicant, the Department must also have its Licensing Support Network certification accepted by the NRC six months prior to the license application submittal.
- **Litigation:** Any actions by the Department or other agencies that advance either the repository or transportation, e.g., environmental impact statements are likely to be challenged in the courts.
- **Legislation:** Proposed legislation has been introduced that contains a number of provisions, to facilitate the licensing, construction and operation of a repository at Yucca Mountain. These provisions will permit the Department to accelerate fulfillment of its responsibilities, without diminishing the protection currently afforded workers, members of the public and the environment.

FISCAL YEAR FY 2007 and 2006 FINANCIAL PERFORMANCE

OCRWM is required by the NWPA to recover the full cost of the Program. The Program's total cost was estimated in the OCRWM 2007 Total System Life Cycle Cost report.

Program funding comes from the Nuclear Waste Fund (NWF) and the Defense Nuclear Waste Disposal Appropriation (DNWDA). The NWF consists of fees paid by the owners and generators of SNF from commercial reactors, in accordance with provisions of their contracts with the Department for disposal services. NWF assets in excess of those authorized by Congress to pay program costs are invested in U.S. Treasury securities. The DNWDA was established by the Congress in lieu of direct payment of fees by the Department into the NWF, to pay for the disposal costs of the HLW resulting from atomic energy defense activities and other Department-managed nuclear materials. As of September 30, 2007, cumulative revenue from fees and the DNWDA, totaled approximately \$19.325 billion, and cumulative interest earnings and other revenue totaled approximately \$13.754 billion. Cumulative expenditures from appropriations and amounts authorized by Congress, including direct appropriations to the NRC, the now defunct Office of the Nuclear Waste negotiator, and the Nuclear Waste Technical Review Board, totaled approximately \$10.313 billion.

As of September 30, 2007, the U.S. Treasury securities held by OCRWM had a market value of \$20.642 billion compared to \$19.346 billion at the end of Fiscal Year 2006. Investment income and net gains on the sale of securities totaled \$979.474 million and \$933.320 million for Fiscal Years 2007 and 2006, respectively.

OCRWM's primary financial goal is to ensure that future spending needs can be met. Therefore, OCRWM relies on the asset-liability matching approach to investing used by pension funds and insurance companies. By matching investments to anticipated funding requirements, OCRWM reduces the risk that changes in interest rates will adversely affect the fee adequacy balance, ensures that identified spending projections will be met, and makes investments at the most favorable rates currently available.

The financial performance measure established by OCRWM for FY 2007 and FY 2006 related to the performance of its investments in U.S. Government securities:

- To reallocate existing investments and invest any additional surpluses to match the Program's cumulative profile for FY 2006 and FY 2007 through 2035 and 2036, respectively.

RESULTS: As of September 30, 2007, the NWF held investments with a market value of \$20.642 billion to provide for estimated gross program life-cycle liabilities of \$20.505 billion. Although most of the investments have a duration of 24 years or less, the NWF has placed recent income surpluses in 28-years and 29-years duration securities after the Treasury resumed issuance of 30-year bonds. New investments during FY 2007 were made in securities with the longest available duration and assets are now in place to fund the next 29 years.

ANALYSIS OF SYSTEMS, CONTROLS AND LEGAL COMPLIANCE

Analysis of systems, controls and legal compliance is performed, reported and audited at the Departmental level. The results of these reviews and assessments are incorporated in the Department's Performance and Accountability Report. A significant issue, Nuclear Waste Disposal, was reported by management in FY 2006 and is described below.

Federal Managers' Financial Integrity Act

The *Federal Managers' Financial Integrity Act (FMFIA)* of 1982 requires that agencies establish internal control and financial systems to provide reasonable assurances that the integrity of Federal programs and operations are protected. Furthermore, it requires that the head of the agency provide an annual assurance statement on whether the agency has met this requirement and whether any material weaknesses exist.

In response to the FMFIA, the Department developed an internal control program which holds managers accountable for the performance, productivity, operations and integrity of their programs through the use of management controls. Annually, senior managers at the Department are responsible for evaluating the adequacy of the internal controls surrounding their activities and determining whether they conform to the principles and standards established by the Office of Management and Budget (OMB) and the Government Accountability Office. The results of these evaluations and other senior management information are used to determine whether there are any internal control problems to be reported as material weaknesses. The Departmental Internal Control and Audit Review Council, the organization responsible for oversight of the Management Control Program, makes the final assessment and decision for the Department.

Significant Issue - Nuclear Waste Disposal

Construction of a repository for the disposal of spent nuclear fuel and high-level radioactive waste, authorized under the NWPA, at Yucca Mountain, Nevada, has been delayed because of external factors and program adjustments. Funding shortfalls and the scientific and technical challenges encountered in this first-of-a-kind endeavor to develop a disposal system that must potentially endure a compliance period of a million years have complicated the steady progress necessary to achieve previously published milestones. Finalizing the EPA radiation protection standards and addressing the licensing requirements of the NRC to submit a license application are the key to achieving the new milestones published in July 2006.

Actions Taken and Remaining

The introduction of the *Nuclear Fuel Management and Disposal Act*, April 2006, seeks to provide stability, clarity and predictability to the Yucca Mountain Project. The proposed legislation addresses many of the uncertainties that are currently beyond the control of the Department and have the potential to significantly delay the opening date for the repository. The most important factor is the enactment of a provision that will facilitate Congressional funding needed to implement the Project.

The program adopted a primarily canister-based approach for handling commercial spent nuclear fuel. The revised approach enabled deployment of necessary surface and sub-surface facilities in a manner that could accommodate future funding and income streams and enhances repository operations and performance.

In January 2006, the Department designated Sandia National Laboratories the lead laboratory to coordinate and organize all scientific work on the Project. Sandia National Laboratories will also review the existing infiltration model and prepare a new model to be used as part of the technical basis for the license application.

The Program is implementing management controls in accordance with DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and performance metrics required under the Department's performance and accountability report system and OMB reporting requirements to ensure it achieves its revised milestones. Additionally, the Program is proceeding to certify its earned value management system, which will be in place prior to critical decision-2, Approve Performance Baseline.



KPMG LLP
2001 M Street, NW
Washington, DC 20036

Independent Auditors' Report

United States Department of Energy
Office of Civilian Radioactive Waste Management:

We have audited the accompanying balance sheets of the Office of Civilian Radioactive Waste Management (OCRWM) as of September 30, 2007 and 2006, and the related statements of net cost, changes in net position, and budgetary resources (hereinafter referred to as "financial statements") for the years then ended. The objective of our audits was to express an opinion on the fair presentation of these financial statements. In connection with our fiscal year 2007 audit, we also considered the OCRWM's internal controls over financial reporting and tested the OCRWM's compliance with certain provisions of applicable laws, regulations, and contracts that could have a direct and material effect on these financial statements.

SUMMARY

As stated in our opinion on the financial statements, we concluded that the OCRWM's financial statements as of and for the years ended September 30, 2007 and 2006, are presented fairly, in all material respects, in conformity with U.S. generally accepted accounting principles.

Our report emphasizes that the OCRWM is involved as a defendant in several matters of litigation relating to its inability to accept waste by January 31, 1998, the date specified in the Nuclear Waste Policy Act of 1982, as amended.

Our report also emphasizes that: (1) the OCRWM changed its method of reporting the reconciliation of budgetary resources obligated to the net cost of operations in fiscal year 2007; and (2) the OCRWM changed its method of accounting for its contractors' defined benefit and other postretirement plans in fiscal year 2007.

Our consideration of internal controls over financial reporting would not necessarily disclose all matters in the internal control that might be material weaknesses as defined in the Internal Control Over Financial Reporting section of this report. However, we noted no matters involving the internal control and its operation that we considered to be material weaknesses as defined in this report.

The results of our tests of compliance with certain provisions of laws, regulations, and contracts disclosed no instances of noncompliance or other matters that are required to be reported herein under *Government Auditing Standards* and Office of Management and Budget (OMB) Bulletin Number (No.) 07-04, *Audit Requirements for Federal Financial Statements*.

The following sections discuss our opinion on the OCRWM's financial statements; our consideration of the OCRWM's internal controls over financial reporting; our



tests of the OCRWM's compliance with certain provisions of applicable laws, regulations, and contracts; and management's and our responsibilities.

OPINION ON THE FINANCIAL STATEMENTS

We have audited the accompanying balance sheets of the OCRWM as of September 30, 2007 and 2006, and the related statements of net cost, changes in net position, and budgetary resources, for the years then ended.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the OCRWM as of September 30, 2007 and 2006, and its net costs, changes in net position, and budgetary resources for the years then ended, in conformity with U.S. generally accepted accounting principles.

As discussed in Note 9 to the financial statements, the OCRWM is involved as a defendant in several matters of litigation relating to its inability to accept waste by the January 31, 1998 date specified in the Nuclear Waste Policy Act of 1982, as amended.

As discussed in Note 12 to the financial statements, the OCRWM changed its method of reporting the reconciliation of budgetary resources obligated to the net cost of operations in fiscal year 2007.

As discussed in Note 2 to the financial statements, the OCRWM changed its method of accounting for its contractors' defined benefit and other postretirement plans in fiscal year 2007 to adopt the provisions of Statement of Financial Accounting Standard No. 158, *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans*.

The information in the Overview and Required Supplementary Stewardship Information sections is not a required part of the financial statements, but is supplementary information required by U.S. generally accepted accounting principles. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of this information. However, we did not audit this information and, accordingly, we express no opinion on it.

Our audits were conducted for the purpose of forming an opinion on the financial statements taken as a whole. The supplementary information included in Supplementary Information – Schedules I and II for the years ended September 30, 2007, is presented for purposes of additional analysis and is not a required part of the financial statements. Such information has been subjected to the auditing procedures applied in the audits of the financial statements and, in our opinion, is fairly stated in all material respects in relation to the financial statements taken as a whole.

We have also previously audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of OCRWM as of and for the years ended September 30, 1983 through September 30, 2005 (none of



which are presented herein), and we expressed unqualified opinions on those financial statements. The supplementary information included in Schedules I and II related to OCRWM's financial statements as of and for the years ended September 30, 1983 through September 30, 2005 was subjected to auditing procedures applied in the audits of those financial statements and, in our opinion, is fairly stated in all material respects in relation to the financial statements from which it has been derived.

INTERNAL CONTROL OVER FINANCIAL REPORTING

Our consideration of internal control over financial reporting was for the limited purpose described in the Responsibilities section of this report and would not necessarily identify all deficiencies in the internal control over financial reporting that might be significant deficiencies or material weaknesses.

A control deficiency exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatements on a timely basis. A significant deficiency is a control deficiency, or combination of control deficiencies, that adversely affects the OCRWM's ability to initiate, authorize, record, process, or report financial data reliably in accordance with U.S. generally accepted accounting principles such that there is more than a remote likelihood that a misstatement of the OCRWM's financial statements that is more than inconsequential will not be prevented or detected by the OCRWM's internal control over financial reporting. A material weakness is a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the financial statements will not be prevented or detected by the OCRWM's internal control.

In our fiscal year 2007 audit, we did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses as defined above. Exhibit I presents the status of the prior year material weakness.

We noted certain additional matters that we have reported to the management of the OCRWM in a separate letter.

COMPLIANCE AND OTHER MATTERS

The results of our tests of compliance described in the Responsibilities section of this report, exclusive of those referred to in the *Federal Financial Management Improvement Act of 1996* (FFMIA), disclosed no instances of noncompliance or other matters that are required to be reported herein under *Government Auditing Standards* or OMB Bulletin No. 07-04.

The results of our tests of FFMIA disclosed no instances in which the OCRWM's financial management systems did not substantially comply with the three requirements discussed in the Responsibilities section of this report.

* * * * *



RESPONSIBILITIES

Management's Responsibilities.

Management is responsible for the financial statements, including:

- Preparing the financial statements in conformity with U.S. generally accepted accounting principles;
- Preparing the Overview (including the performance measures), and the Required Supplementary Stewardship Information;
- Establishing and maintaining effective internal control; and
- Complying with laws, regulations, and contracts applicable to the OCRWM, including FFMIA.

In fulfilling this responsibility, management is required to make estimates and judgments to assess the expected benefits and related costs of internal control policies.

Auditors' Responsibilities.

Our responsibility is to express an opinion on the fiscal year 2007 and 2006 financial statements of the OCRWM based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and OMB Bulletin No. 07-04. Those standards and OMB Bulletin No. 07-04 require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the OCRWM's internal control over financial reporting. Accordingly, we express no such opinion.

An audit also includes:

- Examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements;
- Assessing the accounting principles used and significant estimates made by management; and
- Evaluating the overall financial statement presentation.

We believe that our audits provide a reasonable basis for our opinion.



In planning and performing our fiscal year 2007 audit, we considered the OCRWM's internal control over financial reporting by obtaining an understanding of the OCRWM's internal control, determining whether internal controls had been placed in operation, assessing control risk, and performing tests of controls as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statements. We limited our internal control testing to those controls necessary to achieve the objectives described in *Government Auditing Standards* and OMB Bulletin No. 07-04. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*. The objective of our audit was not to express an opinion on the effectiveness of the OCRWM's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of the OCRWM's internal control over financial reporting.

As part of obtaining reasonable assurance about whether the OCRWM's fiscal year 2007 financial statements are free of material misstatement, we performed tests of the OCRWM's compliance with certain provisions of laws, regulations, and contracts, noncompliance with which could have a direct and material effect on the determination of the OCRWM financial statement amounts, and certain provisions of other laws and regulations specified in OMB Bulletin No. 07-04, including certain provisions referred to in FFMIA. We limited our tests of compliance to the provisions described in the preceding sentence, and we did not test compliance with all laws, regulations, and contracts applicable to the OCRWM. However, providing an opinion on compliance with laws, regulations, and contracts was not an objective of our audit and, accordingly, we do not express such an opinion.

Under OMB Bulletin No. 07-04 and FFMIA, we are required to report whether the OCRWM's financial management systems substantially comply with (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, and (3) the United States Government Standard General Ledger at the transaction level. To meet this requirement, we performed tests of compliance with FFMIA Section 803(a) requirements.

RESTRICTED USE

This report is intended solely for the information and use of the OCRWM's and Department's management, the Department's Office of Inspector General, OMB, the U.S. Government Accountability Office, and the U.S. Congress and is not intended to be and should not be used by anyone other than these specified parties.

KPMG LLP

December 14, 2007

Independent Auditors' Report
Exhibit I – Status of Prior Year Material Weakness

Material Weakness from FY 2006 (with parenthetical disclosure of year first reported)	
Financial Management and Reporting Controls – Considered a Material Weakness (2005)	Closed

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Balance Sheets

As of September 30, 2007 and 2006
(Dollars in thousands)

	2007	2006
ASSETS		
Intragovernmental		
Fund Balance with Treasury ^(Note 3)	\$ 49,249	\$ 66,359
Investments, Net ^(Note 4)	19,463,781	17,952,783
Accounts Receivable:		
Utilities ^(Note 5)	13,038	11,782
Accrued Investment Interest ^(Note 4)	48,124	48,952
Other Accounts Receivable	145	137
Other Intragovernmental Assets	284	147
Total Intragovernmental Assets	<u>19,574,621</u>	<u>18,080,160</u>
Accounts Receivable:		
Utilities ^(Note 5)	3,307,911	3,153,382
Other Accounts Receivable	4	21
General Property, Plant, and Equipment, Net ^(Note 6)	8,985	10,581
Other Assets	1,177	995
Total Assets	<u>\$ 22,892,698</u>	<u>\$ 21,245,139</u>
LIABILITIES		
Intragovernmental:		
Accounts Payable ^(Note 8)	\$ 3,749	\$ 9,563
Deferred Revenue ^(Notes 7 and 10)	534,412	293,896
Other Liabilities	440	354
Total Intragovernmental Liabilities	538,601	303,813
Accounts Payable	40,764	37,762
Deferred Revenue ^(Note 10)	22,245,318	20,821,447
Pension and Other Actuarial Liabilities	13,327	11,529
Other Liabilities	15,261	19,538
Commitments and Contingencies ^(Note 9)	10,966,014	6,717,598
Total Liabilities ^(Note 8)	<u>33,819,285</u>	<u>27,911,687</u>
NET POSITION		
Unexpended Appropriations - Other Funds	39,427	51,050
Cumulative Results of Operations - Other Funds	(10,966,014)	(6,717,598)
Total Net Position	<u>(10,926,587)</u>	<u>(6,666,548)</u>
Total Liabilities and Net Position	<u>\$ 22,892,698</u>	<u>\$ 21,245,139</u>

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Statements of Net Costs

For the Years Ended September 30, 2007 and 2006

(Dollars in thousands)

	2007	2006
First Repository Costs	\$ 376,916	\$ 311,830
All Other Program Costs:		
Program Support	122,442	121,007
Transfers of Appropriations ^(Note 7)	49,418	49,229
Waste Acceptance, Storage and Transportation	32,610	34,061
Imputed and Other Costs	1,814	1,909
Total All Other Program Costs	206,284	206,206
Total First Repository and Other Program Costs	583,200	518,036
Less Earned Revenues ^(Note 10)	(583,194)	(516,127)
Net First Repository Costs	6	1,909
Estimated liability for waste acceptance obligations	4,351,162	1,602,091
Net cost of operations	\$ 4,351,168	\$ 1,604,000

The accompanying notes are an integral part of these statements.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Statements of Changes in Net Position

For the Years Ended September 30, 2007 and 2006

(Dollars in thousands)

	2007	2006
CUMULATIVE RESULTS OF OPERATIONS:		
Beginning Balance	\$ (6,717,598)	\$ (5,222,852)
Change in Accounting Principle ^(Note 2)	(1,808)	-
Beginning Balance, as Adjusted	<u>(6,719,406)</u>	<u>(5,222,852)</u>
Other Financing Sources:		
Imputed Financing from Costs Absorbed by Others	104,560	109,254
Total Other Financing Sources	<u>104,560</u>	<u>109,254</u>
Net Cost of Operations	<u>(4,351,168)</u>	<u>(1,604,000)</u>
Net Change	<u>(4,248,416)</u>	<u>(1,494,746)</u>
Ending Balance - Cumulative Results of Operations	<u>\$ (10,966,014)</u>	<u>\$ (6,717,598)</u>
UNEXPENDED APPROPRIATIONS:		
Beginning Balance	\$ 51,050	\$ 14,094
Budgetary Financing Sources Related to Appropriations:		
Appropriations Received ^(Note 2)	346,500	350,000
Other Adjustments	-	(3,500)
Appropriations Used	<u>(358,123)</u>	<u>(309,544)</u>
Total Budgetary Financing Sources Related to Appropriations	<u>(11,623)</u>	<u>36,956</u>
Ending Balance Unexpended Appropriations	<u>39,427</u>	<u>51,050</u>
Total Net Position	<u>\$ (10,926,587)</u>	<u>\$ (6,666,548)</u>

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Statements of Budgetary Resources

For the Years Ended September 30, 2007 and 2006

(Dollars in thousands)

	2007	2006
BUDGETARY RESOURCES		
Unobligated balance, Brought Forward, October 1	\$ 12,742	\$ 24,266
Recoveries of Prior Year Unpaid Obligations	2	-
Budget Authority:		
Appropriations	445,706	450,000
Spending Authority from Offsetting Collections:		
Earned:		
Collected	-	1,326
Subtotal	445,706	451,326
Temporarily not Available Pursuant to Public Law	-	(1,000)
Permanently Not Available	-	(3,500)
Total Budgetary Resources	<u>\$ 458,450</u>	<u>\$ 471,092</u>
STATUS OF BUDGETARY RESOURCES		
Obligations Incurred:		
Direct	\$ 346,628	\$ 346,164
Exempt from Apportionment	108,785	112,186
Total Obligations Incurred	455,413	458,350
Unobligated Balance:		
Apportioned	224	347
Exempt from Apportionment	2,813	12,395
Total Status of Budgetary Resources	<u>\$ 458,450</u>	<u>\$ 471,092</u>
CHANGE IN OBLIGATED BALANCE		
Obligated Balance, Net:		
Unpaid Obligations, Brought Forward, October 1	\$ 236,697	\$ 279,309
Total Unpaid Obligated Balance, Net, October 1	236,697	279,309
Obligations Incurred	455,413	458,350
Less: Recoveries of Prior Year Unpaid Obligations, Actual	(2)	-
Less: Gross Outlays	(537,787)	(500,962)
Obligated Balance, Unpaid Obligations, Net, End of Period:	<u>\$ 154,321</u>	<u>\$ 236,697</u>
NET OUTLAYS		
Gross Outlays	\$ 537,787	\$ 500,962
Less: Offsetting collections	-	(1,326)
Less: Distributed Offsetting Receipts	(1,550,857)	(1,293,194)
Net Outlays	<u>\$ (1,013,070)</u>	<u>\$ (793,558)</u>

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(1) Legislative Background

The Nuclear Waste Policy Act of 1982 (NWPA) was signed into law on January 7, 1983. The NWPA establishes a framework for the financing, siting, licensing, operating and decommissioning of one or more mined geologic repositories for the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) which is to be carried out by the Department of Energy's (Department) Office of Civilian Radioactive Waste Management (OCRWM). In addition, the NWPA contains other provisions including:

- Assigning responsibility for the full payment of disposal costs to the owners and generators of SNF and HLW and creating a special Nuclear Waste Fund (NWF) within the Department of Treasury of the United States for the collection of fees related to such costs;
- Providing for contracts between the Department and the owners and generators of SNF and HLW pursuant to which the Department is to take title to the SNF or HLW as expeditiously as possible, following commencement of repository operations and, in return for payment of fees established by the NWPA, to begin disposal of the SNF or HLW not later than January 31, 1998; and
- Requiring evaluation of the use of civilian disposal capacity for the disposal of HLW resulting from atomic energy defense activities (defense waste). In April 1985, the President notified the Department of his determination that a separate defense waste repository was not necessary and directed the Department to proceed with arrangements for disposal of such waste. Fees, equivalent to those paid by commercial owners, must be paid for this service by the Federal Government to the NWF account.

On December 22, 1987, the President signed into law the Budget Reconciliation Act, Subtitle A of Title V, of which contained amendments to the NWPA. The legislation directed the Department to characterize only the Yucca Mountain site in Nevada as a candidate site for the first repository. The legislation also provided for the termination of site-specific activities at all candidate sites other than the Yucca Mountain site, within 90 days of enactment, and for phasing out, not later than six months after enactment, all research programs in existence that were designed to evaluate the suitability of crystalline rock as a potential repository host medium. In the event that the Yucca Mountain site proves unsuitable for use as a repository, the legislation requires the Department to terminate site-specific activities and report to Congress.

(2) Significant Accounting Policies

Basis of Presentation – These financial statements have been prepared to report the financial position and results of operations of OCRWM and include all activity related to OCRWM, including the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation, used for the disposal of SNF and HLW. The financial statements have been prepared from the books and records of the Department for OCRWM in accordance with accounting principles generally accepted in the United States of America as applicable to Federal entities.

Basis of Accounting – OCRWM's financial statements are prepared using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred without regard to receipt or payment of cash. OCRWM also uses budgetary accounting to facilitate compliance with legal constraints and to monitor its budget authority.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Revenue Recognition – Fees, related accrued interest, and investment income are recognized as exchange (earned) revenue to the extent of expenses incurred, subject to Congressional authorization as discussed below. Fees billed, related accrued interest, and investment income in excess of current expenses are deferred.

The NWPA requires the civilian owners and generators of nuclear waste to pay their share of the full cost of the Civilian Radioactive Waste Management Program (Program) and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A one-time fee (see Note 5) was recorded by OCRWM as of April 7, 1983, related to the disposal of SNF generated prior to that date. Fees recognized by OCRWM are based upon kWh of electricity generated and sold by civilian nuclear reactors on and after April 7, 1983.

Fees associated with the disposal of the Department's SNF and HLW are also recognized as the related costs are incurred and allocated. To estimate the share of the total Program costs that should be allocated to the Department, the methodology announced by the Department in the Federal Register in August 1987 was used. OCRWM management periodically updates the *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* (TSLCC), which establishes the amounts to allocate.

Appropriations – Expenditure authority for OCRWM is provided by two separate appropriations as follows:

- For fiscal years 2007 and 2006, Congress appropriated \$346,500 and \$350,000, respectively, from the Defense Nuclear Waste Disposal Appropriation to be used for nuclear waste disposal activities. Pursuant to the Consolidated Appropriations Acts for fiscal year 2006, \$3,500 was rescinded.
- For fiscal years 2007 and 2006, Congress authorized \$99,206 and \$150,000, respectively, to be used for nuclear waste disposal activities and remain available until expended. This expenditure authority enables OCRWM to finance activities using the NWF special accounts. Pursuant to the Consolidated Appropriations Act for fiscal year 2006, \$1,000 was rescinded. Of the \$150,000 authorized for fiscal year 2006, \$100,000 was to be derived from the NWF with the remaining \$50,000 funded directly to the Department from Treasury's general fund for use in developing a spent nuclear fuel recycling plan.

Fee payments and investment income are deposited into the NWF account and are made available to the Department through the annual expenditure authority provided by Congress. Investments are made in U.S. Treasury securities from funds in excess of current needs. If, at any time, monies available in the NWF are insufficient to discharge responsibilities under the NWPA, borrowings may be made from the U.S. Treasury. The NWPA limits the OCRWM from incurring expenditures, entering into contracts, and obligating amounts to be expended except as provided in advance by appropriation acts. Appropriated dedicated receipts such as these are excluded from appropriations received on the *Statements of Changes in Net Position*.

Imputed Financing Sources – In certain instances, operating costs of OCRWM are paid out of funds appropriated to other federal agencies. For example, certain costs of retirement programs are paid by the Office of Personnel Management (OPM). When costs directly attributable to OCRWM's operations are paid by other agencies, OCRWM recognizes these amounts on the *Statements of Net Costs*. In addition, these amounts are recognized as imputed financing sources in the *Statements of Changes in Net Position*.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Earmarked Funds – In fiscal year 2006, OCRWM implemented Statement of Federal Financial Accounting Standards (SFFAS) No. 27, Identifying and Reporting Earmarked Funds, which requires separate identification of earmarked funds on the Balance Sheets, Statements of Changes in Net Position, and other selected footnotes.

Earmarked funds are financed by specifically identified revenues, often supplemented by other financing sources, which remain available over time. These specifically identified revenues and other financing sources are required by statute to be used for designated activities, benefits or purposes, and must be accounted for separately from the Government's general revenues (see Note 11). In certain instances, operating costs of OCRWM are paid out of funds appropriated to other federal agencies.

Investments – Investments are in U.S. Treasury securities and are stated at cost net of amortized premiums and discounts as it is the Department's intent to hold the investments to maturity. Premiums and discounts are amortized using the effective interest yield method (see Note 4).

General Property, Plant, and Equipment – Purchases of general property, plant, and equipment (PP&E) exceeding \$50 are capitalized if they have a useful life greater than two years. PP&E is depreciated on a straight-line basis over the estimated useful lives of the assets. Useful lives range from 5 to 30 years. Maintenance costs are borne by OCRWM for equipment either on loan from or shared with other programs.

Accounts Receivable – Payment of accounts receivable will not be complete until OCRWM starts accepting waste. Interest is accrued quarterly on the outstanding amount receivable including accrued interest. The interest rate used is the 13-week U.S. Treasury bill rate. An allowance for doubtful accounts related to one-time spent fuel fees has not been recorded as of September 30, 2007 or 2006, as OCRWM is not obligated to accept waste without payment of fees.

Accrued Investment Interest Receivable – Investment interest is accrued on the outstanding investment balance using the applicable interest rate for the investments.

Liabilities – Liabilities represent the amount of monies or other resources that are likely to be paid by OCRWM as the result of a transaction or event that has already occurred. However, no liability can be paid by OCRWM absent an appropriation. Liabilities for which an appropriation has not been enacted are therefore classified in these notes as liabilities not covered by budgetary resources and there is no certainty that the appropriation will be enacted. Also, liabilities other than contracts can be abrogated by the Government acting in its sovereign capacity.

Accrued Annual Leave – Federal employees' annual leave is accrued as it is earned, and the accrual is reduced annually for actual leave taken. Each year, the accrued annual leave balance is adjusted to reflect the latest pay rates and unused annual leave balances. To the extent that current or prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources. Sick leave and other types of non-vested leave are expensed as taken.

Tax Status – OCRWM, as a part of the Department of Energy, which is a Federal agency, is not subject to federal, state, or local income taxes.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

First Repository Costs – For the years ended September 30, 2007 and 2006, first repository costs consist primarily of Yucca Mountain costs. The general goals are that of licensing and construction of a permanent repository for nuclear waste at Yucca Mountain and to begin acceptance of waste at the facility.

Retirement Plans – Federal Employees – There are two primary retirement systems for Federal employees. Employees hired prior to January 1, 1984, may participate in the Civil Service Retirement System (CSRS). On January 1, 1984, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. Most employees hired after December 31, 1983, are automatically covered by FERS and Social Security. Employees hired prior to January 1, 1984, elected to either join FERS and Social Security or remain in CSRS. A primary feature of FERS is that it offers a savings plan to which the Department automatically contributes 1 percent of pay and matches any employee contribution up to an additional 4 percent of pay. For most employees hired since December 31, 1983, OCRWM also contributes the employer's matching share for Social Security. OCRWM does not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities, if any, applicable to its employees. Reporting such amounts is the responsibility of OPM and the FERS. OCRWM does report, as an imputed financing source and a program expense, the difference between its contributions to Federal employee pension and other retirement benefits and the estimated actuarial costs as computed by OPM.

Contractor Employees – OCRWM's integrated contractors maintain defined benefit pension plans under which they promise to pay employees specified benefits, such as a percentage of the final average pay for each year of service. OCRWM's cost under the contract includes reimbursement of annual employer contributions to the pension plans.

Each year an amount is calculated for employers to contribute to the pension plan to ensure the plan assets are sufficient to provide for the full accrued benefits of contractor employees in the event that the plan is terminated. The level of contributions is dependent on actuarial assumptions about the future, such as the interest rate, employee turnover and deaths, age of retirement, and salary progression. OCRWM is also the predominant fund for one integrated contractor and reports the net liabilities and pension expense of that contractor's pension plans as if it were the plan sponsor.

In FY 2007, the Department implemented the requirements of Statement of Financial Accounting Standards (SFAS) No. 158, "Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans." SFAS No. 158 amends the accounting requirements of SFAS No. 87, "Employers' Accounting for Pensions" and SFAS No. 106, "Employers' Accounting for Postretirement Benefits Other Than Pensions," requiring the recognition of a plan's "funded status" as a liability or asset rather than using delayed recognition requirements of SFAS No. 87 and SFAS No. 106. A \$1.8 million beginning balance adjustment to the FY 2007 cumulative results of operations was recorded for the cumulative effect of this change in accounting principle.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(3) Fund Balance with Treasury

A summary of the status of fund balances with the U.S. Treasury for appropriated and special funds as of September 30, 2007 and 2006, are as follows:

As of September 30, 2007	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	\$ 222	\$ 2,813	\$ 3,035
Obligated balance not yet disbursed			
Undelivered orders	39,206	59,861	99,067
Accounts payable and deposit fund liabilities	6,977	48,276	55,253
Budgetary resources invested in Treasury securities	-	(108,106)	(108,106)
Total FY 2007 Fund balance with Treasury	\$ 46,405	\$ 2,844	\$ 49,249

As of September 30, 2006	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	\$ 347	\$ 12,395	\$ 12,742
Obligated balance not yet disbursed			
Undelivered orders	50,703	127,687	178,390
Accounts payable and deposit fund liabilities	6,245	52,062	58,307
Budgetary resources invested in Treasury securities	-	(183,080)	(183,080)
Total FY 2006 Fund balance with Treasury	\$ 57,295	\$ 9,064	\$ 66,359

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(4) Investments, Net

For the years ended September 2007 and 2006, the NWF received proceeds of \$41,491 and \$149,715, respectively, from the sale of securities. For the years ended September 2007 and 2006 realized gains on the sale of securities were \$557 and \$1,865, respectively.

Accrued interest receivable on investments, as of September 30, 2007 and 2006, totaled \$48,124 and \$48,952, respectively.

Investments in U.S. Treasury securities held as of September 30 of each year consisted of the following:

	<u>2007</u>	<u>2006</u>
Face Value	\$ 39,434,765	\$ 36,482,066
Unamortized discount, net	(19,970,984)	(18,529,283)
Investments, net	\$ 19,463,781	\$ 17,952,783
Unrealized market gains; net	1,178,672	1,393,390
Investments at fair value	<u>\$ 20,642,453</u>	<u>\$ 19,346,173</u>

(5) Receivables Due from Utilities

Owners and generators of civilian SNF and HLW have entered into contracts with the Department for disposal services and for payment of fees to the NWF.

The NWPA specifies two types of fees to be paid to the NWF for disposal services: (a) a one-time charge per kilogram of heavy metal in solidified SNF or HLW existing prior to April 7, 1983; and (b) a one mil per kWh fee on all net electricity generated and sold by civilian nuclear power reactors on and after April 7, 1983. The Secretary of Energy shall annually review the adequacy of the fees established. In the event the Secretary of Energy determines either insufficient or excess revenue is being collected, the Secretary of Energy shall propose an adjustment to the fee to ensure full cost recovery. The kWh fees are due when billed. The contracts between the Department and the owners and generators of the waste provide three options for payment of the one-time spent fuel fee, one of which must have been selected by June 30, 1985, or within two years of contract execution. The options were:

1. Payment of the amount due, plus interest earned from April 7, 1983, in 40 quarterly installments with the final payment due on or before the first scheduled delivery of SNF to the Department;
2. Payment of the amount due, plus interest from April 7, 1983, in a single payment anytime prior to the first delivery of SNF to the Department; or
3. Payment of the amount due any time prior to June 30, 1985, or two years after contract execution, in the form of a single payment, with no interest due.

Under options (1) and (2), interest accrues from April 7, 1983, to date of first payment at the 13-week U.S. Treasury bill rate compounded quarterly. Under option (1), beginning with the first payment, interest is calculated at the 10-year Treasury note rate in effect at the time. Two utilities selected option (1); neither has begun making payments.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(5) Receivables Due from Utilities (continued)

In fiscal years 2007 and 2006, there were no payments or adjustments of one-time spent fuel fees by owners and generators of civilian SNF and HLW.

Accounts receivables from public and intragovernmental utilities at September 30 of each year were as follows:

	<u>2007</u>	<u>2006</u>
Accounts receivable - utilities		
Accounts receivable - intragovernmental utilities		
Kilowatt hour fees	\$ 13,038	\$ 11,782
Accounts receivable - public utilities		
Kilowatt hour fees	\$ 171,388	\$ 169,301
One-time spent nuclear fuel fees:		
Option (1)	\$ 143,531	\$ 143,531
Option (2)	736,958	736,958
Total one-time spent nuclear fuel fees	<u>\$ 880,489</u>	<u>\$ 880,489</u>
Accrued interest on one-time spent nuclear fuel fees:		
Option (1)	\$ 368,046	\$ 343,322
Option (2)	1,887,988	1,760,270
Total accrued interest on one-time spent nuclear fuel fees	<u>\$ 2,256,034</u>	<u>\$ 2,103,592</u>
Total accounts receivable - public utilities	<u>\$ 3,307,911</u>	<u>\$ 3,153,382</u>
Total accounts receivable - utilities	<u><u>\$ 3,320,949</u></u>	<u><u>\$ 3,165,164</u></u>

(6) General Property, Plant, and Equipment, Net

General property, plant, and equipment and related accumulated depreciation consisted of the following at September 30, 2007 and 2006:

	<u>2007</u>	<u>2006</u>
General property, plant, and equipment	\$ 47,672	\$ 48,913
Less accumulated depreciation	<u>(38,687)</u>	<u>(38,332)</u>
General property, plant, and equipment	<u><u>\$ 8,985</u></u>	<u><u>\$ 10,581</u></u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(7) Transactions with the Department and Other Federal Government Agencies

The NWPA established OCRWM within the Department to carry out the provisions of the NWPA and created the Nuclear Waste Fund in the U.S. Treasury. The investment and borrowing powers of the NWF are limited to transactions with the U.S. Treasury. In discharging its obligations under the NWPA, the Department contracts for services with numerous contractors including other Federal Government agencies. Further, significant administrative services are provided by the Department.

As of September 30, 2007 and 2006, OCRWM owed other Federal Government agencies \$3,749 and \$9,563, respectively, for services and costs provided to OCRWM. For the years ended September 30, 2007 and 2006, OCRWM incurred costs of \$30,033 and \$34,986, respectively, for services and costs provided by other Federal Government agencies. In addition to these incurred costs, OCRWM made the following Congressional authorized transfers from the NWF to the following entities:

	2007	2006
Nuclear Regulatory Commission	\$ 45,826	\$ 46,082
Nuclear Waste Technical Review Board	3,592	3,147
Total transfers to Other Federal Government Agencies	\$ 49,418	\$ 49,229

OCRWM has entered into Memoranda of Agreement (MOA) with the Department's Office of Environmental Management and the Department's Office of Naval Nuclear Propulsion. The MOA established the terms and conditions for acceptance of Department-owned SNF and HLW (Defense Waste) for disposal. Those estimated liabilities are included in the TSLCC that is used to calculate the estimate of the Department's share of total current and future Program costs for Defense Waste. During FY 2006 assumption changes were made to the calculation and as a result the Department's liability to OCRWM was eliminated as of September 30, 2006.

The Department's Defense Waste total cost share as of September 30, 2007 is estimated to be \$2,741,013, including interest amounting to \$638,232 based on the methodology published in the Federal Register in August 1987. As of September 30, 2007 and 2006, \$534,412 and \$293,896, respectively, was included in intragovernmental deferred revenue representing the Department's Defense expenditures in excess of the Department's cost share to-date.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(8) Liabilities Not Covered by Budgetary Resources

A summary of liabilities not covered by budgetary resources as of September 30, 2007 and 2006, is as follows:

	<u>2007</u>	<u>2006</u>
Liabilities not covered by budgetary resources:		
Intragovernmental		
Deferred revenue ^(Note 10)	\$ 534,412	\$ 293,896
Non-Intragovernmental		
Deferred revenue ^(Note 10)	22,245,318	20,821,447
Pension and actuarial liabilities	13,327	11,529
Other liabilities	3,122	9,890
Estimated liability for waste acceptance obligation ^(Note 9)	<u>10,966,014</u>	<u>6,717,598</u>
Total liabilities not covered by budgetary resources	<u>\$ 33,762,193</u>	<u>\$ 27,854,360</u>
Liabilities covered by budgetary resources:		
Intragovernmental		
Accounts payable	\$ 3,749	\$ 9,563
Other liabilities	440	354
Non-Intragovernmental		
Accounts payable	40,764	37,762
Other liabilities	<u>12,139</u>	<u>9,648</u>
Total liabilities covered by budgetary resources	<u>\$ 57,092</u>	<u>\$ 57,327</u>
Total Liabilities	<u>\$ 33,819,285</u>	<u>\$ 27,911,687</u>

(9) Commitments and Contingencies

In accordance with the Nuclear Waste Policy Act of 1982 (NWPA), the Department entered into contracts with more than 45 utilities in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of spent nuclear fuel (SNF) by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, the Department has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of this delay.

To date, seven suits have been settled involving utilities that collectively produce about 25 percent of the nuclear-generated electricity in the United States. Under the terms of the settlements, the Judgment Fund, U.S.C. 1304, paid \$256 million through September 30, 2007 to the settling utilities for delay damages they have incurred through September 30, 2006. In addition, two cases have been resolved by final judgments: a judgment of \$35 million that was not appealed and paid by the Judgment Fund in FY06; and a final judgment awarding no damages affirmed by the appellate court. Through September 30, 2007, the Judgment Fund had made total payments of \$291 million for Spent Nuclear Fuel cases.

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(9) Commitments and Contingencies (continued)

Fifty-six cases remain pending in the Court of Federal Claims or in the Court of Appeals for the Federal Circuit. Liability is probable in these cases, and in many of these cases orders have already been entered establishing the Government's liability and the only outstanding issue to be litigated is ascertaining the amount of damages to be awarded. The industry is reported to estimate that damages for all utilities with which the Department has contracts ultimately will be at least \$50 billion. The Department believes that the industry's estimate is highly inflated and that the disposition of the eighteen cases that have been either settled or subject to a judgment in the trial court suggests that the Government's ultimate liability is likely to be significantly less than that estimate.

The Department previously reported several developments that made it difficult to reasonably predict the amount of the Government's likely liability. The courts have since resolved that jurisdiction for these cases is appropriate in the Court of Federal Claims, but have not resolved whether the Government can assert the unavoidable delays defense, under which, if applicable, the Government would not be liable for any damages.

Under current law, any damages or settlements in this litigation will be paid out of the Judgment Fund. The Department's contingent liability estimate for SNF litigation as of September 30, 2007 and 2006 of \$10.966 billion and \$6.717 billion, respectively, is reported net of amounts paid by the Judgment Fund.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(10) Deferred Revenue

As described in Note 2, all fees, both kWh fees and Defense high-level radioactive waste fees, as well as the related interest and investment income, are recognized as revenue to the extent of expenses incurred. Amounts in excess of current expenses are deferred. Deferred revenue at September 30, 2007, and 2006 was as follows:

	2007	2006
Intragovernmental		
Fees billed:		
One-time spent nuclear fuel fees:		
kWh fees	\$ 42,853	43,611
Defense high-level waste fees	112,922	(425,248)
Defense share advance payments	245,201	289,211
Interest:		
Income on investments	978,917	931,455
Defense high-level waste fees	-	(318,922)
Non-intragovernmental		
Fees billed:		
kWh fees	714,688	711,228
Interest:		
One-time spent nuclear fuel fees	152,443	128,192
Other revenue	557	1,865
Total revenues	\$ 2,247,581	\$ 1,361,392
Less earned revenue	(583,194)	(516,127)
Change in deferred revenue	\$ 1,664,387	\$ 845,265
Deferred revenue - beginning balance	21,115,343	20,270,078
Deferred revenue - ending balance	\$ 22,779,730	\$ 21,115,343

Other revenue consists primarily of net gains on the sale of investments.

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(11) Earmarked Funds

	Earmarked Funds	All Other Funds	2007 Consolidated	Earmarked Funds	All Other Funds	2006 Consolidated
Balance Sheet						
Assets						
Fund Balance with Treasury	\$ 2,844	\$ 46,405	\$ 49,249	\$ 9,064	\$ 57,295	\$ 66,359
Investments, Net	19,463,781	-	19,463,781	17,952,783	-	17,952,783
Accounts Receivable	3,369,222	-	3,369,222	3,214,274	-	3,214,274
General Property, Plant, and Equipment, Net	8,772	213	8,985	10,626	(45)	10,581
Other Assets	1,461	-	1,461	1,142	-	1,142
Total Assets	\$ 22,846,080	\$ 46,618	\$ 22,892,698	\$ 21,187,889	\$ 57,250	\$ 21,245,139
Liabilities and Net Position						
Accounts Payable	\$ 36,936	\$ 7,577	\$ 44,513	\$ 42,623	\$ 4,702	\$ 47,325
Deferred Revenue	22,245,318	534,412	22,779,730	20,821,447	293,896	21,115,343
Pension and Other Actuarial Liabilities	11,450	1,877	13,327	10,031	1,498	11,529
Other Liabilities	15,701	-	15,701	19,892	-	19,892
Commitments and Contingencies	-	10,966,014	10,966,014	-	6,717,598	6,717,598
Unexpended Appropriations	-	39,427	39,427	-	51,050	51,050
Cumulative Results of Operations	-	(10,966,014)	(10,966,014)	-	(6,717,598)	(6,717,598)
Total Liabilities and Net Position	\$ 22,309,405	\$ 583,293	\$ 22,892,698	\$ 20,893,993	\$ 351,146	\$ 21,245,139
Statement of Net Costs						
Total First Repository and Other Program Costs	\$ 224,659	\$ 358,541	\$ 583,200	\$ 207,077	\$ 310,959	\$ 518,036
Less Earned Revenues	(224,659)	(358,535)	(583,194)	(207,077)	(309,050)	(516,127)
Net First Repository Costs	\$ -	\$ 6	\$ 6	\$ -	\$ 1,909	\$ 1,909
Estimated liability for waste acceptance obligations	\$ -	\$ 4,351,162	\$ 4,351,162	\$ -	\$ 1,602,091	\$ 1,602,091
Net cost of operations	\$ -	\$ 4,351,168	\$ 4,351,168	\$ -	\$ 1,604,000	\$ 1,604,000
Statement of Changes in Net Position						
Beginning Balance - Cumulative Results of Operations	\$ -	\$ (6,717,598)	\$ (6,717,598)	\$ -	\$ (5,222,852)	\$ (5,222,852)
Change in Accounting Principle	-	(1,808)	(1,808)	-	-	-
Imputed Financing from Costs Absorbed by Others	-	104,560	104,560	-	109,254	109,254
Net Cost of Operations	-	(4,351,168)	(4,351,168)	-	(1,604,000)	(1,604,000)
Ending Balance - Cumulative Results of Operations	\$ -	\$ (10,966,014)	\$ (10,966,014)	\$ -	\$ (6,717,598)	\$ (6,717,598)
Beginning Balance - Unexpended Appropriations	\$ -	\$ 51,050	\$ 51,050	\$ -	\$ 14,094	\$ 14,094
Appropriations Received	-	346,500	346,500	-	350,000	350,000
Other Adjustments	-	-	-	-	(3,500)	(3,500)
Appropriations Used	-	(358,122)	(358,122)	-	(309,544)	(309,544)
Ending Balance - Unexpended Appropriations	\$ -	\$ 39,428	\$ 39,428	\$ -	\$ 51,049	\$ 51,050
Total Net Position	\$ -	\$ (10,926,586)	\$ (10,926,586)	\$ -	\$ (6,666,549)	\$ (6,666,548)

(12) Reconciliation of Net Cost of Operations to Budget

SFFAS No. 7 requires a reconciliation of proprietary and budgetary information in a way that helps users relate the two. In previous years, this reconciliation was accomplished by presenting the Statement of Financing as a Basic Financial Statement. Beginning in fiscal year 2007, OMB Circular No. A-136, "Financial Reporting Requirements," requires that this reconciliation be presented as a note on a comparative basis rather than as a basic statement. Accordingly, OCRWM presents the following fiscal year 2007 reconciliation and comparative fiscal year 2006 reconciliation:

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Notes to Financial Statements
September 30, 2007 and 2006

(Dollars in thousands unless otherwise noted)

(12) Reconciliation of Net Cost of Operations to Budget (continued)

	2007	2006
RESOURCES USED TO FINANCE ACTIVITIES:		
Budgetary Resources Obligated:		
Obligations Incurred	\$ 455,413	\$ 458,350
Less: Spending Authority from Offsetting Collections and Recoveries	(2)	(1,326)
Obligations, Net of Offsetting Collections and Recoveries	<u>455,411</u>	<u>457,024</u>
Offsetting Receipts:		
Fees for Disposal of Spent Nuclear Fuel	(754,197)	(751,537)
Earnings on Investments	(796,660)	(541,656)
Other Offsetting Receipts	-	(1)
Total Offsetting Receipts	<u>(1,550,857)</u>	<u>(1,293,194)</u>
Net Obligations	<u>(1,095,446)</u>	<u>(836,170)</u>
Other Resources:		
Imputed Financing from Costs Absorbed by Others	104,560	109,254
Other:		
Offsetting Receipts, Deferred	2,083,654	1,723,720
Adjustment for Department of Energy Appropriation	(358,123)	(309,544)
Total Other	<u>1,725,531</u>	<u>1,414,176</u>
Net Other Resources Used to Finance Activities	<u>1,830,091</u>	<u>1,523,430</u>
Total Resources Used to Finance Activities	<u>\$ 734,645</u>	<u>\$ 687,260</u>
RESOURCES USED TO FINANCE ITEMS NOT PART OF THE NET COST OF OPERATIONS:		
Change in Resources Obligated for Goods/Services/Benefits Ordered But Not Yet Provided		
	\$ 79,002	\$ 4,266
Resources that Finance the Acquisition of Assets	(769)	(2,935)
Resources that Fund Expenses Recognized in Prior Periods	-	(1,831)
Other Resources and Adjustments	-	20,604
Total Resources Used to Finance Items Not Part of the Net Cost of Operations	<u>78,233</u>	<u>20,104</u>
Total Resources Used to Finance the Net Cost of Operations	<u>\$ 812,878</u>	<u>\$ 707,364</u>
NET COST ITEMS THAT DO NOT REQUIRE OR GENERATE RESOURCES IN CURRENT PERIOD:		
Increases in Unfunded Liability Estimates		
	\$ 4,244,451	\$ 1,502,423
Components Not Requiring or Generating Resources:		
Depreciation and Amortization	(721,045)	(657,677)
Revaluation of Assets and Liabilities	266	(10)
Other	14,618	51,900
Total Components Not Requiring or Generating Resources	<u>(706,161)</u>	<u>(605,787)</u>
Total Net Cost Items That Do Not Require or Generate Resources in Current Period	<u>3,538,290</u>	<u>896,636</u>
NET COST OF OPERATIONS	<u>\$ 4,351,168</u>	<u>\$ 1,604,000</u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Required Supplementary Stewardship Information for Research and Development for Fiscal Year ending
September 30, 2007

(Dollars in thousands unless otherwise noted)

Expenses for research and development programs applicable to the Nuclear Waste to conduct activities on the long-term storage of high-level nuclear waste at a permanent underground repository were as follows:

	Direct Cost	Depreciation & Other Managerial Cost	Total Cost
FY 2007 APPLIED			
Environmental Quality	<u>\$172,815</u>	<u>\$1,563</u>	<u>\$174,378</u>
FY 2006 APPLIED			
Environmental Quality	<u>\$259,325</u>	<u>\$3,031</u>	<u>\$262,356</u>
FY 2005 APPLIED			
Environmental Quality	<u>\$143,966</u>	<u>\$1,905</u>	<u>\$145,871</u>
FY 2004 APPLIED			
Environmental Quality	<u>\$65,312</u>	<u>\$1,772</u>	<u>\$67,084</u>
FY 2003 APPLIED			
Environmental Quality	<u>\$75,782</u>	<u>\$1,049</u>	<u>\$76,831</u>
FY 2002 APPLIED			
Environmental Quality	<u>\$62,523</u>	<u>\$2,577</u>	<u>\$65,100</u>
FY 2001 APPLIED			
Environmental Quality	<u>\$60,393</u>	<u>\$3,107</u>	<u>\$63,500</u>
FY 2001 DEVELOPMENT			
Environmental Quality	<u>\$58,662</u>	<u>\$4,738</u>	<u>\$63,400</u>

UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Supplementary Information - Schedule I
Schedule of Cumulative Net First and Second Repository Costs for the
Twenty Five Years Ended September 30, 2007

(Dollars in thousands unless otherwise noted)

First Repository Costs	<u>\$ 7,104,906</u>
All Other Program Costs:	
Program Support	\$ 1,923,833
Transfers of Appropriations	521,286
Waste Acceptance, Storage and Transportation	506,387
Imputed and Other Costs	<u>147,826</u>
Total All Other Program Costs	<u>\$ 3,099,332</u>
Second Repository Costs	<u>\$ 108,896</u>
Total First and Second Repository Costs and Other Program Costs	<u>\$ 10,313,134</u>
Less Earned Revenue	<u>(10,299,278)</u>
Cumulative Net First and Second Repository Costs	<u><u>\$ 13,856</u></u>

**UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

Supplementary Information - Schedule II
Schedule of Cumulative Revenues and Deferred Revenue as of and for the
Twenty Five Years Ended September 30, 2007

(Dollars in thousands unless otherwise noted)

Intragovernmental:

Fees billed:

kWh fees	\$	665,840
One-time spent nuclear fuel fees		174,598
Defense high-level waste fees		2,117,104
Defense share advance payments		534,412

Interest:

Income on investments	10,125,838
Defense high-level waste fees	638,232

Non-intragovernmental:

Fees billed:

kWh fees:	13,658,183
One-time spent nuclear fuel fees	2,174,802

Interest:

One-time spent nuclear fuel fees	2,285,803
----------------------------------	-----------

Other revenue	<u>704,196</u>
---------------	----------------

Total revenues	\$ 33,079,008
----------------	---------------

Less earned revenue	<u>(10,299,278)</u>
---------------------	---------------------

Deferred revenue	<u><u>\$ 22,779,730</u></u>
------------------	-----------------------------

Finance Docket No. 35106

EXHIBIT G

There is no Surface Transportation Board requirement for an Exhibit G

Finance Docket No. 35106

EXHIBIT H

*Draft Supplemental 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 – Nevada Rail Transportation Corridor,
DOE/EIS-0250F-S2D*

and

*Draft Environmental Impact Statement for a Rail
Alignment for the Construction and Operation of a
Railroad in Nevada to a Geologic Repository at Yucca
Mountain, Nye County, Nevada, DOE/EIS-0369D*

Per instructions by the Surface Transportation Board
Exhibit H is not included in hard copy.

Exhibit H is available online at:
http://www.ocrwm.doe.gov/transport/draft_eis/index.shtml

or

Exhibit H is also available in hard copy at:

DOE Public Reading Room
2341 Postal Drive
Pahrump, Nevada 89048
(775) 751-7480

Documents also can be ordered by calling the OCRWM toll-free information line at
1-800-225-6972.

Finance Docket No. 35106

EXHIBIT I

Secretary of Energy's Transmittal Letter to President George W. Bush

and

*Secretary of Energy's Recommendation Regarding the Suitability of the Yucca Mountain
Site for a Repository Under the Nuclear Waste Policy Act of 1982*



The Secretary of Energy
Washington, DC 20585

February 14, 2002

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

I am transmitting herewith, in accordance with section 114(a)(1) of the Nuclear Waste Policy Act of 1982 (the "Act"), 42 U.S.C. 10134, my recommendation for your approval of the Yucca Mountain site for the development of a nuclear waste repository, along with a comprehensive statement of the basis of my recommendation. In making this recommendation, I have examined three considerations.

First, and most important, I have considered whether sound science supports the determination that the Yucca Mountain site is scientifically and technically suitable for the development of a repository. I am convinced that it does. This suitability determination provides the indispensable foundation for my recommendation. Irrespective of any other considerations, I could not and would not recommend the Yucca Mountain site without having first determined that a repository at Yucca Mountain will bring together the location, natural barriers, and design elements necessary to protect the health and safety of the public, including those Americans living in the immediate vicinity, now and long into the future.

The Department has engaged in over 20 years of scientific and technical investigation of the suitability of the Yucca Mountain site. As part of this investigation, some of the world's best scientists have been examining every aspect of the natural processes -- past, present and future -- that could affect the ability of a repository beneath Yucca Mountain to isolate radionuclides emitted from any spent fuel and radioactive waste disposed there. They have been conducting equally searching investigations into the processes that could affect the behavior of the engineered barriers that are expected to contribute to successful isolation of radionuclides. These investigations have run the gamut, from mapping the geologic features of the site, to studying the repository rock, to investigating whether and how water moves through the Yucca Mountain site.

To give just a few examples, Yucca Mountain scientists have: mapped geologic structures, including rock units, faults, fractures, and volcanic features; excavated more than 200 pits and trenches to remove rocks and other material for direct observation; drilled more than 450 boreholes; collected over 75,000 feet of core, and some 18,000 geologic and water samples; constructed six and one-half miles of tunnels to provide access to the rocks that would be used for the repository; mapped the geologic features exposed by the underground openings in the tunnels; conducted the largest known test in history to simulate heat effects of a repository, heating some seven million cubic feet of rock over its ambient temperature; tested mechanical,



chemical, and hydrologic properties of rock samples; and examined over 13,000 engineered material samples to determine their corrosion resistance in a variety of environments.

The findings from these and numerous other studies have been used to expand our knowledge of the rocks beneath Yucca Mountain and the flow of water through these rocks, including amounts, pathways, and rates. Yucca Mountain scientists have used this vast reservoir of information to develop computer simulations that describe the natural features, events and processes that exist at Yucca Mountain and, in turn, have used these descriptions to develop the models to forecast how a repository will perform far into the future. Yucca Mountain scientists have followed a deliberately cautious approach to enhance confidence in any prediction of future performance.

The results of this investigation have been openly and thoroughly reviewed by the Department and oversight entities such as the Nuclear Regulatory Commission (NRC), the Nuclear Waste Technical Review Board, and the U.S. Geological Survey, as well as having been subjected to scientific peer reviews, including a review undertaken by the International Atomic Energy Agency. The Department also has made available the scientific materials and analyses used to prepare the technical evaluations of site suitability for public review by all interested parties. The results of this extensive investigation and the external technical reviews of this body of scientific work give me confidence for the conclusion, based on sound scientific principles, that a repository at Yucca Mountain will be able to protect the health and safety of the public when evaluated against the radiological protection standards adopted by the Environmental Protection Agency and implemented by the NRC in accordance with Congressional direction in the Energy Policy Act of 1992.

Second, having found the site technically suitable, I am also convinced that there are compelling national interests that require development of a repository. In brief, the reasons are these:

- A repository is important to our national security. About 40% of our fleet's principal combat vessels, including submarines and aircraft carriers, are nuclear-powered. They must periodically be refueled and the spent fuel removed. This spent fuel is currently stored at surface facilities under temporary arrangements. A repository is necessary to assure a permanent disposition pathway for this material and thereby enhance the certainty of future naval operational capability.
- A repository is important to promote our non-proliferation objectives. The end of the Cold War has brought with it the welcome challenge of disposing of surplus weapons-grade plutonium as part of the process of decommissioning weapons we no longer need. A geological repository is an integral part of our disposition plans. Without it, our ability to meet our pledge to decommission our weapons could be placed in jeopardy, thereby jeopardizing the commitment of other nations, such as Russia, to decommission its own.
- A repository is important to our energy security. We must ensure that nuclear power, which provides 20% of the nation's electric power, remains

an important part of our domestic energy production. Without the stabilizing effects of nuclear power, energy markets will become increasingly more exposed to price spikes and supply uncertainties, as we are forced to replace it with other energy sources to substitute for the almost five hours of electricity that nuclear power currently provides each day, on average, to each home, farm, factory and business in America. Nuclear power is also important to sustainable growth because it produces no controlled air pollutants, such as sulfur and particulates, or greenhouse gases. A repository at Yucca Mountain is indispensable to the maintenance and potential growth of this environmentally efficient source of energy.

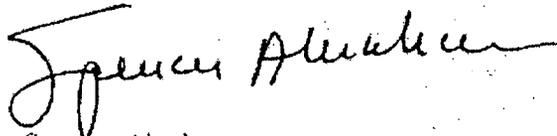
- A repository is important to our homeland security. Spent nuclear fuel, high-level radioactive waste, and excess plutonium for which there is no complete disposal pathway without a repository are currently stored at over 131 sites in 39 States. More than 161 million Americans live within 75 miles of one or more of these sites. The facilities housing these materials were intended to do so on a temporary basis. They should be able to withstand current terrorist threats, but that may not remain the case in the future. These materials would be far better secured in a deep underground repository at Yucca Mountain, on federal land, far from population centers, that can withstand an attack well beyond any that is reasonably conceivable.
- And a repository is important to our efforts to protect the environment. It is past time for the federal government to implement an environmentally sound disposition plan for our defense wastes, which are located in Tennessee, Colorado, South Carolina, New Mexico, New York, Washington and Idaho. Among the wastes currently at these sites, approximately 100,000,000 gallons of high-level liquid waste are stored in, and in some instances have leaked from, temporary holding tanks. About 2,500 metric tons of solid un-reprocessed fuel from production and other reactors also are stored at these sites. It is also past time for the federal government to begin disposition of commercial spent fuel, a program that was to have begun in 1998. A repository is necessary for accomplishment of either of these objectives.

Third, I have considered carefully the primary arguments against locating a repository at Yucca Mountain. None of these arguments rises to a level that would outweigh the case for going forward. This is not to say that there have not been important concerns identified. I am confident, however, these concerns have been and will continue to be addressed in an appropriate manner.

In short, after months of study based on scientific and technical research unique in its scope and depth, and after reviewing the results of a public review process that went well beyond the requirements of the Act, I reached the conclusions described in the preceding paragraphs – namely, that technically and scientifically the Yucca Mountain site is fully suitable; that development of a repository at the Yucca Mountain site serves the national interest in numerous important ways; and that the arguments against its designation do not rise to a level that would outweigh the case for going forward. Not completing the site designation process and moving forward to licensing the development of a repository, as Congress mandated almost 20 years ago, would be an irresponsible dereliction of duty.

Accordingly, I recommend the Yucca Mountain site for the development of a nuclear waste repository.

Respectfully,

A handwritten signature in cursive script that reads "Spencer Abraham". The signature is written in dark ink and is positioned above the printed name.

Spencer Abraham

**Recommendation by the Secretary of Energy
Regarding the Suitability of the Yucca Mountain Site
for a Repository Under the Nuclear Waste Policy Act of 1982**

February 2002

<i>1. Introduction.....</i>	<i>1</i>
<i>2. Background.....</i>	<i>3</i>
2.1. History of the Yucca Mountain Project and the Nuclear Waste Policy Act	3
2.2. The Nuclear Waste Policy Act and the Responsibilities of the Department of Energy and the Secretary.....	5
<i>3. Decision</i>	<i>6</i>
3.1. The Recommendation.....	6
3.2. What This Recommendation Means, and What It Does Not Mean.....	6
<i>4. Decision Determination Methodology and the Decision-Making Process.....</i>	<i>7</i>
<i>5. Decision Criteria</i>	<i>8</i>
5.1. Scientific and Technical Suitability.....	9
5.2. National Interest Considerations.....	10
<i>6. Is Yucca Mountain Scientifically and Technically Suitable for Development of a Repository?</i>	<i>12</i>
6.1. Framework for Suitability Determination	12
6.1.1. General Outline.....	12
6.1.2. Radiation Protection Standards.....	13
6.1.3. Underlying Hard Science.....	16
<i>7. Results of Suitability Evaluations and Conclusions.....</i>	<i>18</i>
7.1. Results of Pre-Closure Evaluations.....	18
7.2. Results of Post-Closure Evaluations	20
<i>8. The National Interest.....</i>	<i>26</i>
8.1. Nuclear Science and the National Interest	26
8.2. Energy Security.....	27
8.3. National Security.....	28
8.3.1. Powering the Navy Nuclear Fleet.....	28
8.3.2. Allowing the Nation to Decommission Its Surplus Nuclear Weapons and Support Nuclear Non-Proliferation Efforts.....	28
8.4. Protecting the Environment.....	29
8.5. Facilitating Continuation of Research, Medical, and Humanitarian Programs.....	30
8.6. Assisting Anti-Terrorism at Home.....	30
8.7. Summary	31
<i>9. None of the Arguments Against Yucca Mountain Withstands Analysis.....</i>	<i>31</i>

9.1. Assertion 1: The Citizens of Nevada Were Denied an Adequate Opportunity to Be Heard.....	32
9.2. Assertion 2: The Project Has Received Inadequate Study	33
9.3. Assertion 3: The Rules Were Changed in the Middle of the Game	33
9.4. Assertion 4: The Process Tramples States' Rights	37
9.5. Assertion 5: Transportation of Nuclear Materials is Disruptive and Dangerous.....	38
9.6. Assertion 6: Transportation of Wastes to the Site Will Have a Dramatically Negative Economic Impact on Las Vegas.....	39
9.7. Assertion 7: It is Premature for DOE to Make a Site Recommendation for Various Reasons.....	43
9.7.1. The General Accounting Office has concluded that it is premature for DOE to make a site recommendation now.....	43
9.7.2. DOE is not ready to make a site recommendation now because DOE and NRC have agreed on 293 technical items that need to be completed before DOE files a license application.....	44
9.7.3. It is premature for DOE to make a recommendation now because DOE cannot complete this additional work until 2006. The NWPA requires DOE to file a license application within 90 days of the approval of site designation.....	45
10. Conclusion.....	45

1. Introduction

For more than half a century, since nuclear science helped us win World War II and ring in the Atomic Age, scientists have known that the Nation would need a secure, permanent facility in which to dispose of radioactive wastes. Twenty years ago, when Congress adopted the Nuclear Waste Policy Act of 1982 (NWPA or "the Act"), it recognized the overwhelming consensus in the scientific community that the best option for such a facility would be a deep underground repository. Fifteen years ago, Congress directed the Secretary of Energy to investigate and recommend to the President whether such a repository could be located safely at Yucca Mountain, Nevada. Since then, our country has spent billions of dollars and millions of hours of research endeavoring to answer this question. I have carefully reviewed the product of this study. In my judgment, it constitutes sound science and shows that a safe repository can be sited there. I also believe that compelling national interests counsel in favor of proceeding with this project. Accordingly, consistent with my responsibilities under the NWPA, today I am recommending that Yucca Mountain be developed as the site for an underground repository for spent fuel and other radioactive wastes.¹

The first consideration in my decision was whether the Yucca Mountain site will safeguard the health and safety of the people, in Nevada and across the country, and will be effective in containing at minimum risk the material it is designed to hold. Substantial evidence shows that it will. Yucca Mountain is far and away the most thoroughly researched site of its kind in the world. It is a geologically stable site, in a closed groundwater basin, isolated on thousands of acres of Federal land, and farther from any metropolitan area than the great majority of less secure, temporary nuclear waste storage sites that exist in the country today.

This point bears emphasis. We are not confronting a hypothetical problem. We have a staggering amount of radioactive waste in this country – nearly 100,000,000 gallons of high-level nuclear waste and more than 40,000 metric tons of spent nuclear fuel with more created every day. Our choice is not between, on the one hand, a disposal site with costs and risks held to a minimum, and, on the other, a magic disposal system with no costs or risks at all. Instead, the real choice is between a single secure site, deep under the ground at Yucca Mountain, or making do with what we have now or some variant of it – 131 aging surface sites, scattered across 39 states. Every one of those sites was built on the assumption that it would be temporary. As time goes by, every one is closer to the limit of its safe life span. And every one is at least a potential security risk – safe for today, but a question mark in decades to come.

The Yucca Mountain facility is important to achieving a number of our national goals. It will promote our energy security, our national security, and safety in our homeland. It will help strengthen our economy and help us clean up the environment.

The benefits of nuclear power are with us every day. Twenty percent of our country's electricity comes from nuclear energy. To put it another way, the "average" home operates on nuclear-generated electricity for almost five hours a day. A government with a complacent, kick-the-

¹ For purposes of this Recommendation, the terms "radioactive waste" and "waste" are used to cover high-level radioactive waste and spent nuclear fuel, as those terms are used in the Nuclear Waste Policy Act.

can-down-the-road nuclear waste disposal policy will sooner or later have to ask its citizens which five hours of electricity they would care to do without.

Regions that produce steel, automobiles, and durable goods rely in particular on nuclear power, which reduces the air pollution associated with fossil fuels – greenhouse gases, solid particulate matter, smog, and acid rain. But environmental concerns extend further. Most commercial spent fuel storage facilities are near large population centers; in fact, more than 161 million Americans live within 75 miles of these facilities. These storage sites also tend to be near rivers, lakes, and seacoasts. Should a radioactive release occur from one of these older, less robust facilities, it could contaminate any of 20 major waterways, including the Mississippi River. Over 30 million Americans are served by these potentially at-risk water sources.

Our national security interests are likewise at stake. Forty percent of our warships, including many of the most strategic vessels in our Navy, are powered by nuclear fuel, which eventually becomes spent fuel. At the same time, the end of the Cold War has brought the welcome challenge to our Nation of disposing of surplus weapons-grade plutonium as part of the process of decommissioning our nuclear weapons. Regardless of whether this material is turned into reactor fuel or otherwise treated, an underground repository is an indispensable component in any plan for its complete disposition. An affirmative decision on Yucca Mountain is also likely to affect other nations' weapons decommissioning, since their willingness to proceed will depend on being satisfied that we are doing so. Moving forward with the repository will contribute to our global efforts to stem the proliferation of nuclear weapons in other ways, since it will encourage nations with weaker controls over their own materials to follow a similar path of permanent, underground disposal, thereby making it more difficult for these materials to fall into the wrong hands. By moving forward with Yucca Mountain, we will show leadership, set out a roadmap, and encourage other nations to follow it.

There will be those who say the problem of nuclear waste disposal generally, and Yucca Mountain in particular, needs more study. In fact, both issues have been studied for more than twice the amount of time it took to plan and complete the moon landing. My Recommendation today is consistent with the conclusion of the National Research Council of the National Academy of Sciences – a conclusion reached, not last week or last month, but 12 years ago. The Council noted “a worldwide scientific consensus that deep geological disposal, the approach being followed by the United States, is the best option for disposing of high-level radioactive waste.”² Likewise, a broad spectrum of experts agrees that we now have enough information, including more than 20 years of researching Yucca Mountain specifically, to support a conclusion that such a repository can be safely located there.³

Nonetheless, should this site designation ultimately become effective, considerable additional study lies ahead. Before an ounce of spent fuel or radioactive waste could be sent to Yucca

² *Rethinking High-Level Radioactive Waste Disposal: A Position Statement of the Board on Radioactive Waste Management*, Washington, D.C., National Academy Press, 1990.

³ Letter and attached report, Charles G. Groat, Director, U.S. Geologic Survey, to Robert G. Card, October 4, 2001 (hereafter *USGS Letter & Report*); Letter and attached report, Hans Riotte, NEA-IAEA Joint Secretariat, to Lake H. Barrett, November 2, 2001 (hereafter *NEA-IAEA Letter & Report*); Letter, Charles V. Shank, Director, Lawrence Berkeley National Laboratory, to Spencer Abraham, September 6, 2000 (hereafter *Lawrence Berkeley National Laboratory Letter*).

Mountain, indeed even before construction of the permanent facilities for emplacement of waste could begin there, the Department of Energy (DOE or "the Department") will be required to submit an application to the independent Nuclear Regulatory Commission (NRC). There, DOE would be required to make its case through a formal review process that will include public hearings and is expected to last at least three years. Only after that, if the license were granted, could construction begin. The DOE would also have to obtain an additional operating license, supported by evidence that public health and safety will be preserved, before any waste could actually be received.

In short, even if the Yucca Mountain Recommendation were accepted today, an estimated minimum of eight more years lies ahead before the site would become operational.

We have seen decades of study, and properly so for a decision of this importance, one with significant consequences for so many of our citizens. As necessary, many more years of study will be undertaken. But it is past time to stop sacrificing that which is forward-looking and prudent on the altar of a *status quo* we know ultimately will fail us. The *status quo* is not the best we can do for our energy future, our national security, our economy, our environment, and safety – and we are less safe every day as the clock runs down on dozens of older, temporary sites.

I recommend the deep underground site at Yucca Mountain, Nevada, for development as our Nation's first permanent facility for disposing of high-level nuclear waste.

2. Background

2.1. History of the Yucca Mountain Project and the Nuclear Waste Policy Act

The need for a secure facility in which to dispose of radioactive wastes has been known in this country at least since World War II. As early as 1957, a National Academy of Sciences report to the Atomic Energy Commission suggested burying radioactive waste in geologic formations. Beginning in the 1970s, the United States and other countries evaluated many options for the safe and permanent disposal of radioactive waste, including deep seabed disposal, remote island siting, dry cask storage, disposal in the polar ice sheets, transmutation, and rocketing waste into orbit around the sun. After analyzing these options, disposal in a mined geologic repository emerged as the preferred long-term environmental solution for the management of these wastes.⁴ Congress recognized this consensus 20 years ago when it passed the Nuclear Waste Policy Act of 1982.

In the Act, Congress created a Federal obligation to accept civilian spent nuclear fuel and dispose of it in a geologic facility. Congress also designated the agencies responsible for implementing this policy and specified their roles. The Department of Energy must characterize, site, design, build, and manage a Federal waste repository. The Environmental Protection Agency (EPA) must set the public health standards for it. The Nuclear Regulatory Commission must license its construction, operation, and closure.

⁴Final Environmental Impact Statement for Management of Commercially Generated Radioactive Waste, DOE/EIS-0046, 1980.

The Department of Energy began studying Yucca Mountain almost a quarter century ago. Even before Congress adopted the NWPA, the Department had begun national site screening research as part of the National Waste Terminal Storage program, which included examination of Federal sites that had previously been used for defense-related activities and were already potentially contaminated. Yucca Mountain was one such location, on and adjacent to the Nevada Test Site, which was then under consideration. Work began on the Yucca Mountain site in 1978. When the NWPA was passed, the Department was studying more than 25 sites around the country as potential repositories. The Act provided for the siting and development of two; Yucca Mountain was one of nine sites under consideration for the first repository program.

Following the provisions of the Act and the Department's siting Guidelines,⁵ the Department prepared draft environmental assessments for the nine sites. Final environmental assessments were prepared for five of these, including Yucca Mountain. In 1986, the Department compared and ranked the sites under consideration for characterization. It did this by using a multi-attribute methodology – an accepted, formal scientific method used to help decision makers compare, on an equivalent basis, the many components that make up a complex decision. When all the components of the ranking decision were considered together, taking account of both pre-closure and post-closure concerns, Yucca Mountain was the top-ranked site.⁶ The Department examined a variety of ways of combining the components of the ranking scheme; this only confirmed the conclusion that Yucca Mountain came out in first place. The EPA also looked at the performance of a repository in unsaturated tuff. The EPA noted that in its modeling in support of development of the standards, unsaturated tuff was one of the two geologic media that appeared most capable of limiting releases of radionuclides in a manner that keeps expected doses to individuals low.⁷

In 1986, Secretary of Energy Herrington found three sites to be suitable for site characterization, and recommended the three, including Yucca Mountain, to President Reagan for detailed site characterization.⁸ The Secretary also made a preliminary finding, based on Guidelines that did not require site characterization, that the three sites were suitable for development as repositories.⁹

The next year, Congress amended the NWPA, and selected Yucca Mountain as the single site to be characterized. It simultaneously directed the Department to cease activities at all other potential sites. Although it has been suggested that Congress's decision was made for purely political reasons, the record described above reveals that the Yucca Mountain site consistently ranked at or near the top of the sites evaluated well before Congress's action.

⁵ The Guidelines then in force were promulgated at 10 CFR part 960, General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories, 1984.

⁶ *Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization for the First Radioactive Waste Repository*, DOE/S-0048, May 1986.

⁷ Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes, Final Rule, 40 CFR Part 191, December 20, 1993.

⁸ Letter, John S. Herrington, Secretary of Energy, to President Ronald Reagan, May 27, 1986; with attached report, *Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization for the First Radioactive Waste Repository*, DOE/S-0048, May 1986.

⁹ *Ibid.*

As previously noted, the National Research Council of the National Academy of Sciences concluded in 1990 (and reiterated last year) that there is "a worldwide scientific consensus that deep geological disposal, the approach being followed by the United States, is the best option for disposing of high-level radioactive waste."¹⁰ Today, many national and international scientific experts and nuclear waste management professionals agree with DOE that there exists sufficient information to support a national decision on designation of the Yucca Mountain site.¹¹

2.2. The Nuclear Waste Policy Act and the Responsibilities of the Department of Energy and the Secretary

Congress assigned to the Secretary of Energy the primary responsibility for implementing the national policy of developing a deep underground repository. The Secretary must determine whether to initiate the next step laid out in the NWPA – a recommendation to designate Yucca Mountain as the site for development as a permanent disposal facility. The criteria for this determination are described more fully in section 5. Briefly, I first must determine whether Yucca Mountain is in fact technically and scientifically suitable to be a repository. A favorable suitability determination is indispensable for a positive recommendation of the site to the President. Under additional criteria I have adopted above and beyond the statutory requirements, I have also sought to determine whether, when other relevant considerations are taken into account, recommending it is in the overall national interest and, if so, whether there are countervailing arguments so strong that I should nonetheless decline to make the Recommendation.

The Act contemplates several important stages in evaluating the site before a Secretarial recommendation is in order. It directs the Secretary to develop a site characterization plan, one that will help guide test programs for the collection of data to be used in evaluating the site. It directs the Secretary to conduct such characterization studies as may be necessary to evaluate the site's suitability. And it directs the Secretary to hold hearings in the vicinity of the prospective site to inform the residents and receive their comments. It is at the completion of these stages that the Act directs the Secretary, if he finds the site suitable, to determine whether to recommend it to the President for development as a permanent repository.

If the Secretary recommends to the President that Yucca Mountain be developed, he must include with the Recommendation, and make available to the public, a comprehensive statement of the basis for his determination.¹² If at any time the Secretary determines that Yucca Mountain is not a suitable site, he must report to Congress within six months his recommendations for further action to assure safe, permanent disposal of spent nuclear fuel and high-level radioactive waste.

¹⁰ *Rethinking High-Level Radioactive Waste Disposal: A Position Statement of the Board on Radioactive Waste Management*, Washington, D.C., National Academy Press, 1990. And: *Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges*, Board on Radioactive Waste Management, Washington, D.C., National Academy Press, 2001.

¹¹ *USGS Letter & Report, supra; NEA-IAEA Letter & Report, supra; Lawrence-Berkeley-National Laboratory Letter, supra.*

¹² This document together with accompanying materials comprises the recommendation and the comprehensive statement. The accompanying materials are described in footnote 26.

Following a Recommendation by the Secretary, the President may recommend the Yucca Mountain site to Congress "if... [he] considers [it] qualified for application for a construction authorization...."¹³ If the President submits a recommendation to Congress, he must also submit a copy of the statement setting forth the basis for the Secretary's Recommendation.

A Presidential recommendation takes effect 60 days after submission unless Nevada forwards a notice of disapproval to the Congress. If Nevada submits such a notice, Congress has a limited time during which it may nevertheless give effect to the President's recommendation by passing, under expedited procedures, a joint resolution of siting approval. If the President's recommendation takes effect, the Act directs the Secretary to submit to the NRC a construction license application.

The NWPA by its terms contemplated that the entire process of siting, licensing, and constructing a repository would have been completed more than four years ago, by January 31, 1998. Accordingly, it required the Department to enter into contracts to begin accepting waste for disposal by that date.

3. Decision

3.1. The Recommendation

After over 20 years of research and billions of dollars of carefully planned and reviewed scientific field work, the Department has found that a repository at Yucca Mountain brings together the location, natural barriers, and design elements most likely to protect the health and safety of the public, including those Americans living in the immediate vicinity, now and long into the future. It is therefore suitable, within the meaning of the NWPA, for development as a permanent nuclear waste and spent fuel repository.

After reviewing the extensive, indeed unprecedented, analysis the Department has undertaken, and in discharging the responsibilities made incumbent on the Secretary under the Act, I am recommending to the President that Yucca Mountain be developed as the Nation's first permanent, deep underground repository for high-level radioactive waste. A decision to develop Yucca Mountain will be a critical step forward in addressing our Nation's energy future, our national defense, our safety at home, and protection for our economy and environment.

3.2. What This Recommendation Means, and What It Does Not Mean

Even after so many years of research, this Recommendation is a preliminary step. It does no more than start the formal safety evaluation process. Before a license is granted, much less before repository construction or waste emplacement may begin, many steps and many years still lie ahead. The DOE must submit an application for a construction license; defend it through formal review, including public hearings; and receive authorization from the NRC, which has the statutory responsibility to ensure that any repository built at Yucca Mountain meets stringent

¹³ NWPA section 114(a)(2)(A).

tests of health and safety. The NRC licensing process is expected to take a minimum of three years. Opposing viewpoints will have every opportunity to be heard. If the NRC grants this first license, it will only authorize initial construction. The DOE would then have to seek and obtain a second operating license from the NRC before any wastes could be received. The process altogether is expected to take a minimum of eight years.

The DOE would also be subject to NRC oversight as a condition of the operating license. Construction, licensing, and operation of the repository would also be subject to ongoing Congressional oversight.

At some future point, the repository is expected to close. EPA and NRC regulations require monitoring after the DOE receives a license amendment authorizing the closure, which would be from 50 to about 300 years after waste emplacement begins, or possibly longer. The repository would also be designed, however, to be able to adapt to methods future generations might develop to manage high-level radioactive waste. Thus, even after completion of waste emplacement, the waste could be retrieved to take advantage of its economic value or usefulness to as yet undeveloped technologies.

Permanently closing the repository would require sealing all shafts, ramps, exploratory boreholes, and other underground openings connected to the surface. Such sealing would discourage human intrusion and prevent water from entering through these openings. DOE's site stewardship would include maintaining control of the area, monitoring and testing, and implementing security measures against vandalism and theft. In addition, a network of permanent monuments and markers would be erected around the site to alert future generations to the presence and nature of the buried waste.¹⁴ Detailed public records held in multiple places would identify the location and layout of the repository and the nature and potential hazard of the waste it contains. The Federal Government would maintain control of the site for the indefinite future. Active security systems would prevent deliberate or inadvertent human intrusion and any other human activity that could adversely affect the performance of the repository.

4. Decision Determination Methodology and the Decision-Making Process

I have considered many kinds of information in making my determination today. I have put on a hard hat, gone down into the Mountain, and spoken with many of the scientists and engineers working there. Of course my decision-making included a great deal more than that. I have also personally reviewed detailed summaries of the science and research undertaken by the Yucca Mountain Project since 1978. I relied upon review materials, program evaluations, and face-to-face briefings given by many individuals familiar with the Project, such as the acting program manager and program senior staff.

My consideration included: (a) the general background of the program, including the relevant legislative history; (b) the types, sources, and amounts of radioactive waste that would be disposed of at the site and their risk; (c) the extent of Federal responsibilities; (d) the criteria for a

¹⁴During characterization of the Yucca Mountain site, Nye County began to develop its Early Warning Monitoring program and boreholes. These boreholes not only provide information about water movement in the area of the site, but also can serve as monitoring points should a repository be built at Yucca Mountain.

suitability decision, including the NWPA's provisions bearing on the basis for the Secretary's consideration; the regulatory structure, its substance, history, and issues; DOE's Yucca Mountain Suitability Guidelines promulgated under the NWPA;¹⁵ the NRC licensing regulations,¹⁶ and EPA radiation protection standards¹⁷ as referenced in the Suitability Guidelines; (e) assessments of repository performance, including technical data and descriptions of how those data were gathered and evaluated; assessments of the effectiveness of natural and engineered barriers in meeting applicable radiation protection standards, and adjustments for uncertainties associated with each of these; (f) the Yucca Mountain Site Suitability Evaluation; (g) the views of members of the public, including those expressed at hearings and through written comments; (h) environmental, socioeconomic, and transportation issues; (i) program oversight history, technical issues, and responses, including the role and views of the NRC, the Nuclear Waste Technical Review Board, the General Accounting Office, the Inspector General, and the State of Nevada; and the role and views of the National Laboratories, the United States Geological Survey, and peer reviews; and (j) public policy impact.

I also requested an external review of program briefing materials. It was conducted by Dr. Chris Whipple, a member of the National Academy of Engineering and an experienced independent peer reviewer of programs for both the Waste Isolation Pilot Plant and the Yucca Mountain Project. Dr. Whipple previously had led a peer review team that critically analyzed Total System Performance Assessment (TSPA) work of the Yucca Mountain Project.

I also reviewed the comment summary documents from both the Environmental Impact Statement (EIS) and NWPA Section 114 site recommendation hearing process in order fully to take into account public views concerning a possible recommendation of the Yucca Mountain site. This review enabled me to evaluate scientific and research results in the context of both strongly held local concerns and issues of national importance. I took particular note of comments and concerns raised by the Governor of Nevada, governors of other states, state agencies, Native American tribes, and members of the public at large.

5. Decision Criteria

My charge to make a recommendation to the President on this matter stems from the Nuclear Waste Policy Act of 1982. That statute directs the Secretary of Energy to determine "whether to recommend to the President that he approve [the Yucca Mountain] site for development of a repository."¹⁸ The NWPA establishes certain guideposts along the way to making this determination, but it also gives the Secretary significant responsibility for deciding what the relevant considerations are to be.

Pursuant to that responsibility, I concluded that I should use three criteria in determining whether to recommend approval of the Yucca Mountain Project. First, is Yucca Mountain a scientifically

¹⁵ 10 CFR Part 963, Yucca Mountain Site Suitability Guidelines, November 14, 2001.

¹⁶ 10 CFR Part 63, Disposal of High-Level Radioactive Waste in a Geologic Repository at Yucca Mountain, Nevada, November 2, 2001.

¹⁷ 40 CFR Part 197, Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada, June 13, 2001.

¹⁸ NWPA section 114(a)(1).

and technically suitable site for a repository, *i.e.*, a site that promises a reasonable expectation of public health and safety for disposal of spent nuclear fuel and high-level radioactive waste for the next 10,000 years? Second, are there compelling national interests that favor proceeding with the decision to site a repository there? And third, are there countervailing considerations that outweigh those interests?

The first of these criteria is expressly contemplated by the NWPA, although the NWPA also confers considerable discretion and responsibility on the Secretary in defining how to determine scientific and technical suitability and in making a judgment on the question. The two other criteria are not specified by the NWPA, but I am convinced that they are appropriate checks on a pure suitability-based decision.

5.1. Scientific and Technical Suitability

Under the NWPA, the first step in a Secretarial determination regarding Yucca Mountain is deciding whether it is scientifically and technically suitable as a repository site. Although the NWPA does not state explicitly that this is the initial step, the language and structure of the Act strongly suggest that this is so. Most significantly, section 114(a)(1) of the NWPA states that the Secretary's recommendation is to be made at the conclusion of site characterization.¹⁹ Section 113, in turn, makes clear that the function of site characterization is to provide enough site-specific information to allow a decision on Yucca Mountain's scientific suitability.²⁰

As to what a determination of site suitability entails, the only real guidance the Act provides is that in several places it equates a favorable suitability judgment with a judgment that a repository could (1) be built at that site and (2) receive a construction authorization from the NRC.²¹ This suggests that a determination that the site is suitable entails a judgment on my part that a repository at Yucca Mountain would likely be licensable by the NRC.

Beyond that, the NWPA largely leaves the question to the Secretary of Energy by charging him with establishing "criteria to be used to determine the suitability of ... candidate site[s] for the location of a repository."²² On November 14, 2001, following NRC's concurrence, the Department issued its final version of these criteria in a rule entitled, "Yucca Mountain Site Suitability Guidelines." I shall describe these in detail in the next section of this Recommendation, but outline them here. In brief, DOE's Guidelines envision that I may find the Yucca Mountain site suitable if I conclude that a repository constructed there is "likely" to meet

¹⁹Ibid.

²⁰This is apparent from two related provisions of section 113: section 113(c)(1), which states that, "The Secretary may conduct at the Yucca Mountain site only such site characterization activities as the Secretary considers necessary to provide the data required for evaluation of the suitability of such site for an application to be submitted to the Commission for a construction authorization for a repository at such site" (as well as for NEPA purposes); and its companion provision, section 113(c)(3), which states that, "If the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall ... terminate all site characterization activities [there]."

²¹NWPA section 112(b)(1)(D)(ii); NWPA section 113(c)(1); NWPA section 113(c)(3).

²²NWPA section 113(b)(1)(A)(iv). That section contemplates that these criteria are to be included in the first instance in the site characterization plan for each site and thereafter may be modified using the procedures of section 112(a).

extremely stringent radiation protection standards designed to protect public health and safety.²³ The EPA originally established these standards.²⁴ They are now also set out in NRC licensing rules.²⁵

The EPA and NRC adopted the standards so as to assure that while the repository is receiving nuclear materials, any radiation doses to workers and members of the public in the vicinity of the site would be at safe levels, and that after the repository is sealed, radiation doses to those in the vicinity would be at safe levels for 10,000 years. These radiation protection levels are identical to those with which the DOE will have to demonstrate compliance to the satisfaction of the NRC in order to obtain a license to build the repository.

Using the Department's suitability Guidelines, I have concluded that Yucca Mountain is in fact suitable for a repository. The reasons for this conclusion are set out in section 7 of this Recommendation. However, I want to pause to make one thing clear at the outset. If for any reason I found that the site were not suitable or licensable, then, irrespective of any other consideration, I would not recommend it. Specifically, however much as I might believe that proceeding toward a repository would advance the national interest in other ways, those additional considerations could not properly influence, and have not influenced, my determination of suitability.

5.2. National Interest Considerations

Beyond scientific suitability, the NWPAs is virtually silent on what other standard or standards the Secretary should apply in making a recommendation. It does direct me to consider certain matters. It requires that I consider the record of hearings conducted in the vicinity of Yucca Mountain, the site characterization record, and various other information I am directed to transmit to the President with my Recommendation.²⁶ The Act does not, however, specify how I

²³ 10 CFR part 963.

²⁴ 40 CFR part 197.

²⁵ 10 CFR part 63.

²⁶ The statutorily required information is set out in Section 114(a)(1) of the NWPAs, which states:

Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

- (A) a description of the proposed repository, including preliminary engineering specifications for the facility;
- (B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;
- (C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;
- (D) a final environmental impact statement prepared for the Yucca Mountain site pursuant to subsection (f) and the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.], together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that the Secretary shall not be required in any such environmental impact statement to consider the need for a repository, the alternatives to geological disposal, or alternative sites to the Yucca Mountain site;
- (E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository;
- (F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

am to consider these various items or what standard I am to use in weighing them. And finally among the items it directs me to take into account is, "such other information as the Secretary considers appropriate."

The approach taken in the Act led me to conclude that, after completing the first step of reaching a judgment as to the scientific suitability of Yucca Mountain, if I concluded the site was scientifically suitable, I should also address a second matter: whether it is in the overall national interest to build a repository there. In considering that issue, I have addressed two further questions: are there compelling national interests favoring development of the site, and if so, are there countervailing considerations weighty enough to overcome the arguments for proceeding with development? Sections 8 and 9 of this Recommendation set forth my conclusions on these questions.

In my view, the statute's silence on the factors that go into the recommendation process makes it at a minimum ambiguous on whether I should conduct any inquiry beyond the question of scientific suitability. In light of that ambiguity, I have elected to construe the statute as allowing me, if I make a favorable suitability determination based on science, also to consider whether development of a repository at Yucca Mountain is in the national interest. For several reasons, I believe this is the better way to interpret the NWPA. First, given the significance of a siting

(G) such other information as the Secretary considers appropriate; and

(H) any impact report submitted under section 116(c)(2)(B) [42 U.S.C. 10136(c)(2)(B)] by the State of Nevada.

This material is attached to this Recommendation, as follows:

- The description of the repository called for by section 114(a)(1)(A) is contained in Chapter 2 of the Yucca Mountain Science and Engineering Report (YMS&ER), Revision 1.
- The material relating to the waste form called for by section 114(a)(1)(B) is contained in Chapters 3 and 4 of the YMS&ER, Revision 1.
- The discussion of site characterization data called for by section 114(a)(1)(C) is contained in Chapter 4 of the YMS&ER, Revision 1.
- The EIS-related material called for by section 114(a)(1)(D) is contained in the *Final Environmental Impact Statement (EIS) for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, along with letters received from the Secretary of the Interior, the Chair of the Council on Environmental Quality, the Administrator of the Environmental Protection Agency, and the Chairman of the Nuclear Regulatory Commission (NRC), transmitting their respective comments on the final EIS.
- The information called for by section 114(a)(1)(E) is contained in a letter from NRC Chairman Meserve to Under Secretary Card, dated November 13, 2001.
- The information called for by section 114(a)(1)(F) is contained in Section 2 of two separate reports, the *Comment Summary Document* and the *Supplemental Comment Summary Document*, and in a separate document providing responses to comments from the Governor of Nevada sent to the Department after the public comment periods on a possible site recommendation closed.
- Section 114(a)(1)(G) provides for the inclusion of other information as the Secretary considers appropriate. The report, *Yucca Mountain Site Suitability Evaluation* (DOE/RW-0549, February 2002), has been included as other information. This report provides an evaluation of the suitability of the Yucca Mountain site against Departmental Guidelines setting forth the criteria and methodology to be used in determining the suitability of the Yucca Mountain site, pursuant to section 113(b)(1)(A)(iv). In addition, impact reports submitted by the various Nevada counties have been included as other information to be forwarded to the President. In transmitting these reports to the President, the Department is neither deciding on, nor endorsing, any specific impact assistance requested by the governmental entities in those reports.
- The State of Nevada submitted an impact report pursuant to section 114(a)(1)(H). In transmitting this report to the President, the Department is likewise neither deciding on, nor endorsing this report.

decision and the nature of the officers involved, one would expect that even if a Cabinet Secretary were to find a site technically suitable for a repository, he should be able to take broader considerations into account in determining what recommendation to make to the President. A pure suitability-based decision risks taking insufficient heed of the views of the people, particularly in Nevada but in other parts of the country as well. Second, it is difficult to envision a Cabinet Secretary's making a recommendation without taking into account these broader considerations. Finally, it is plain that any conclusion on whether to recommend this site is likely to be reviewed by Congress. Since that review will inevitably focus on broader questions than the scientific and technical suitability of the site, it seems useful in the first instance for the Executive Branch to factor such considerations into its recommendation as well. I note, however, that if my interpretation of the statute in this regard is incorrect, and Congress has made a finding of suitability the sole determinant of whether to recommend Yucca Mountain, my Recommendation would be the same.

6. Is Yucca Mountain Scientifically and Technically Suitable for Development of a Repository?

The Department of Energy has spent over two decades and billions of dollars on carefully planned and reviewed scientific fieldwork designed to help determine whether Yucca Mountain is a suitable site for a repository. The results of that work are summarized in the *Yucca Mountain Science and Engineering Report, Revision 1*, and evaluated in the Yucca Mountain Site Suitability Evaluation (YMSSE), which concludes, as set out in 10 CFR part 963, that Yucca Mountain is "likely" to meet the applicable radiation standards and thus to protect the health and safety of the public, including those living in the immediate vicinity now and thousands of years from now. I have carefully studied that evaluation and much of the material underlying it, and I believe it to be correct.

6.1. Framework for Suitability Determination

6.1.1. General Outline

The general outline of the analytic framework I have used to evaluate the scientific suitability of the site is set out in the Department's Yucca Mountain Site Suitability Guidelines, found at 10 CFR part 963.

The framework has three key features. First, the Guidelines divide the suitability inquiry into sub-inquiries concerning a "pre-closure" safety evaluation and a "post-closure" performance evaluation. The "pre-closure" evaluation involves assessing whether a repository at the site is likely to be able to operate safely while it is open and receiving wastes. The "post-closure" evaluation involves assessing whether the repository is likely to continue to isolate the materials for 10,000 years after it has been sealed, so as to prevent harmful releases of radionuclides.

Second, the Guidelines set out a method and criteria for conducting the pre-closure safety evaluation. The method is essentially the same as that used to evaluate the safety of other proposed nuclear facilities; it is not particularly novel and should be recognized by those familiar with safety assessments of existing facilities. This is because, while it is open and receiving

nuclear materials, a repository at Yucca Mountain will not be very different, in terms of its functions and the activities expected to take place there, from many other modern facilities built to handle such materials. A pre-closure evaluation to assess the probable safety of such a facility entails considering its design, the nature of the substances it handles, and the kinds of activities and external events that might occur while it is receiving waste. It then uses known data to forecast the level of radioactivity to which workers and members of the public would be likely to be exposed as a result.

Third, the Guidelines set out a method and criteria for evaluating the post-closure performance of the repository. This is the most challenging aspect of evaluating Yucca Mountain's suitability, since it entails assessing the ability of the repository to isolate radioactive materials far into the future. The scientific consensus is, and the Guidelines specify, that this should be done using a "Total System Performance Assessment." This approach, which is similar to other efforts to forecast the behavior of complex systems over long periods of time, takes information derived from a multitude of experiments and known facts. It feeds that information into a series of models. These in turn are used to develop one overarching model of how well a repository at Yucca Mountain would be likely to perform in preventing the escape of radioactivity and radioactive materials. The model can then be used to forecast the levels of radioactivity to which people near the repository might be exposed 10,000 years or more after the repository is sealed.²⁷

6.1.2. Radiation Protection Standards

A key question to be answered, as part of any suitability determination is, "What level of radiation exposure is acceptable?"

²⁷ The selection of the 10,000-year compliance period for the individual-protection standard involves both technical and policy considerations. EPA weighed both during the rulemaking for 40 CFR Part 197. EPA considered policy and technical factors, as well as the experience of other EPA and international programs. First, EPA evaluated the policies for managing risks from the disposal of both long lived, hazardous, nonradioactive materials and radioactive materials. Second, EPA evaluated consistency with both 40 CFR Part 191 and the issue of consistent time periods for the protection of groundwater resources and public health. Third, EPA considered the issue of uncertainty in predicting dose over the very long periods contemplated in the alternative of peak dose within the period of geologic stability. Finally, EPA reviewed the feasibility of implementing the alternative of peak risk within the period of geologic stability.

As a result of these considerations, EPA established a 10,000-year compliance period with a quantitative limit and a requirement to calculate the peak dose, using performance assessments, if the peak dose occurs after 10,000 years. Under this approach, DOE must make the performance assessment results for the post-10,000-year period part of the public record by including them in the EIS for Yucca Mountain.

The relevance of a 10,000-year compliance period can also be understood by examining hazard indices that compare the potential risk of released radionuclides to other risks. One such analysis, presented in the *Final Environmental Impact Statement for the Management of Commercially Generated Radioactive Waste*, DOE/EIS-0046F, examined the relative amounts of water required to bring the concentration of a substance to allowable drinking water standards. The relative hazard for spent fuel compared to the toxicity of the ore used to produce the reactor fuel at one year after removal of the spent fuel from the reactor is about the same hazard as a rich mercury ore. The hazard index is about the same as average mercury ores at about 80 years. By 200 years the hazard index is about the same as average lead ore; by 1,000 years it is comparable to a silver ore. The relative hazard index is about the same as the uranium ore that it came from at 10,000 years. This is not to suggest that the wastes from spent fuel are not toxic. However, it is suggested that where concern for the toxicity of the ore bodies is not great, the spent fuel should cause no greater concern, particularly if placed within multiple engineered barriers in geologic formations, at least as, if not more, remote from the biosphere than these common ores.

DOE's Site Suitability Guidelines use as their benchmark the levels the NRC has specified for purposes of deciding whether to license a repository at Yucca Mountain. The NRC, in turn, established these levels on the basis of radiation protection standards set by the EPA. The standards generally require that during pre-closure, the repository facilities, operations, and controls restrict radiation doses to less than 15 millirem a year²⁸ to a member of the public in its vicinity.²⁹ During post-closure, they generally require that the maximum radiation dose allowed to someone living in the vicinity of Yucca Mountain be no more than 15 millirem per year, and no more than four millirem per year from certain radionuclides in the groundwater.³⁰

This level of radiation exposure is comparable to, or less than, ordinary variations in natural background radiation that people typically experience each year. It is also less than radiation levels to which Americans are exposed in the course of their everyday lives – in other words, radiation “doses” to which people generally give no thought at all.

To understand this, it is important to remember that radiation is part of the natural world and that we are exposed to it all the time. Every day we encounter radiation from space in the form of cosmic rays. Every day we are also exposed to terrestrial radiation, emitted from naturally radioactive substances in the earth's surface.

In addition to natural background radiation from these sources, people are exposed to radiation from other everyday sources. These include X-rays and other medical procedures, and consumer goods (e.g., television sets and smoke detectors).

Americans, on average, receive an annual radiation exposure of 360 millirem from their surroundings. The 15 millirem dose the EPA standard set as the acceptable annual exposure from the repository is thus slightly over four percent of what we receive every year right now.

²⁸ Risk to human beings from radiation is due to its ionizing effects. Radionuclides found in nature, commercial products, and nuclear waste emit ionizing radiation. The forms of ionizing radiation differ in their penetrating power or energy and in the manner in which they affect human tissue. Some ionizing radiation, known as alpha radiation, can be stopped by a sheet of paper, but may be very harmful if inhaled, ingested or otherwise admitted into the body. Long-lived radioactive elements, with atomic numbers higher than 92, such as plutonium, emit alpha radiation. Other ionizing radiation, known as beta radiation, can penetrate the skin and can cause serious effects if emitted from an inhaled or ingested radionuclide. The ionizing radiation with the greatest penetrating power is gamma radiation; it can penetrate and damage critical organs in the body. Fission products can emit both gamma and beta radiation depending on the radionuclides present. In high-level nuclear waste, beta and gamma radiation emitters, such as cesium and strontium, present the greatest hazard for the first 300 to 1,000 years, by which time they have decayed. After that time, the alpha-emitting radionuclides present the greatest hazard.

Radiation doses can be correlated to potential biologic effects and are measured in a unit called a rem. Doses are often expressed in terms of thousandths of a rem, or millirem (mrem); the internationally used unit is the Sievert (S), which is equivalent to 100 rem.

²⁹ The NRC regulations also require that the annual dose to workers there be less than 5 rem. See 10 CFR part 63, referencing 10 CFR part 20. This is the general standard for occupational exposure that applies in numerous other settings, such as operating nuclear facilities.

³⁰ During both pre- and post-closure, the NRC licensing rules, 10 CFR part 63, also contain a number of more particularized standards for specific situations. These are referenced in the results tables contained in the following sections. Pursuant to EPA's groundwater standard, 40 CFR part 197, they also contain concentration limits on certain kinds of radionuclides that may be present in the water, whether or not their presence is attributable to a potential repository. These are also referenced in the results tables.

Moreover, background radiation varies from one location to another due to many natural and man-made factors. At higher elevations, the atmosphere provides less protection from cosmic rays, so background radiation is higher. In the United States, this variation can be 50 or more millirem. Thus, if the repository generates radiation doses set as the benchmark in the Guidelines, the incremental radiation dose a person living in the vicinity of Yucca Mountain would receive from it would be about the same level of increase in radiation exposure as a person would experience as a result of moving from Philadelphia to Denver.

Ordinary air travel is another example. Flying at typical cross-country altitudes results in increased exposure of about one-half millirem per hour. If the Yucca Mountain repository generates radiation at the 15 millirem benchmark, it would increase the exposure of those living near it to about the same extent as if they took three round trip flights between the East Coast and Las Vegas.

Rocks and soil also affect natural background radiation, particularly if the rocks are igneous or the soils derived from igneous rock, which can contain radioactive potassium, thorium, or uranium. In these cases, the variation in the background radiation is frequently in the tens of millirem or higher. Wood contains virtually no naturally occurring radioactive substances that contribute to radiation exposures, but bricks and concrete made from crushed rock and soils often do. Living or working in structures made from these materials can also result in tens of millirem of increased exposure to radiation. Thus, if the repository generates radiation at the levels in the Guidelines' benchmark, it is likely to result in less additional exposure to a person living in its vicinity than if he moved from a wood house to a brick house.

Finally, it is noteworthy that the radiation protection standards referenced by the Guidelines are based on those selected by the NRC for licensing the repository. They in turn relied on the EPA rule establishing these as the appropriate standards for the site. The NRC and EPA acted pursuant to specific directives in the NWPA, in which Congress first assigned to the EPA the responsibility to set these standards, and later in the Energy Policy Act of 1992, which directed the EPA to act in conjunction with the National Academy of Sciences and develop a standard specifically for Yucca Mountain. The EPA carefully considered the question of how to do so. The 15 millirem per year standard is the same it has applied to the Waste Isolation Pilot Plant in New Mexico.³¹ And it is well within the National Academy of Sciences-recommended range, a range developed in part by referring to guidelines from national and international advisory bodies and regulations in other developed countries.³²

For all these reasons, there is every cause to believe that a repository that can meet the 15 millirem radiation protection standard will be fully protective of the health and safety of residents living in the vicinity of the repository.³³

³¹ 40 CFR part 191.

³² *Technical Bases for Yucca Mountain Standards*, National Academy of Sciences, National Research Council, 1995.

³³ As noted above, the EPA, in 40 CFR part 197, also established groundwater protection standards in the Yucca Mountain rule; these are compatible with drinking water standards applied elsewhere in the United States, and apply maximum contaminant levels, as well as a 4 mrem/yr dose standard.

6.1.3. Underlying Hard Science

As explained in section 6.1.1, the Guidelines contemplate the use of models and analyses to project whether the repository will meet the 15 millirem dose standard.³⁴ To have confidence in the model results, however, it is important to understand the kind of science that went into constructing them.

For over 20 years, scientists have been investigating every aspect of the natural processes – past, present and future – that could affect the ability of a repository beneath Yucca Mountain to isolate radionuclides emitted from nuclear materials emplaced there. They have been conducting equally searching investigations into the processes that would allow them to understand the behavior of the engineered barriers – principally the waste “packages” (more nearly akin to vaults) – that are expected to contribute to successful waste isolation. These investigations have run the gamut, from mapping the geological features of the site, to studying the repository rock, to investigating whether and how water moves through the Mountain. To give just a few examples:

At the surface of the repository:

- Yucca Mountain scientists have mapped geologic structures, including rock units, faults, fractures, and volcanic features. To do this, they have excavated more than 200 pits and trenches to remove alluvial material or weathered rock to be able to observe surface and near-surface features directly, as well as to understand what events and processes have occurred or might occur at the Mountain.
- They have drilled more than 450 surface boreholes and collected over 75,000 feet of geologic core samples and some 18,000 geologic and water samples. They used the information obtained to identify rock and other formations beneath the surface, monitor infiltration of moisture, measure the depth of the water table and properties of the hydrologic system, observe the rate at which water moves from the surface into subsurface rock, and determine air and water movement properties above the water table.
- They have conducted aquifer testing at sets of wells to determine the transport and other properties of the saturated zone below Yucca Mountain. These tests included injecting easily identified groundwater tracers in one well, which were then detected in another; this helped scientists understand how fast water moves.
- They have conducted tectonic field studies to evaluate extensions of the earth’s crust and the probability of seismic events near Yucca Mountain.

³⁴ As well, of course, as the other radiation protection standards such as the groundwater standard.

Underground:

The Department's scientists have conducted a massive project to probe the area under the Mountain's surface where the repository will be built.

- They constructed a five mile-long main underground tunnel, the Exploratory Studies Facility, to provide access to the specific rock type that would be used for the repository. This main tunnel is adjacent to the proposed repository block, about 800 feet underground. After completing the main tunnel, they excavated a second tunnel, 1.6-miles long and 16.5 feet in diameter. This tunnel, referred to as the Cross-Drift tunnel, runs about 45 feet above and across the repository block.
- They then mapped the geologic features such as faults, fractures, stratigraphic units, mineral compositions, etc., exposed by the underground openings in the tunnels.
- They collected rock samples to determine geotechnical properties.
- They conducted a drift-scale thermal test to observe the effects of heat on the hydrologic, mechanical, and chemical properties of the rock, and chemical properties of the water and gas liberated as a result of heating. The four yearlong heating cycle of the drift-scale test was the largest known heater test in history, heating some seven million cubic feet of rock over its ambient temperature. This test also included samples of engineered materials to determine corrosion resistance in simulated repository conditions.

In various laboratory-based studies:

Yucca Mountain scientists have supplemented with laboratory work the surface and underground tests previously described.

- They have tested mechanical, chemical, and hydrologic properties of rock samples in support of repository design and development of natural process models.
- They have tested radionuclides to determine solubility and colloid formation that affect their transport if released.
- They have tested over 13,000 engineered material samples to determine their corrosion resistance in a variety of environments.
- They have determined the chemical properties of water samples and the effects of heat on the behavior and properties of water in the host rock.

The findings from these numerous studies were used to develop computer simulations that describe the natural features, events, and processes that exist at Yucca Mountain or that could be changed as the result of waste disposal. The descriptions in turn were used to develop the models discussed in the next section to project the likely radiation doses from the repository.

7. Results of Suitability Evaluations and Conclusions

As explained above, the Guidelines contemplate that the Secretary will evaluate the suitability of the Yucca Mountain site for a repository on two separate bases.

The Guidelines first contemplate that I will determine whether the site is suitable for a repository during the entire pre-closure or operational period, assumed to be from 50 to 300 years after emplacement of nuclear materials begins. To answer this question, the Guidelines ask me to determine whether, while it is operating, the repository is likely to result in annual radiation doses to people in the vicinity and those working there that will fall below the dosage levels set in the radiation protection standards.³⁵ The Guidelines contemplate that I will use a pre-closure safety evaluation to guide my response.³⁶

Second, the Guidelines contemplate that I will determine whether the repository is suitable – in other words, may reasonably be expected to be safe – after it has been sealed. To answer that question, the Guidelines ask me to determine whether it is likely that the repository will continue to isolate radionuclides for 10,000 years after it is sealed, so that an individual living 18 kilometers (11 miles) from the repository is not exposed to annual radiation doses above those set in the radiation protection standards.³⁷ The Guidelines contemplate that I will use a Total System Performance Assessment to guide my response to this question.³⁸

The Department has completed both the Pre-Closure Safety Evaluation and TSPA called for by the Guidelines. These projects project that a repository at Yucca Mountain will result in radioactive doses well below the applicable radiation protection standards. As I explain below, I have reviewed these projections and the bases for them, and I believe them to be well founded. I also believe both the Pre-Closure Safety Evaluation and the Total System Performance Assessment have properly considered the criteria set out in the Guidelines for each period. Using these evaluations as set out in the Guidelines,³⁹ I believe it is likely that a repository at Yucca Mountain will result in radiation doses below the radiation protection standards for both periods. Accordingly, I believe Yucca Mountain is suitable for the development of a repository.

7.1. Results of Pre-Closure Evaluations

As explained in section 6.1.1, the Pre-Closure Safety Evaluation method I have employed is commonly used to assess the likely performance of planned or prospective nuclear facilities. Essentially what it involves is evaluating whether the contemplated facility is designed to prevent or mitigate the effects of possible accidents. The facility will be considered safe if its design is likely to result in radioactive releases below those set in the radiation protection standards.

³⁵ 10 CFR part 963.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid.

The Department has conducted such a Pre-Closure Safety Evaluation, which is summarized in the *Yucca Mountain Science and Engineering Report, Revision 1*.⁴⁰ In conducting this evaluation, the Department considered descriptions of how the site will be laid out, the surface facilities, and the underground facilities and their operations. It also considered a series of potential hazards, including, for example, seismic activity, flooding, and severe winds, and their consequences. Finally, it considered preliminary descriptions of how components of the facilities' design would prevent or mitigate the effects of accidents.

The Pre-Closure Safety Evaluation concluded that the preliminary design would prevent or dramatically mitigate the effects of accidents, and that the repository would therefore not result in radioactive releases that would lead to exposure levels above those set by the radiation protection standards. It considered the pre-closure criteria of 10 CFR 963.14 in reaching this conclusion. In particular, it found that the preliminary design has the ability to contain and limit releases of radioactive materials; the ability to implement control and emergency systems to limit exposures to radiation; the ability to maintain a system and components that perform their intended safety functions; and the ability to preserve the option to retrieve wastes during the pre-closure period. The annual doses of radiation to which the Pre-Closure Safety Evaluation projected individuals in the vicinity of the repository and workers would be exposed are set out in the following table. These doses fall well below the levels that the radiation protection standards establish.

I have carefully reviewed the Pre-Closure Safety Evaluation and find its conclusions persuasive. I am therefore convinced that a repository can be built at Yucca Mountain that will operate safely without harming those in the repository's vicinity during the pre-closure period. Finally, I would note that although many aspects of this project are controversial, there is no controversy of which I am aware concerning this aspect of the Department's conclusions. This stands to reason. The kinds of activities that would take place at the repository during the pre-closure period – essentially, the management and handling of nuclear materials including packaging and emplacement in the repository – are similar to the kinds of activities that at present go on every day, and have gone on for years, at temporary storage sites around the country. These activities are conducted safely at those sites, and no one has advanced a plausible reason why they could not be conducted equally if not more safely during pre-closure operations at a new, state-of-the-art facility at Yucca Mountain.

That is not an insignificant point, since the pre-closure period will last at least 50 years after the start of emplacement, which will begin at the earliest eight years from today. Moreover, the Department's Pre-Closure Safety Evaluation also assumed a possible alternative pre-closure period of 300 years from the beginning of emplacement, and its conclusions remained unchanged. Thus, the Department's conclusion that the repository can operate safely for the next 300 years – or for about three generations longer than the United States has existed – has not been seriously questioned.

⁴⁰ *Yucca Mountain Science and Engineering Report, Revision 1*.

Table 1. Summary Pre-Closure Dose Performance Criteria and Evaluation Results⁴¹

Standard	Limits	Results
Public Exposures^a		
Pre-closure standard: 10 CFR 63.204, referenced in 10 CFR 963.2; Pre-Closure Performance Objective for normal operations and Category 1 event sequences per 10 CFR 63.111(a)(2), referenced in 10 CFR 963.2	15 mrem/yr ^b	0.06 mrem/yr ^b
Constraint specified for air emissions of radioactive material to the environment (not a dose limitation): 10 CFR 20.1101 (d) ^c	10 mrem/yr ^{b,d}	0.06 mrem/yr ^b
Dose limits for individual member of the public for normal operations and Category 1 event sequences: 10 CFR 20.1301 ^e	100 mrem/yr ^{b,d}	0.06 mrem/yr ^b
	2 mrem/hr in any unrestricted area from external sources	<<2 mrem/hr
Pre-Closure Performance Objective for any Category 2 event sequence: 10 CFR 63.111(b)(2), referenced in 10 CFR 963.2	5 rem ^b	0.02 rem ^b
	50 rem organ or tissue dose (other than the lens of the eye)	0.10 rem
	15 rem lens of the eye dose	0.06 rem
	50 rem skin dose	0.04 rem
Workers' Exposures		
Occupational Dose Limits for Adults from normal operational emissions and Category 1 event sequences: 10 CFR 20.1201 ^e	5 rem/yr ^b	0.01 rem/yr ^b
	50 rem/yr organ or tissue dose (other than the lens of the eye)	0.10 rem/yr
	15 rem/yr lens of the eye dose	0.15 rem/yr
	50 rem/yr skin dose	0.13 rem/yr
Routine Occupational Dose Limits for Adults: 10 CFR 20.1201 ^e	5 rem/yr ^b	0.06 to 0.79 rem/yr ^b

- NOTES:
- ^a Results for public exposures are calculated at the site boundary.
 - ^b Total effective dose equivalent.
 - ^c 10 CFR 63.111(a)(1), which is referenced in 10 CFR 963.2, would require repository operations area to meet the requirements of 10 CFR part 20.
 - ^d 10 CFR 20.1301(a)(1), which is cross-referenced through 10 CFR 963.2; dose limit to extent applicable.
 - ^e 10 CFR 63.111(b)(1), which referenced in 10 CFR 963.2, would require repository design objectives for Category 1 and normal operations to meet 10 CFR 63.111(a)(1) requirements (10 CFR part 20).

7.2. Results of Post-Closure Evaluations

The most challenging aspect of evaluating Yucca Mountain is assessing the likely post-closure performance of a repository 10,000 years into the future. As previously explained, the Department's Guidelines contemplate that this will be done using a Total System Performance Assessment. That assessment involves using data compiled from scientific investigation into the natural processes that affect the site, the behavior of the waste, and the behavior of the

⁴¹ Yucca Mountain Site Suitability Evaluation.

engineered barriers such as the waste packages; developing models from these data; then developing a single model of how, as a whole, a repository at Yucca Mountain is likely to behave during the post-closure period. The model is then used to project radiation doses to which people in the vicinity of the Mountain are likely to be exposed as a result of the repository. Finally, the assessment compares the projected doses with the radiation protection standards to determine whether the repository is likely to comply with them.

The challenge, obviously, is that this involves making a prediction a very long time into the future concerning the behavior of a very complex system. To place 10,000 years into perspective, consider that the Roman Empire flourished nearly 2,000 years ago. The pyramids were built as long as 5,000 years ago, and plants were domesticated some 10,000 years ago. Accordingly, as the NRC explained, "Proof that the geologic repository will conform with the objectives for post-closure performance is not to be had in the ordinary sense of the word because of the uncertainties inherent in the understanding of the evolution of the geologic setting, biosphere, and engineered barrier system"⁴² over 10,000 years. The judgment that the NRC envisions making is therefore not a certainty that the repository will conform to the standard, certainty being unattainable in this or virtually any other important matter where choices must be made. Rather, as it goes on to explain, "For such long-term performance, what is required is reasonable expectation, making allowance for the time period, hazards, and uncertainties involved, that the outcome will conform with the objectives for post-closure performance for the geologic repository."⁴³ The Nuclear Waste Technical Review Board recently summarized much the same thought (emphasis added): "Eliminating all uncertainty associated with estimates of repository performance would never be possible at any repository site."⁴⁴

These views, in turn, inform my understanding of the judgment I am expected to make at this stage of the proceeding in evaluating the likely post-closure performance of a repository at Yucca Mountain. To conclude that it is suitable for post-closure; I do not need to know that we have answered all questions about the way each aspect of the repository will behave 10,000 years from now; that would be an impossible task. Rather, what I need to decide is whether, using the TSPA results, and fully bearing in mind the inevitable uncertainties connected with such an enterprise, I can responsibly conclude that we know enough to warrant a predictive judgment on my part that, during the post-closure period, a repository at Yucca Mountain is likely to meet the radiation protection standards.

I believe I can. Essentially, the reason for this is the system of multiple and redundant safeguards that will be created by the combination of the site's natural barriers and the engineered ones we will add. Even given many uncertainties, this calculated redundancy makes it likely that very little, if any, radiation will find its way to the accessible environment.

⁴² Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada, Final Rule, 66 Fed. Reg. 55731, 55804, November 2, 2001.

⁴³ Ibid.

⁴⁴ Nuclear Waste Technical Review Board Letter Report from all Board members to Speaker Hastert, Senator Byrd, and Secretary Abraham, January 24, 2002.

Before I describe in broad terms how the TSPA results and the criteria used in the regulations lead to this conclusion, I would like to give an illustration of how this works. The illustration draws on the TSPA analyses, but also explains what these analyses mean in the real world.

An Example

The most studied issue relating to Yucca Mountain, and the single most pressing concern many have felt about the post-closure phase of a repository there, is whether there might be a way for radionuclides from the emplaced nuclear materials to contaminate the water supply. This is not a problem unique to Yucca Mountain. Rather, besides disruptive events discussed later, water is the primary mechanism to transport radionuclides to people and is also the most likely mechanism for radionuclides to escape from the storage facilities we have now.

In the case of Yucca Mountain, the concern has been that rainwater seeping into the Mountain might contact disposal casks and carry radionuclides down to the water table in sufficient amounts to endanger sources of groundwater. In my judgment, when one considers everything we have learned about the multiple natural and engineered barriers that lie at the core of the Department's planning for this Project, this concern turns out to have virtually no realistic foundation.

Yucca Mountain is in the middle of a desert. Like any desert, it has an arid climate, receiving less than eight inches of rain in an average year. Most of that runs off the Mountain or evaporates. Only about five percent, less than four-tenths of an inch per year, ever reaches repository depth.

In order to reach the tunnels where the waste casks would be housed, this water must travel through about 800 feet of densely welded and bedded tuffs,⁴⁵ a trip that will typically require more than 1,000 years. The amount of water that eventually reaches the repository level at any point in time is very small, so small that capillary forces tend to retain it in small pores and fractures in the rock. It is noteworthy that all our observations so far indicate that no water actually drips into the tunnels at this level and all of the water is retained within the rock.

In spite of this finding, our TSPA ran calculations based on the assumption that water does drip into the tunnels. At that point, even just to reach radionuclides in the waste, the water would still have to breach the engineered barriers. These include waste packages composed of an outer barrier of highly corrosion-resistant alloy and a thick inner barrier of high quality stainless steel.

⁴⁵Yucca Mountain consists of alternating layers of welded and nonwelded volcanic material known as welded and non-welded tuff: welded tuff at the surface, welded tuff at the level of the repository, and an intervening layer of nonwelded tuffs. These nonwelded units contain few fractures; thus, they delay the downward flow of moisture into the welded tuff layer below, where the repository would be located. At the repository-level, water-in-small-fractures has a tendency to remain in the fractures rather than flow into larger openings, such as tunnels. Thus, the small amount of water traveling through small fractures near any emplacement tunnel would tend to flow around the tunnel, rather than seeping, forming a drip, and falling onto the drip shields below. Non-welded tuffs below the repository also provide a significant barrier to radionuclide transport. Deposits of minerals in the fractures demonstrate that for the last several million years the repository host rock has been under unsaturated conditions, even when higher precipitation, owing to the continent's overall glacial conditions, prevailed at the Mountain's surface.

The waste package is designed to prevent contact between the waste pellets and water that might seep into the tunnels unexpectedly, and thus to prevent release of radionuclides.⁴⁶ In addition, anchored above each waste package is a titanium drip shield that provides yet more protection against seepage. But even assuming the water defeats both the titanium shield and the metal waste package, the waste form itself is a barrier to the release of radionuclides. Specifically, the spent fuel is in the form of ceramic pellets, resistant to degradation and covered with a corrosion-resistant metal cladding.

Nevertheless, DOE scientists ran a set of calculations assuming that water penetrated the titanium shield and made small holes in three waste packages, due to manufacturing defects (even though the manufacturing process will be tightly controlled). The scientists further assumed that the water dissolves some of the ceramic waste. Even so, the analyses showed that only small quantities of radionuclides would diffuse and escape from the solid waste form. In order to reach the water table from the repository, the water, now assumed to be carrying radionuclides, must travel another 800 feet through layers of rock, some of which are nearly impenetrable. During this trip, many of the radionuclides are adsorbed by the rock because of its chemical properties.

The result of all this is instructive. Even under these adverse conditions, all assumed in the teeth of a high probability that not one of them will come to pass, the amount of radionuclides reaching the water table is so low that annual doses to people who could drink the water are well below the applicable radiation standards, and less than a millionth of the annual dose people receive from natural background radiation. Extrapolating from these calculations shows that even if all of the waste packages were breached in the fashion I have described above, the resulting contribution to annual dose would still be below the radiation safety standards, and less than one percent of the natural background.⁴⁷

Total System Performance More Generally

It is important to understand that there is nothing unique about the kind of planning illustrated in the water seepage scenario described above. Rather, the scenario is characteristic of the studies DOE has undertaken and the solutions it has devised: deliberately pessimistic assumptions incorporated sometimes to the point of extravagance, met with multiple redundancies to assure safety. For example, one of our scenarios for Nevada postulates the return of ice ages, and examines Yucca Mountain assuming that it would receive about twice as much rain as it does today with four times as much infiltration into the Mountain.

As in the example above, the Department evaluated physical and historical information used to develop models of repository components, and then employed those models to forecast how the repository would perform in the post-closure period. These results are described at length in the

⁴⁶ These engineered barriers will protect the waste under a wide range of conditions. For example, the barriers are protected by their underground location from the daily variations in temperature and moisture that occur above ground. As a result, the Mountain provides favorable conditions for the performance of these barriers. Indeed, the battery of tests we have conducted suggests that the waste packages are extremely resistant to corrosion.

⁴⁷ *Yucca Mountain Science and Engineering Report, Revision 1.*

TPSA analyses and summarized in Chapter 4 of the *Yucca Mountain Science and Engineering Report*.⁴⁸

The Department used the suitability criteria set forth in 10 CFR 963.17 in the TSPA analyses. It carefully evaluated and modeled the behavior of characteristics of the site, such as its geologic, hydrologic, geophysical, and geochemical properties. Likewise it evaluated what are called unsaturated zone flow characteristics, such as precipitation entering the Mountain and water movement through the pores of the rock – in other words, natural processes which affect the amount of water entering the unsaturated zone above the repository and potentially coming in contact with wastes inside. DOE also evaluated and modeled near-field environment characteristics, such as effects of heat from the waste on waterflow through the site, the temperature and humidity at the engineered barriers, and chemical reactions and products that could result from water contacting the engineered barriers.

The Department carefully studied and modeled the characteristics of the engineered barriers as they aged. DOE emphasized specifically those processes important to determining waste package lifetimes and the potential for corroding the package. It examined waste form degradation characteristics, including potential corrosion or break-down of the cladding on the spent fuel pellets and the ability of individual radionuclides to resist dissolving in water that might penetrate breached waste packages. It examined ways in which radionuclides could begin to move outward once the engineered barrier system has been degraded – for example, whether colloidal particles might form and whether radionuclides could adhere to these particles as they were assumed to wash through the remaining barriers. Finally, the Department evaluated and modeled saturated and unsaturated zone flow characteristics, such as how water with dissolved radionuclides or colloidal particles might move through the unsaturated zone below the repository, how heat from the waste would affect waterflow through the site, and how water with dissolved radionuclides would move in the saturated zone 800 feet beneath the repository (assuming it could reach that depth).

Consistent with 10 CFR 963.17, the Department also evaluated the lifestyle and habits of individuals who potentially could be exposed to radioactive material at a future time, based, as would be required by NRC licensing regulations,⁴⁹ on representative current conditions. Currently, there are about 3,500 people who live in Amargosa Valley, the closest town to Yucca Mountain. They consume ground or surface water from the immediate area through direct extraction or by eating plants that have grown in the soil. The Department therefore assumed that the “reasonably maximally exposed individual” – that is, the hypothetical person envisioned to test whether the repository is likely to meet required radiation protection standards – likewise would drink water and eat agricultural products grown with water from the area, and built that assumption into its models.

Using the models described above, as well as a host of others it generated taking account of other relevant features, events and processes that could affect the repository’s performance, the Department developed a representative simulation of the behavior of the proposed Yucca Mountain site. It then considered thousands of possibilities about what might happen there. For

⁴⁸ Ibid.

⁴⁹ 10 CFR part 63.

example, it considered the possibility that waste packages might be manufactured defectively. It considered the possibility that the climate would change. It considered earthquakes. Our studies show that earthquakes probably will occur at Yucca Mountain sometime in the future. Because the occurrence of earthquakes is difficult to predict, our models conservatively treat earthquakes by assuming that they will occur over the next 10,000 years.

Essentially, if the Department believed that there was close to a 1 in 10,000 per year probability of some potentially adverse occurrence in the course of the 10,000 year post-closure period (which comes to a probability close to one during the entire period) the Department considered that possibility, unless it concluded the occurrence would not affect the repository's performance. It then used the simulation model to calculate what the resulting dose would be based on each such possibility. Finally, it used the mean peak values of the results of these calculations to project the resulting dose.

The Department then proceeded to consider the impact of disruptive events, such as volcanism, with a lower probability of occurrence, on the order of one in 10,000 over the entire 10,000 year period (meaning roughly a one in a 100 million per year of occurring during that time). This led it to analyze, for example, the effects that a volcano might have on the repository's waste containment capabilities. Scientists started with a careful analysis of the entire geologic setting of Yucca Mountain. Then, with substantial data on regional volcanoes, they used computer modeling to understand each volcanic center's controlling structures. Experts then estimated the likelihood of magma intruding into one of the repository's emplacement tunnels. The DOE estimates the likelihood of such an event's occurring during the first 10,000 years after repository closure to be one chance in about 70 million per year, or one chance in 7,000 over the entire period.

Including volcanoes in its analyses, the TSPA results still indicate that the site meets the EPA standards.⁵⁰ What the calculations showed is that the projected, probability-weighted maximum mean annual dose to an individual from the repository for the next 10,000 years is one-tenth of a millirem. That is less than one-fifth of the dose an individual gets from a one-hour airplane flight. And it is less than one one-hundredth of the dose that DOE's Guidelines, using the EPA standards, specify as acceptable for assessing suitability.

Finally, in a separate assessment, analysts studied a hypothetical scenario under which people inadvertently intruded into the repository while drilling for water. The Guidelines' radiation protection standards, based on EPA and NRC rules, specify that as part of its Total System Performance Assessment, DOE should determine when a human-caused penetration of a waste package could first occur via drilling, assuming the drillers were using current technology and practices and did not recognize that they had hit anything unusual. If such an intrusion could occur within 10,000 years, the 15 millirem dose limit would apply.

DOE's analyses, however, indicate that unrecognized contact through drilling would not happen within 10,000 years. Under conditions that DOE believes can realistically be expected to exist at

⁵⁰ The results produced under volcanic scenarios are weighted by probability under the NRC method specified for how to treat low probability events. 10 CFR Part 63.

the repository, the waste packages are extremely corrosion-resistant for tens of thousands of years. Even under pessimistic assumptions, the earliest time DOE could even devise a scenario under which a waste package would be unnoticeable to a driller is approximately 30,000 years. Before then, the waste package structure would be readily apparent to a driller who hit it.

Table 2 presents the summary results of the Total System Performance Assessment analyses and how they compare to the radiation protection standards.⁵¹

In Summary

Using the methods and criteria set out in DOE's Yucca Mountain Site Suitability Guidelines, I am convinced that the Yucca Mountain site is scientifically suitable – in a word, safe – for development of a repository. Specifically, on the basis of the safety evaluation DOE has conducted pursuant to 10 CFR 963.13, it is my judgment that a repository at the site is likely to meet applicable radiation protection standards for the pre-closure period. And on the basis of the Total System Performance Assessment DOE has conducted pursuant to 10 CFR 963.16, it is my judgment that a repository at the site is likely to meet applicable radiation protection standards for the post-closure period as well. Additionally, I have evaluated the pre-closure suitability criteria of 10 CFR 963.14 and the post-closure suitability criteria of 10 CFR 963.17, and am convinced that the safety evaluations were done under the stringent standards required. Accordingly, I find the Yucca Mountain site suitable for development of a repository.

8. The National Interest

Having determined that the site is scientifically suitable, I now turn to the remaining factors I outlined above as bearing on my Recommendation. Are there compelling national interests favoring going forward with a repository at Yucca Mountain? If so, are there countervailing considerations of sufficient weight to overcome those interests? In this section I set out my conclusions on the first question. In section 9 I set out my views on the second.

8.1. Nuclear Science and the National Interest

Our country depends in many ways on the benefits of nuclear science: in the generation of twenty percent of the Nation's electricity; in the operation of many of the Navy's most strategic vessels; in the maintenance of the Nation's nuclear weapons arsenal; and in numerous research and development projects, both medical and scientific. All these activities produce radioactive wastes that have been accumulating since the mid-1940s. They are currently scattered among 131 sites in 39 states, residing in temporary surface storage facilities and awaiting final disposal. In exchange for the many benefits of nuclear power, we assume the cost of managing its byproducts in a responsible, safe, and secure fashion. And there is a near-universal consensus that a deep geologic facility is the only scientifically credible, long-term solution to a problem that will only grow more difficult the longer it is ignored.

⁵¹ *Yucca Mountain Site Suitability Evaluation.*

Table 2. Summary Post-Closure Dose and Activity Concentration Limits and Evaluation Results

Standard	Limits	Results ^c
Individual protection standard: 10 CFR 63.311, referenced in 10 CFR 963.2	15 mrem/yr TEDE	0.1 mrem/yr ^a (HTOM) 0.1 mrem/yr ^a (LTOM)
Human intrusion standard: 10 CFR 63.321, referenced in 10 CFR 963.2	15 mrem/yr TEDE	NA ^b
Groundwater protection standard: 10 CFR 63.331, referenced in 10 CFR 963.2	5 pCi/L combined radium-226 and radium-228, including natural background	1.04 pCi/L ^c (HTOM) 1.04 pCi/L ^c (LTOM)
	15 pCi/L gross alpha activity (including radium-226 but excluding radon and uranium), including natural background	1.1 pCi/L ^{c,d} (HTOM) 1.1 pCi/L ^{c,d} (LTOM)
	4 mrem/yr to the whole body or any organ from combined beta-and photon-emitting radionuclides	.000023 mrem/yr (HTOM) .000013mrem/yr (LTOM)

- NOTES: ^a Probability-weighted peak mean dose equivalent for the nominal and disruptive scenarios, which include igneous activity; results are based on an average annual water demand of approximately 2,000 acre-ft; the mean dose for groundwater-pathway-dominated scenarios would be reduced by approximately one-third by using 3,000 acre-ft.
- ^b Human-intrusion-related releases are not expected during the period of regulatory compliance; the DOE has determined that the earliest time after disposal that the waste package would degrade sufficiently that a human intrusion could occur without recognition by the driller is at least 30,000 years, so the dose limits do not apply for purposes of the site suitability evaluation.
- ^c These values represent measured natural background radiation concentrations; calculated activity concentrations from repository releases are well below minimum detection levels, background radiation concentrations, and regulatory limits.
- ^d Gross alpha background concentrations are 0.4 pCi/L ± 0.7 (for maximum of 1.1 pCi/L).
- ^e Peak value of the mean probability-weighted results within the regulatory timeframe.

TEDE= total effective dose equivalent; HTOM= higher temperature operating mode; LTOM= lower-temperature operating mode; NA= not applicable. Source: Williams 2001a, Section 6, Tables 6-1, 6-2, 6-3, and 6-4.

8.2. Energy Security

Roughly 20 percent of our country's electricity is generated from nuclear power. This means that, on average, each home, farm, factory, and business in America runs on nuclear fuel for a little less than five hours a day.

A balanced energy policy – one that makes use of multiple sources of energy, rather than becoming dependent entirely on generating electricity from a single source, such as natural gas – is important to economic growth. Our vulnerability to shortages and price spikes rises in direct proportion to our failure to maintain diverse sources of power. To assure that we will continue to have reliable and affordable sources of energy, we need to preserve our access to nuclear power.

Yet the Federal government's failure to meet its obligation to dispose of spent nuclear fuel under the NWPA – as it has been supposed to do starting in 1998 – is placing our access to this source

of energy in jeopardy. Nuclear power plants have been storing their spent fuel on site, but many are running out of space to do so. Unless a better solution is found, a growing number of these plants will not be able to find additional storage space and will be forced to shut down prematurely. Nor are we likely to see any new plants built.

Already we are facing a growing imbalance between our projected energy needs and our projected supplies. The loss of existing electric generating capacity that we will experience if nuclear plants start going off-line would significantly exacerbate this problem, leading to price spikes and increased electricity rates as relatively cheap power is taken off the market. A permanent repository for spent nuclear fuel is essential to our continuing to count on nuclear energy to help us meet our energy demands.

8.3. National Security

8.3.1. Powering the Navy Nuclear Fleet

A strong Navy is a vital part of national security. Many of the most strategically important vessels in our fleet, including submarines and aircraft carriers, are nuclear powered. They have played a major role in every significant military action in which the United States has been involved for some 40 years, including our current operations in Afghanistan. They are also essential to our nuclear deterrent. In short, our nuclear-powered Navy is indispensable to our status as a world power.

For the nuclear Navy to function, nuclear ships must be refueled periodically and the spent fuel removed. The spent fuel must go someplace. Currently, as part of a consent decree entered into between the State of Idaho and the Federal Government, this material goes to temporary surface storage facilities at the Idaho National Environmental and Engineering Laboratory. But this cannot continue indefinitely, and indeed the agreement specifies that the spent fuel must be removed. Failure to establish a permanent disposition pathway is not only irresponsible, but could also create serious future uncertainties potentially affecting the continued capability of our Naval operations.

8.3.2. Allowing the Nation to Decommission Its Surplus Nuclear Weapons and Support Nuclear Non-Proliferation Efforts

A decision now on the Yucca Mountain repository is also important in several ways to our efforts to prevent the proliferation of nuclear weapons. First, the end of the Cold War has brought the welcome challenge to our country of disposing of surplus weapons-grade plutonium as part of the process of decommissioning weapons we no longer need. Current plans call for turning the plutonium into "mixed-oxide" or "MOX" fuel. But creating MOX fuel as well as burning the fuel in a nuclear reactor will generate spent nuclear fuel, and other byproducts which themselves will require somewhere to go. A geological repository is critical to completing disposal of these materials. Such complete disposal is important if we are to expect other nations to decommission their own weapons, which they are unlikely to do unless persuaded that we are truly decommissioning our own.

A repository is important to non-proliferation for other reasons as well. Unauthorized removal of nuclear materials from a repository will be difficult even in the absence of strong institutional controls. Therefore, in countries that lack such controls, and even in our own, a safe repository is essential in preventing these materials from falling into the hands of rogue nations. By permanently disposing of nuclear weapons materials in a facility of this kind, the United States would encourage other nations to do the same.

8.4. Protecting the Environment

An underground repository at Yucca Mountain is important to our efforts to protect our environment and achieve sustainable growth in two ways. First, it will allow us to dispose of the radioactive waste that has been building up in our country for over fifty years in a safe and environmentally sound manner. Second, it will facilitate continued use and potential expansion of nuclear power, one of the few sources of electricity currently available to us that emits no carbon dioxide or other greenhouse gases.

As to the first point: While the Federal government has long promised that it would assume responsibility for nuclear waste, it has yet to start implementing an environmentally sound approach for disposing of this material. It is past time for us to do so. The production of nuclear weapons at the end of the Second World War and for many years thereafter has resulted in a legacy of high-level radioactive waste and spent fuel, currently located in Tennessee, Colorado, South Carolina, New Mexico, New York, Washington, and Idaho. Among these wastes, approximately 100,000,000 gallons of high-level liquid waste are stored in, and in some instances have leaked from, temporary holding tanks. In addition to this high-level radioactive waste, about 2,100 metric tons of solid, unprocessed fuel from a plutonium-production reactor are stored at the Hanford Nuclear Reservation, with another 400 metric tons stored at other DOE sites.

In addition, under the NWPA, the Federal government is also responsible for disposing of spent commercial fuel, a program that was to have begun in 1998, four years ago. More than 161 million Americans, well more than half the population, reside within 75 miles of a major nuclear facility – and, thus, within 75 miles of that facility's aging and temporary capacity for storing this material. Moreover, because nuclear reactors require abundant water for cooling, on-site storage tends to be located near rivers, lakes, and seacoasts. Ten closed facilities, such as Big Rock Point, on the banks of Lake Michigan, also house spent fuel and incur significant annual costs without providing any ongoing benefit. Over the long-term, without active management and monitoring, degrading surface storage facilities may pose a risk to any of 20 major U.S. lakes and waterways, including the Mississippi River. Millions of Americans are served by municipal water systems with intakes along these waterways. In recent letters, Governors Bob Taft of Ohio⁵² and John Engler of Michigan⁵³ raised concerns about the advisability of long-term storage of spent fuel in temporary systems so close to major bodies of water. The scientific consensus is that disposal of this material in a deep underground repository is not merely the safe answer and the right answer for protecting our environment but the only answer that has any degree of realism.

⁵² Letter, Governor Bob Taft to Secretary Spencer Abraham, July 30, 2001.

⁵³ Letter, Governor John Engler to Secretary Spencer Abraham, September 5, 2001.

In addition, nuclear power is one of only a few sources of power available to us now in a potentially plentiful and economical manner that could drastically reduce air pollution and greenhouse gas emissions caused by the generation of electricity. It produces no controlled air pollutants, such as sulfur and particulates, or greenhouse gases. Therefore, it can help keep our air clean, avoid generation of ground-level ozone, and prevent acid rain. A repository at Yucca Mountain is indispensable to the maintenance and potential expansion of the use of this environmentally efficient source of energy.

8.5. Facilitating Continuation of Research, Medical, and Humanitarian Programs

The Department has provided fuel for use in research reactors in domestic and foreign universities and laboratories. Research reactors provide a wide range of benefits including the production of radioisotopes for medical use – e.g., in body-scan imaging and the treatment of cancer. To limit the risk to the public, and to support nuclear non-proliferation objectives, these laboratories are required to return the DOE-origin spent fuel from domestic research reactors and from foreign research reactors. These spent fuels are temporarily stored at Savannah River, South Carolina, and at the Idaho National Engineering and Environmental Laboratory while awaiting disposal in a permanent repository.

Again, we can either implement a permanent solution – Yucca Mountain – or risk eroding our capacity to conduct this kind of research. The chances of a person becoming sick from the nuclear materials to be stored at the Yucca Mountain site are, as shown above, all but non-existent. Responsible critics must balance that against the chance of a person becoming sick as a result of the research that may not be undertaken, remaining sick for want of the drug that may not be found, or dying for lack of the cure that may not be developed – all because the nuclear fuel-dependent science that could produce these things was never done, our country having run out of places to dispose of the waste.

8.6. Assisting Anti-Terrorism at Home

As I have noted previously, spent fuel and other high level radioactive waste is presently stored at temporary storage facilities at 131 locations in 39 states. Ten of these are at shutdown reactor sites for which security would not otherwise be required. Moreover, many reactors are approaching their storage capacity and are likely to seek some form of off-site storage, thereby creating potential new targets.

Storage by reactor-owners was intended to be a temporary arrangement. The design of the storage facilities reflects that fact. They tend to be less secured than the reactors themselves, and the structures surrounding the fuel stored in aboveground containers are also less robust.

These storage facilities should be able to withstand current threats. But as the determination and sophistication of terrorists increases, that may well change. That means we will have to choose one of two courses. We can continue to endeavor to secure each of these sites, many of which, as noted above, are close to major metropolitan areas and waterways. Or we can consolidate this

fuel in one remote, secure, arid underground location and continue to develop state-of-the-art security arrangements to protect it there.

To me the choice is clear. The proposed geologic repository in the desert at Yucca Mountain offers unique features that make it far easier to secure against terrorist threats. These include: 1) disposal 800 feet below ground; 2) remote location; 3) restricted access afforded by Federal land ownership of the Nevada Test Site; 4) proximity to Nellis Air Force Range; 5) restricted airspace above the site; 6) far from any major waterways. The design and operation of a geologic repository, including surface operations, can also incorporate from the beginning appropriate features to protect against a terrorist threat and can be changed, if necessary, to respond to future changes in the terrorist threat.

An operational repository will also be an important signal to other nuclear countries, none of which have opened a repository. Inadequately protected nuclear waste in any country is a potential danger to us, and we can't expect them to site a facility if we, with more resources, won't. A fresh look at nuclear material security should involve new concepts such as those inherent in a geologic repository, and should set the standard for the manner in which the international community manages its own nuclear materials.

To understand Yucca Mountain's relative advantage in frustrating potential terrorist attacks compared to the *status quo*, one need only ask the following: If nuclear materials were already emplaced there, would anyone even suggest that we should spread them to 131 sites in 39 states, at locations typically closer to major cities and waterways than Yucca Mountain is, as a means of discouraging a terrorist attack?

8.7. Summary

In short, there are important reasons to move forward with a repository at Yucca Mountain. Doing so will advance our energy security by helping us to maintain diverse sources of energy supply. It will advance our national security by helping to provide operational certainty to our nuclear Navy and by facilitating the decommissioning of nuclear weapons and the secure disposition of nuclear materials. It will help us clean up our environment by allowing us to close the nuclear fuel cycle and giving us greater access to a form of energy that does not emit greenhouse gases. And it will help us in our efforts to secure ourselves against terrorist threats by allowing us to remove nuclear materials from scattered above-ground locations to a single, secure underground facility. Given the site's scientific and technical suitability, I find that compelling national interests counsel in favor of taking the next step toward siting a repository at Yucca Mountain.

9. *None of the Arguments Against Yucca Mountain Withstands Analysis*

As explained above, after months of study based on research unique in its scope and depth, I have concluded that the Yucca Mountain site is fully suitable under the most cautious standards that reasonably might be applied. I have also concluded that it serves the national interest in numerous important ways. The final question I shall examine is whether the arguments against its designation not rise to a level that outweighs the case for going forward. I believe they do

not, as I shall explain. I do so by briefly describing these principle arguments made by opponents of the Project, and then responding to them.

9.1. Assertion 1: The Citizens of Nevada Were Denied an Adequate Opportunity to Be Heard

Critics have claimed that the decision-making process under the NWPA was unfair because it allowed insufficient opportunity for public input, particularly from the citizens of Nevada. That is not so. There was ample opportunity for public discussion and debate; the Department in fact went well beyond the Act's requirements in providing notice and the opportunity to be heard.

My predecessors and I invited and encouraged public, governmental, and tribal participation at all levels. The Department also made numerous Yucca Mountain documents available to the public. These included several specifically prepared to inform any who might be interested of the technical information and analyses that I would have before me as I considered the suitability of the site. There was no statutory requirement for producing these documents; I considered it important to make them available, and thus to provide a timely sharing of information that would form the basis of my consideration and, ultimately, decision.

To assist in discharging part of the Secretarial responsibilities created by the Act, the Department conducted official public meetings before starting the Environmental Impact Statement. Subsequently, the Department held a total of 24 public hearings on the draft and the supplemental draft Environmental Impact Statements. With the release of the *Yucca Mountain Science and Engineering Report* in May 2001, the DOE opened a public comment period lasting approximately six months; the period continued through the release of the *Preliminary Site Suitability Evaluation* in July 2001 and closed on October 19, 2001. After publishing DOE's final rule, "Yucca Mountain Site Suitability Guidelines," on November 14, 2001, I announced an additional 30-day supplemental comment period with a closing date of December 14, 2001. During these combined public comment periods, the DOE held 66 additional public hearings across Nevada and in Inyo County, California, to receive comments on my consideration of a possible recommendation of the Yucca Mountain site. More than 17,000 comments were received.⁵⁴

The lengths to which the Department went to solicit public comment can be seen in the details: from 1995 through 2001, there were 126 official hearings with a court reporter present. The Nevada cities where these hearings were held included: Amargosa Valley, Battle Mountain, Caliente, Carson City, Crescent Valley, Elko, Ely, Fallon, Gardnerville, Goldfield, Hawthorne, Las Vegas, Lovelock, Pahrump, Reno, Tonopah, Virginia City, Winnemucca, and Yerington. Elsewhere, meetings were held in Independence, Lone Pine, Sacramento, and San Bernardino in California; Washington, DC; Boise, ID; Chicago, IL; Denver, CO; Dallas/Ft. Worth, TX; Salt Lake City, UT; Baltimore, MD; Albany, NY; Atlanta, GA; Kansas City, MO.; Cleveland, OH; and St. Louis, MO.

There were 600 hours of public meetings for the 2001 hearings alone. All in all, there were a total of 528 comment days, or about a year and a half. Additionally, the science centers were

⁵⁴ *Comment Summary Document and Supplemental Comment Summary Document*, February 2002.

open for 340 hours (both with and without court reporter) to receive comments. Since 1991, there have been 2,062 tours of Yucca Mountain, and 49,073 visitors have been to the site.

In light of the extensive opportunities DOE has provided for public input, it is my judgment that the opportunities for hearing and consideration of comments were abundant and met any procedural measure of fairness.

9.2. Assertion 2: The Project Has Received Inadequate Study

Critics have said that there has been inadequate study to determine Yucca Mountain's suitability. To the contrary, and as I believe section 6 of this Recommendation makes clear at length, the characterization process at Yucca Mountain is unprecedented for any even remotely comparable undertaking. Indeed, Yucca Mountain studies have now been under way for nearly five times as long as it took to build the Hoover Dam and more than six times the entire duration of the Manhattan Project. Yucca Mountain is, by any measure, the most exhaustively studied project of its kind the world has ever known.

Beginning in 1978 and continuing to the present day, the Department has spent billions of dollars on characterization studies. There has been ongoing dialogue between the Department and the NRC over the goals, content and results of the test programs. As noted, there have been ample opportunities for public involvement. At this still early stage, and with many more years before the Yucca Mountain site could become operational, the request for yet more preliminary study, even before seeking a license from the NRC, is unsupportable. Additional study will be undertaken at stages to come as an appropriate part of the licensing process.

For these reasons, I have concluded that the current body of accumulated scientific and technical knowledge provides a more than adequate technical basis to designate the Yucca Mountain site, thereby beginning the licensing phase of the project. For convenience, a listing of the types of tests that have been performed is provided in Table 3.

9.3. Assertion 3: The Rules Were Changed in the Middle of the Game

The State of Nevada claims that at some point the Department concluded that Yucca Mountain was not suitable under earlier regulations, and then changed the rules to fit the site. That is not true. Even the most elementary knowledge of the history of the program shows this claim is baseless.

The Guidelines did change, but not in a way that disadvantaged critics from making their case, and certainly not to suit any pre-existing agenda at the Department. Rather, they were changed to conform to changes in the statutory and regulatory framework governing the siting process and in the scientific consensus regarding the best approach for assessing the likely performance of a repository over long periods of time.

Table 3: Types of Tests Performed to Collect Data for Site Characterization of Yucca Mountain⁵⁵

Process Models	Types of Tests and Studies
Unsaturated Zone (the rocks above the water table containing little water that limit the amount of water that can contact waste packages)	Future climate studies
	Infiltration model studies
	Unsaturated zone flow model studies
	Seepage model studies
	Unsaturated zone transport studies
Near-Field Environment (moisture, temperature, and chemistry conditions surrounding and affecting the waste packages)	Drift scale test
	Single heater test
	Large block test
	Field tests on coupled processes
	Laboratory coupled processes tests
Engineered Barrier System (EBS) (man-made features comprising the repository that influence how radionuclides might move)	Cementitious materials tests
	EBS design tests
	In-drift gas composition tests
	In-drift water chemistry, precipitates and salts tests
	Microbial communities tests
	Radionuclide transport tests
	Drift degradation analysis tests
Rock mass mechanical properties tests	
Waste Package (metal container that the wastes would be placed in)	Waste package environment tests
	Materials selection studies
	General corrosion tests
	Localized corrosion tests
	Stress corrosion cracking tests
	Hydrogen-induced cracking tests
	Metallurgical stability/phases tests
	Manufacturing defects tests
	Filler material tests
Welding tests	
Waste Form (high-level wastes and spent fuel that are the source of radionuclides)	Radioisotope inventory study
	In-package chemistry tests
	Commercial spent nuclear fuel cladding degradation tests
	Defense spent nuclear fuel degradation tests
	High level waste glass degradation tests
	Dissolved radioisotope concentration tests
Colloid radioisotope concentration tests	
Saturated Zone (movement of water in rocks below the water table)	Saturated zone characterization studies
	Saturated zone flow studies
	Saturated zone transport studies

⁵⁵ Summary information about progress in testing is provided to the NRC twice each year. There are 23 Semiannual Progress Reports available, covering all testing for the Yucca Mountain site. These documents include references to numerous technical reports of the Program, which number in the thousands.

Table 3: Types of Tests Performed to Collect Data for Site Characterization of Yucca Mountain, continued

Integrated Site Model (computer models of the geology)	Geologic framework model studies
	Rock properties model studies
	Mineralogical model studies
Site Description (description of the repository)	Geologic mapping studies
	Fracture data collection studies
	Natural resources assessment studies
	Erosion studies
	Natural and man-made analog studies
Disruptive Events (unlikely disruptions to the repository)	Probability of igneous activity studies
	Characteristics of igneous activity studies
	Seismic hazards studies

The DOE's original siting Guidelines were promulgated in 1984. At the time, the Nuclear Waste Policy Act called on the Department to evaluate and characterize multiple sites and to recommend one or more among them. Also at the time, consistent with the scientific and regulatory consensus of the late 1970's, the Nuclear Regulatory Commission had in place regulations for licensing repositories that sought to protect against radioactive releases by focusing on the performance of individual subparts, or subsystems, that were part of the repository. Finally, the EPA had proposed rules for repositories that also focused on limiting the amount and type of radionuclides released from a repository. Consistent with this framework, DOE's Guidelines focused on making comparative judgments among sites and emphasized mechanisms for evaluating the performance of potential repository subsystems against the NRC subsystem performance requirements and the EPA release limits.

Starting in 1987, however, both the regulatory framework and scientific consensus began to change. To begin with, Congress changed the law governing evaluation and selection of a repository site. In 1987, it amended the Nuclear Waste Policy Act to eliminate any authority or responsibility on the part of the Department for comparing sites, directed the Department to cease all evaluation of any potential repository sites other than Yucca Mountain, and directed it to focus its efforts exclusively on determining whether or not to recommend the Yucca Mountain site. This change was important, as it eliminated a central purpose of the Guidelines – to compare and contrast multiple fully characterized sites for ultimate selection of one among several for recommendation.

Next, Congress reinforced its directive to focus on Yucca Mountain in section 801 of the Energy Policy Act of 1992. This provision also gave three new directives to EPA. First, it directed EPA, within 90 days of enactment, to contract with the National Academy of Sciences for a study regarding, among other topics, whether a specific kind of radiation protection standard for repositories would be protective of public health and safety. The question posed was whether standards prescribing a maximum annual effective dose individuals could receive from the repository – as opposed to the then-current standards EPA had in place focusing on releases –

would be reasonable standards for protecting health and safety at the Yucca Mountain site. Second, Congress directed EPA, consistent with the findings and recommendations of the Academy, to promulgate such standards no later than one year after completion of the Academy's study. Finally, it directed that such standards, when promulgated, would be the exclusive public health and safety standards applicable to the Yucca Mountain site. Section 801 also contained a directive to the NRC that, within a year after EPA's promulgation of the new standards, NRC modify its licensing criteria for repositories under the NWPA as necessary to be consistent with the EPA standards.

Pursuant to the section 801 directive, in 1995 the National Academy of Sciences published a report entitled "Technical Bases for Yucca Mountain Standards."⁵⁶ This report concluded that dose standards would be protective of public health and safety.⁵⁷ It also concluded that if EPA adopted this kind of standard, it would be appropriate for the NRC to revise its licensing rules, which currently focused on subsystem performance, to focus instead on the performance of the total repository system, including both its engineered and natural barriers. It noted that this would be a preferable approach because it was the performance of the entire repository, not the different subsystems, that was crucial, and that imposition of separate subsystem performance requirements might result in suboptimal performance of the repository as a whole.⁵⁸ Finally, National Academy of Sciences noted that its recommendations, if adopted, "*impl[ie]d the development of regulatory and analytical approaches for Yucca Mountain that are different from those employed in the past*" whose promulgation would likely require more than the one-year timeframe specified in the Energy Policy Act of 1992.

Along with these changes in regulatory thinking, the scientific and technical understanding of repository performance at Yucca Mountain was advancing. The DOE's use of Total System Performance Assessment to evaluate repository performance became more sophisticated, and helped focus DOE's research work on those areas important to maximizing the safety of the repository and minimizing public exposure to radionuclide releases from the repository.

In 1999, the culmination of years of scientific and technical advancements and careful regulatory review resulted in EPA and NRC proposals for new regulations specific to a repository at Yucca Mountain based on state-of-the-art science and regulatory standards.⁵⁹ Since section 113(c) of the NWPA directed DOE to focus its site characterization activities on those necessary to evaluate the suitability of the site for a license application to the NRC, the proposed changes to the EPA and NRC rules in turn required DOE to propose modifications to its criteria and methodology for determining the suitability of the Yucca Mountain site. Accordingly, DOE proposed new state-of-the-art Yucca-Mountain-specific site suitability Guidelines consistent with NRC licensing regulations.⁶⁰ After EPA and NRC finalized their revisions,⁶¹ DOE promptly

⁵⁶ *Technical Bases for Yucca Mountain Standards*, National Academy of Sciences, National Research Council, 1995.

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

⁵⁹ Disposal of High-Level Radioactive Wastes in a Proposed Geological Repository at Yucca Mountain, Nevada, Proposed Rule, 64 Fed. Reg. 8640, February 22, 1999; Environmental Radiation Protection Standards for Yucca Mountain, Nevada, Proposed Rule, 64 Fed. Reg. 46975, August 27, 1999.

⁶⁰ General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories, Yucca Mountain Site Suitability Guidelines, 64 Fed. Reg. 67054, November 30, 1999.

finalized its own.⁶² For the reasons explained in the National Academy of Sciences study, the revised Guidelines' focus on the performance of the total repository system also makes them a better tool for protection of public safety than the old Guidelines, since the old subsystem approach might have resulted in a repository whose subsystems performed better in one or another respect but whose total performance in protecting human health was inferior.

In short, far from seeking to manipulate its siting Guidelines to fit the site, DOE had no choice but to amend its Guidelines to conform with the new regulatory framework established at Congress's direction by the National Academy of Sciences, the EPA, and the NRC. Moreover, this framework represents the culmination of a carefully considered set of regulatory decisions initiated at the direction of the Congress of the United States and completed nine years later, in which top scientists in the country have participated, and in which expert regulatory authorities, the NRC and the EPA, have played the leading role. These authorities likewise agree that the new regulatory framework, of which the Department's revised Guidelines are a necessary part, forms a coherent whole well designed to protect the health and safety of the public.

9.4. Assertion 4: The Process Tramples States' Rights

Some have argued that a Federal selection of siting disrespects states' rights. That is incorrect. Indeed, Nevada's interests have been accorded a place in Federal law to an extent seldom, if ever, seen before.

As provided by the NWPA, the State of Nevada has the right to veto any Presidential site recommendation. It may do so by submitting a notice of disapproval to Congress within 60 days of the President's action.

If Nevada submits a notice of disapproval, Congress has 90 calendar days of continuous session to override the notice by passing a resolution of siting designation. If it does not do so, the State's disapproval becomes effective.

The respect due Nevada has not stopped with grudging obedience to the statutory commands. Instead, as noted previously, the Department has held hearings over a range of dates and places well in excess of what reasonably could have been viewed as a statutory mandate. And I have taken full account of Governor Guinn's comment and those of Nevada's other elected officials who oppose this Project. Although they reflect a view I do not share, I will continue to accord them the highest degree of respect.

Finally, the Federal Government has appropriated more funds to Nevada to conduct its own Yucca Mountain studies than any other State has ever been given for any remotely similar purpose. Since the start of the Program in 1983, the State of Nevada has received over \$78 million in oversight funding. Since 1989, when the affected units of local government requested

⁶¹Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada, Final Rule, 66 FR 32073, June 13, 2001; Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada; Final Rule, 66 FR 55732, November 2, 2001.

⁶²General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories, Yucca Mountain Site Suitability Guidelines, Final Rule, 66 Fed. Reg. 57303, November 14, 2001.

oversight funding, they have received over \$67 million. In total, the State of Nevada and the affected units of local government have received over \$145 million over that timeframe; with Nye County, home to Yucca Mountain, receiving over \$22 million and Clark County, home to Las Vegas, receiving about \$25 million. In addition, over the last 10 years, the State of Nevada and the affected units of local government have been given over \$73 million to compensate for taxes they would have collected on the site characterization and the development and operation of a repository if they were legally authorized to tax activities of the Federal Government. Nye County has also conducted its own oversight drilling program since 1996, for which over that time Nye has received almost \$21 million. Thus, the grand total that has been awarded to the state and its local governments simply on account of Yucca Mountain research has been nearly \$240 million.

Given the extensive evidence that the state has been, and will be, accorded a degree of involvement and authority seldom if ever accorded under similar circumstances, it is my judgment that the assertion of an infringement on state's rights is incorrect.

9.5. Assertion 5: Transportation of Nuclear Materials is Disruptive and Dangerous

Critics have argued that transporting wastes to Yucca Mountain is simply too dangerous, given the amount involved and the distances that will need to be traversed, sometimes near population centers.

These concerns are not substantiated for three principal reasons. ~~First, they take no account of~~ the dangers of not transporting the wastes and leaving them to degrade and/or accumulate in their present, temporary facilities. Second, they pay no heed to the fact that, if the Yucca Mountain repository is not built, some wastes that would have been bound for that location will have to be transported elsewhere, meaning that our real choice is not between transporting or not transporting, but between transporting with as much planning and safety as possible, or transporting with such organization as the moment might invite. And third, they ignore the remarkable record of safe transportation of nuclear materials that our country has achieved over more than three decades.

The first point is not difficult to understand. The potential hazards of transporting wastes are made to appear menacing only by ignoring the potential hazards of leaving the material where it is – at 131 aging surface facilities in 39 states. Every ton of waste not transported for five or ten minutes near a town on the route to Yucca Mountain is a ton of waste left sitting in or near someone else's town – and not for five or ten minutes but indefinitely. Most of the wastes left where they are in or near dozens of towns (and cities) continue to accumulate day-by-day in temporary facilities not intended for long-term storage or disposal.

The second point is also fairly simple. Many of these older sites have reached or will soon reach pool storage limits. Over 40 are projected to need some form of dry storage by 2010. Additional facilities will therefore be required. There are real limits, however, to how many of these can realistically be expected to be built on site. Many utilities do not have the space available to build them, and are likely to face major regulatory hurdles in attempting to acquire it.

Therefore one way or another, unless all these reactors shut down, off-site storage facilities will need to be built, substantial amounts of waste will have to be transported there, and this will happen not in the distant future but quite soon. For example, today nuclear utilities and a Native American tribe in Utah are working toward construction of an "interim" storage facility on tribal land. Whether or not this effort ultimately succeeds, it is likely that some similar effort will. Thus, if we are merely to keep our present supply of nuclear energy, at some fast-approaching point there will be transportation of nuclear wastes. The only question is whether we will have (a) numerous supplemental storage sites springing up, with transportation to them arranged *ad hoc*, or (b) one permanent repository, with transportation to it arranged systematically and with years of advance planning. The second alternative is plainly preferable, making the Yucca Mountain plan superior on this ground alone.

Finally, transportation of nuclear waste is not remotely the risky venture Yucca's critics seek to make it out to be. Over the last 30 years, there have been over 2,700 shipments of spent nuclear fuel. Occasional traffic accidents have occurred, but there has not been one identifiable injury related to radiation exposure because of them. In addition, since 1975, or since the last stages of the war in Vietnam, national security shipments have traveled over 100 million miles – more than the distance from here to the sun – with no accidents causing a fatality or harmful release of radioactive material.⁶³

Our safety record is comparable to that in Europe, where nuclear fuel has been transported extensively since 1966.⁶⁴ Over the last 25 years, more than 70,000 MTU (an amount roughly equal to what is expected to be shipped over the entire active life of the Yucca Mountain Project) has been shipped in approximately 20,000 casks. France and Britain average 650 shipments per year, even though the population density in each of those countries grossly exceeds that of the United States.

Even so, we need not, and should not, be content to rest upon the record of the past no matter how good. For transportation to Yucca Mountain, the Department of Transportation has established a process that DOE and the states must use for evaluating potential routes. Consistent with Federal regulations, the NRC would approve all routes and security plans and would certify transportation casks prior to shipment.

In short, for all these reasons, I have concluded that the stated concerns about transportation are ill-founded and should not stand in the way of taking the next step toward designation of the Yucca Mountain site.

9.6. Assertion 6: Transportation of Wastes to the Site Will Have a Dramatically Negative Economic Impact on Las Vegas

There have been repeated assertions that shipments of radioactive waste through the Las Vegas valley could have effects on the local, entertainment-based, economy. Such effects could include, for example, discouraging tourism and lowering property values. These assertions are

⁶³ *About the Transportation Safeguards System*, Office of Transportation Safeguards Fact Sheet.

⁶⁴ Presentation by Ronald Pope, Head of Transport Safety Unit for the Internal Atomic Energy Agency, at 13th International Symposium for Packing of Radioactive Materials 2001, Chicago, IL, September 2001.

largely unsupportable by any evidence and are addressed in the Final Environmental Impact Statement.

Much of what has been said in the preceding section applies here as well. The record speaks for itself. In addition to the history of safe shipment on interstate highways through relatively open spaces, five metric tons of spent nuclear fuel from 27 countries have, over the last 16 years, been transported without incident through Concord, California, and Charleston, South Carolina (the latter, like Las Vegas, a tourist destination). There is no reason to believe that a similar safe record will not be achieved in Nevada.

The truth of it is that many tourists coming to Las Vegas will be farther from nuclear sites when they get there than when they left home. All major nuclear power generation facilities in the United States are located near large metropolitan centers in order to minimize the amount of power lost during transmission. It is thus not surprising that more than 161 million Americans are closer to a commercial nuclear facility than anyone in Las Vegas is to Yucca Mountain, as shown in Table 4. Indeed there are few large metropolitan centers that do not have a major nuclear facility located within 75 miles.⁶⁵

Table 4. U.S. Population in Contiguous United States Living Within Various Distances of Commercial Nuclear Facilities

State	Zone (miles from facilities)				
	0 - 25	25 - 50	50 - 75	0 - 50	0 - 75
AL	327,488	617,283	452,817	944,771	1,397,588
AR	91,993	159,544	859,399	251,537	1,110,936
AZ	25,803	1,550,878	1,608,816	1,576,682	3,185,497
CA	2,488,467	8,666,094	11,962,159	11,154,561	23,116,719
CO	*	*	*	*	*
CT	962,725	2,394,573	55,292	3,357,298	3,412,590
DC		153,634	418,425	153,634	572,059
DE	457,523	184,324	123,438	641,847	765,285
FL	1,135,427	2,865,538	3,550,098	4,000,965	7,551,063
GA	186,028	886,879	1,145,585	1,072,907	2,218,491
IA	512,517	566,867	474,723	1,079,384	1,554,107
ID	*	*	*	*	*
IL	2,068,321	7,970,381	835,971	10,038,701	10,874,673
IN	34,431	945,514	468,802	979,945	1,448,747
KS	19,797	161,268	686,554	181,065	867,619
KY					
LA	786,052	1,592,771	772,888	2,378,823	3,151,710
MA	740,668	4,346,548	1,275,039	5,087,217	6,362,255
MD	438,958	2,528,095	2,007,566	2,967,053	4,974,619

⁶⁵ It is noteworthy that Atlantic City has three reactor sites closer than 75 miles at the same time its tourism-based economy has been expanding. Yucca Mountain, by contrast, would be one of the few nuclear facilities in the country in a remote area with no metropolitan center within 75 miles.

Table 4. U.S. Population in Contiguous United States Living Within Various Distances of Commercial Nuclear Facilities, continued

ME	151,828	521,691	280,266	673,520	953,785
MI	898,433	3,815,786	2,491,128	4,714,219	7,205,346
MN	450,935	2,999,162	330,754	3,450,097	3,780,850
MO	72,929	393,186	952,824	466,115	1,418,939
MS	36,411	169,211	561,585	205,622	767,207
MT					
NC	1,864,567	2,265,107	2,577,799	4,129,674	6,747,239
ND					
NE	564,594	181,950	379,944	746,544	1,126,488
NH	278,528	649,119	188,301	927,646	1,115,947
NJ	795,512	5,628,139	2,023,890	6,423,650	8,447,540
NM	*	*	*	*	*
NV					
NY	1,866,267	9,017,732	5,435,801	10,883,999	16,319,800
OH	656,156	2,790,959	2,074,628	3,447,115	5,521,743
OK			5,479		5,479
OR	45,053	1,381,995	432,829	1,427,047	1,859,876
PA	3,206,819	6,437,719	1,564,624	9,644,538	11,209,162
RI	19,252	284,282	744,786	303,534	1,048,320
SC	705,470	1,760,435	747,457	2,465,906	3,213,363
SD			569		569
TN	532,368	456,157	927,261	988,525	1,915,786
TX	136,390	1,337,035	3,766,243	1,473,425	5,239,668
UT	*	*	*	*	*
VA	597,715	2,377,308	2,221,770	2,975,024	5,196,794
VT	54,257	43,739	77,319	97,996	175,315
WA	331,397	500,577	585,734	831,974	1,417,708
WI	542,083	2,065,518	1,646,584	2,607,601	4,254,185
WV	43,813	65,183	37,095	108,996	146,090
WY					
Grand Total	24,126,975	80,732,181	56,752,239	104,859,156	161,651,160
Proposed Repository at Yucca Mountain					
Population around Yucca Mountain	1,678	13,084	19,069	14,762	33,831

*State with no commercial facilities but with other nuclear facilities depending on a repository for waste disposition.

As shown in Table 5, 22 of the 30 most populous metropolitan areas in the United States have 36 operating nuclear reactors closer to them than a waste repository at Yucca Mountain would be to Las Vegas, some 90 miles distant.

Table 5. Top 30 Metropolitan Areas in Contiguous U.S. by Population - Distance to Nearest Commercial Power Reactor (does not include other nuclear facilities that are dependent on a high-level repository for waste disposition)

Rank	Area Name	Population 2000 Census (Note 1)	Major Population Centers	State	Nearest Commercial Nuclear Reactor	Distance (Miles) (Note 4)
1	New York—Northern New Jersey—Long Island, NY—NJ—CT—PA CMSA (Note 2)	21,199,865	New York	NY	INDIAN POINT	45.0
			Jersey City	NJ	INDIAN POINT	44.4
2	Los Angeles—Riverside—Orange County, CA CMSA	16,373,645	Los Angeles	CA	SAN ONOFRE	61.5
			Riverside	CA	SAN ONOFRE	41.2
3	Chicago—Gary—Kenosha, IL—IN—WI CMSA	9,157,540	Chicago	IL	ZION	44.9
			Rockford	IL	BYRON	17.7
4	Washington—Baltimore, DC—MD—VA—WV CMSA	7,608,070	Baltimore	MD	PEACH BOTTOM	43.0
			Washington D.C.	DC	CALVERT CLIFFS	51.2
5	San Francisco—Oakland—San Jose, CA CMSA	7,039,362	San Francisco	CA	RANCHO SECO	81.3
			Oakland	CA	RANCHO SECO	73.3
			San Jose	CA	RANCHO SECO	81.8
6	Philadelphia—Wilmington—Atlantic City, PA—NJ—DE—MD CMSA	6,188,463	Philadelphia	PA	LIMERICK	34.1
			Boston	MA	PILGRIM	45.2
7	Boston—Worcester—Lawrence, MA—NH—ME—CT CMSA	5,819,100	Worcester	MA	VERMONT YANKEE	60.3
			Detroit	MI	FERMI	30.4
8	Detroit—Ann Arbor—Flint, MI CMSA	5,456,428	Dallas	TX	COMANCHE PEAK	69.3
			Fort Worth	TX	COMANCHE PEAK	41.7
9	Dallas—Fort Worth, TX CMSA	5,221,801	Houston	TX	SOUTH TEXAS PROJECT	82.7
			Houston	TX	SOUTH TEXAS PROJECT	82.7
10	Houston—Galveston—Brazoria, TX CMSA	4,669,571	Atlanta	GA	SEQUOYAH	121.7
			Atlanta	GA	SEQUOYAH	121.7
11	Atlanta, GA MSA (Note 3)	4,112,198	Fort Lauderdale	FL	TURKEY POINT	57.9
			Miami	FL	TURKEY POINT	29.6
12	Miami—Fort Lauderdale, FL CMSA	3,876,380	Seattle	WA	TROJAN	111.4
			Tacoma	WA	TROJAN	86.4
13	Seattle—Tacoma—Bremerton, WA CMSA	3,554,760	Glendale	AZ	PALO VERDE	40.4
			Scottsdale	AZ	PALO VERDE	56.3
			Phoenix	AZ	PALO VERDE	45.8
			Tempe	AZ	PALO VERDE	55.2
			Mesa	AZ	PALO VERDE	60.2
			Chandler	AZ	PALO VERDE	59.4
14	Phoenix—Mesa, AZ MSA	3,251,876	Minneapolis	MN	MONTICELLO	39.1
			Saint Paul	MN	PRAIRIE ISLAND STATION	34.2
15	Minneapolis—St. Paul, MN—WI MSA	2,968,806	Cleveland	OH	PERRY	39.3
			Akron	OH	PERRY	59.3
16	Cleveland—Akron, OH CMSA	2,945,831	Cleveland	OH	PERRY	39.3
17	San Diego, CA MSA	2,813,833	San Diego	CA	SAN ONOFRE	50.7
18	St. Louis, MO—IL MSA	2,603,607	Saint Louis	MO	CALLAWAY	91.7
19	Denver—Boulder—Greeley, CO CMSA	2,581,506	Denver	CO	FORT CALHOUN	495.6
20	Tampa—St. Petersburg—Clearwater, FL MSA	2,395,997	Tampa	FL	CRYSTAL RIVER	81.9
21	Pittsburgh, PA MSA	2,358,695	Pittsburgh	PA	BEAVER VALLEY	29.6

Table 5. Top 30 Metropolitan Areas in Contiguous U.S. by Population - Distance to Nearest Commercial Power Reactor, continued

22	Portland—Salem, OR—WA CMSA	2,265,223	Portland	OR	TROJAN	37.2
23	Cincinnati—Hamilton, OH—KY—IN CMSA	1,979,202	Cincinnati	OH	DAVIS BESSE	206.8
24	Sacramento—Yolo, CA CMSA	1,796,857	Sacramento	CA	RANCHO SECO	26.1
25	Kansas City, MO—KS MSA	1,776,062	Kansas City	MO	WOLF CREEK	88.2
			Kansas City	KS	WOLF CREEK	87.0
26	Milwaukee—Racine, WI CMSA	1,689,572	Milwaukee	WI	ZION	44.2
27	Orlando, FL MSA	1,644,561	Orlando	FL	CRYSTAL RIVER	98.7
28	Indianapolis, IN MSA	1,607,486	Indianapolis	IN	CLINTON	156.5
29	San Antonio, TX MSA	1,592,383	San Antonio	TX	SOUTH TEXAS PROJECT	161.3
30	Norfolk—Virginia Beach—Newport News, VA—NC MSA	1,569,541	Newport News	VA	SURRY	23.2
			Virginia Beach	VA	SURRY	53.4
			Norfolk	VA	SURRY	37.3

Notes

- 1 Populations from 2000 Census data for Continental USA
- 2 CMSA means "Consolidated Metropolitan Statistical Area"
- 3 MSA means "Metropolitan Statistical Area"
- 4 Distances shown are relative to a central feature such as a city hall, county seat, or capitol building.

Many cities with strong tourism industries are located closer to existing storage facilities than Las Vegas would be to a repository at Yucca Mountain. Therefore, those who assert that a repository 90 miles from Las Vegas would have dramatically negative effects on local tourism have the burden of producing strong evidence to back up their claims. They have not done so. Thus, I know of no reason to believe that there is any compelling argument that the Las Vegas economy would be harmed by a repository at Yucca Mountain.

9.7. Assertion 7: It is Premature for DOE to Make a Site Recommendation for Various Reasons

9.7.1. The General Accounting Office has concluded that it is premature for DOE to make a site recommendation now

The GAO did make this statement in its draft report, *Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project*, which was prematurely released.⁶⁶ After receiving the Department's response, however, in the final version of this report, released in December 2001, GAO expressly acknowledged that "the Secretary has the discretion to make such a recommendation at this time."⁶⁷

⁶⁶ *Nuclear Waste: Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project*, Unpublished Draft.

⁶⁷ *Nuclear Waste: Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project*, GAO-02-191, December 21, 2001.

9.7.2. *DOE is not ready to make a site recommendation now because DOE and NRC have agreed on 293 technical items that need to be completed before DOE files a license application*

The Nuclear Regulatory Commission provided a sufficiency letter to DOE on November 13, 2001, that concluded that existing and planned work, upon completion, would be sufficient to apply for a construction authorization. The agreed upon course of action by DOE and the NRC is intended to assist in the license application phase of the project, not site recommendation. In consultation with the Nuclear Regulatory Commission staff concerning *licensing*, DOE agreed it would obtain certain additional information relating to nine "key technical issues" to support license application. The DOE agreed to undertake 293 activities that would assist in resolution of these issues.

The NRC has *never* stated that this was work that DOE needed to complete before *site recommendation*. In fact, it went out of its way not to do so. The Commission is well aware that section 114(a)(1)(E) of the NWPA requires a Secretarial recommendation of Yucca Mountain to be accompanied by a letter from the Commission providing its preliminary comments on the sufficiency of the information the Department has assembled for a construction license application. Had it been of the view that site recommendation should not proceed, its preliminary views would have stated that this information is not sufficient and that the Commission has no confidence that it ever will be.

Instead, in its section 114(a)(1)(E) letter, the Commission said the opposite: "[T]he NRC believes that sufficient at-depth characterization analysis and waste form proposal information, although not available now, *will be available at the time of a potential license application such that development of an acceptable license application is achievable*" (emphasis added). It also listed the outstanding issues as "closed pending," meaning that the NRC staff has confidence that DOE's proposed approach, together with the agreement to provide additional information, acceptably addresses the issue so that no information beyond that provided or agreed to would likely be required for a license application.

The DOE has completed over one-third of the actions necessary to fulfill the 293 agreements and has submitted the results to the NRC for review. The NRC has documented 23 of these as "complete." The remaining work consists largely of documentation (improve technical positions and provide additional plans and procedures) and confirmation (enhance understanding with additional testing or analysis or additional corroboration of data or models).

As I explained earlier, the NWPA makes clear that site recommendation is an intermediate step. The filing of a construction license application is the step that comes after site recommendation is complete. It is entirely unsurprising that the Department would have to do additional work before taking that next step. But the fact that the next step will require additional work is no reason not to take this one.

9.7.3. It is premature for DOE to make a recommendation now because DOE cannot complete this additional work until 2006. The NWPA requires DOE to file a license application within 90 days of the approval of site designation

When Congress enacted the NWPA in 1982, it included in the Act a series of deadlines that represented its best judgment regarding how long various steps should take. These deadlines included the 90-day provision referenced above. They also included a requirement that DOE begin disposing of waste in 1998, in the expectation that a repository would by then have been built and licensed.

Obviously, the timeframes set in the Act have proven to be optimistic. That is no reason, however, for the Department not to honor what was plainly their central function: to move along as promptly and as responsibly as possible in the development of a repository. Accordingly, to read the 90-day provision at issue as a basis for proceeding more slowly stands the provision on its head.

Our current plans call for filing a license application at the end of 2004, not 2006. Assuming Congressional action on this question this year, that would mean that DOE could be two years late in filing the application. But any delay in site recommendation will only result in *further* delay in the filing of this application. For the reasons explained in section 7, I believe I have the information necessary to allow me to determine that the site is scientifically and technically suitable, and I have so determined. That being so, I am confident that I best honor the various deadlines set out in the Act, including the central 1998 deadline (already passed) specifying when the Department was to begin waste disposal, by proceeding with site recommendation as promptly as I can after reaching this conclusion.

10. Conclusion

As I explained at the outset of this document, the Nuclear Waste Policy Act vests responsibilities for deciding how this country will proceed with regard to nuclear waste in a number of different Federal and state actors. As Secretary of Energy, I am charged with making a specific determination: whether to recommend to the President that Yucca Mountain be developed as the site for a repository for spent fuel and high-level radioactive wastes. I have endeavored to discharge that responsibility conscientiously and to the best of my ability.

The first question I believe the law asks me to answer is whether the Yucca Mountain site is scientifically and technically suitable for development as a repository. The amount and quality of research the Department of Energy has invested into answering this question — done by top-flight people, much of it on the watch of my predecessors from both parties — is nothing short of staggering. After careful evaluation, I am convinced that the product of over 20 years, millions of hours, and four billion dollars of this research provides a sound scientific basis for concluding that the site can perform safely during both the pre- and post-closure periods, and that it is indeed scientifically and technically suitable for development as a repository.

Having resolved this fundamental question, I then turned to a second set of considerations: are there compelling national interests that warrant proceeding with this project? I am convinced

that there are, and that a repository for nuclear waste at Yucca Mountain will advance, in important ways, our energy security, our national security, our environmental goals, and our security against terrorist attacks.

Finally, I examined the arguments that opponents of the project have advanced for why we should not proceed. I do not believe any of them is of sufficient weight to warrant following a different course.

Accordingly, I have determined to recommend to the President that he find Yucca Mountain qualified for application for a construction authorization before the Nuclear Regulatory Commission, and that he recommend it for development of a repository.

Finance Docket No. 35106

EXHIBIT J

Final Report Rail Transportation Economic Impact Evaluation & Planning
Wilber Smith and Associates, 2005

Final Report

Rail Transportation Economic Impact Evaluation & Planning

prepared for

Nye County

Department of Natural Resources
and Federal Facilities



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

in association with
URS Corporation
KORVE Engineering

May 10, 2005

Table of Contents

- 1. INTRODUCTION**
 - 1.1 Purpose of assessment
 - 1.2 Description of system and operations
 - 1.3 Assumptions
 - 1.4 Methodology

- 2. CONSTRUCTION BENEFITS**
 - 2.1 Construction materials
 - 2.2 Construction workforce and equipment
 - 2.3 Work camp location, function and activity
 - 2.4 Construction and work camp access

- 3. POTENTIAL SHARED USE**
 - 3.1 Existing freight markets
 - 3.2 Potential new markets
 - 3.3 Potential capital enhancements – locations of sidings and spurs
 - 3.4 Passenger operations

- 4. ECONOMIC BENEFITS**
 - 4.1 Savings to local shippers
 - 4.2 Direct economic effect: new employment
 - 4.3 Indirect and induced effects
 - 4.4 Benefits of freight traffic diversion

- 5. OTHER OPPORTUNITIES**
 - 5.1 OCRWM Nevada Rail procurement process
 - 5.2 Line ownership
 - 5.3 Operations
 - 5.4 Alternative institutional models

6. CONCLUSION

- 6.1 Construction benefits**
- 6.2 Potential shared use**
- 6.3 Economic benefits**
- 6.4 Other opportunities**

1. INTRODUCTION

1.1 Purpose of assessment

This assessment quantifies economic benefits that could accrue to the Nevada counties of Nye, Lincoln and Esmeralda from the construction of the Nevada Rail line and from its use by local industries for freight transportation.

The Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) is preparing National Environmental Policy Act (NEPA) documentation for the Nevada Rail waste transportation system. The counties of Nye, Esmeralda and Lincoln and the City of Caliente, Nevada are concurrently assessing the economic opportunity represented by the construction and operation of the rail line, particularly with regard to the potential of shared use by commercial freight traffic. The DOE has stated its intent to transport High-Level Waste (HLW) and Spent Nuclear Fuel (SNF) to a geologic repository at Yucca Mountain, Nevada via a 'mostly rail' transportation strategy. In Nevada, the DOE intends to construct a new rail line for this purpose, from an interchange point with the Union Pacific Railroad (UPRR) at Caliente, NV, through the counties of Lincoln and Nye, and adjacent to Esmeralda County, to the repository itself. The Caliente Corridor route, approximately 513 km (319 miles) in length, will be designed and constructed specifically for the safe and secure transportation of SNF and HLW. The rail line may also enable freight shipment by industries throughout the corridor, with attendant economic benefits to the communities, counties and state of Nevada.

The Nye County Department of Natural Resources and Federal Facilities is assessing the potential economic benefits of the Nevada Rail facility to the counties of Nye, Esmeralda and Lincoln. This study is prepared in response to Task 2 of Nye County's overall work plan. The project summarized in this study is Task 2 of three tasks. Separate studies will be prepared to address the results of the remaining tasks. The scope of work for Task 2 includes the following sub-tasks appearing in Table 1.

Table 1: Nye County Overall Work Plan Task 2 Work Elements

Subtask	Work Statement
2.1	Identify the availability and location of construction materials (aggregates, railroad ballast, water, etc.).
2.2	Identify the availability and location of construction support (workforce, equipment, commercial supplies, etc.).
2.3	Provide options for the location of work camps.
2.4	Provide options for developing access to work camps from existing roads.
2.5	Provide input on local desires for operations of the rail line, including common carriage use.
2.6	Provide the intended purpose (local desires) and location for rail sidings.
2.7	Provide input on economic factors that may affect alignment decisions.
2.8	Provide information on possible commodities that could be shipped on the rail line by local communities if the decision were made to allow common carriage use.
2.9	Provide input from the counties' perspective of the viability of this rail system to integrate with local needs and expectations for mass transit between rural communities along the corridor.

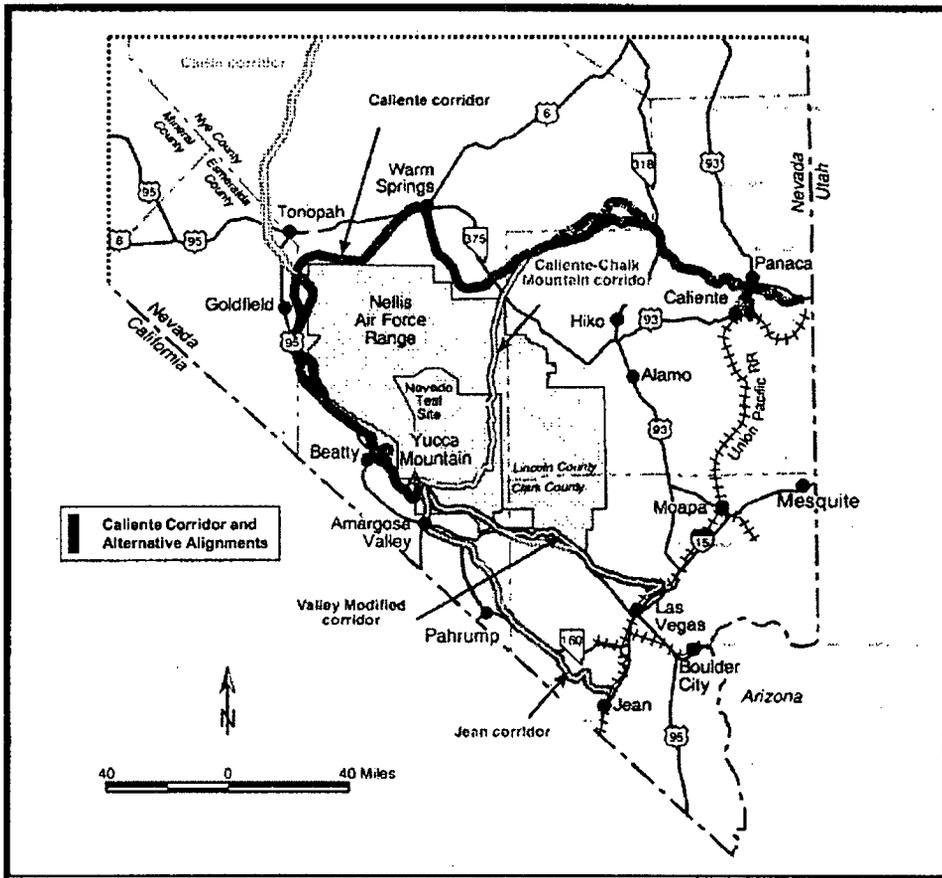
This study culminates the work defined in the preceding table. Whereas the DOE may use this information to evaluate the economic impacts and benefits to the state and local entities affected by Nevada Rail, the economic effects of construction depend on the procurement, sourcing and construction strategy being defined by DOE itself. Therefore, this study reflects an exchange of information with DOE and its consultants.

Because of the limited budget for this effort, and the fact that DOE is defining the Nevada Rail construction strategy, this assessment places limited analytic emphasis on subtasks 2.1 through 2.4 of the Task 2 scope. Instead, this assessment draws from work performed by Nye County staff to identify local stakeholders that may benefit from the presence of a new freight railroad, and estimates the immediate economic benefit the railroad may offer them and their communities. More detailed economic analysis of benefits throughout the corridor must be the subject of subsequent study.

Description of system and operations

The Caliente Corridor begins at an interchange point with the Union Pacific mainline near Caliente, Nevada, and then traverses west-northwest through Lincoln County. It enters the eastern border of Nye County, then re-enters Lincoln County at its upper-western boundary. The route circumscribes the Nevada Test Site and Training Range, winding generally westward among several basins and ranges. Turning sharply south at the northwest corner of the Air Force range near Tonopah, the route passes close by the town of Goldfield. Although the proposed route itself does not enter Esmeralda County, six sections of land adjacent to the route are in Esmeralda County. The route then turns south-southeast, passing near the town of Beatty and Amargosa Valley, before entering the Nevada Test Site and the property of the proposed Geologic Repository. Along the corridor OCRWM has identified several alternative alignments, which are the subject of detailed assessment as part of DOE's ongoing Nevada Rail Draft Environmental Impact Statement (DEIS).

**Figure 1: OCRWM Nevada Rail Line
Caliente and Other Candidate Corridors**



Preliminary specifications for the Nevada Rail line call for a single-track mainline, with passing sidings to allow inbound and outbound trains to pass. At full operation there will be from three to five trains per week inbound to Yucca Mountain, and it is assumed that a similar number of empty trains will be operated outbound. DOE intends that these trains will exclusively transport HLW and SNF casks, accompanied by safety and security equipment and personnel, both to and from the repository.

A facility for the maintenance of waste transportation casks will be located at or adjacent to the repository. It is not yet clear whether this facility will also maintain rolling stock, motive power, or support the maintenance of right-of-way and track.

At Caliente, HLW and SNF shipments will be switched from the Union Pacific mainline to Nevada Rail. It has not yet been determined whether waste transportation trains will be operated exclusively on commercial railroads and switched directly to Nevada Rail, or whether waste shipments will be set out from mixed commercial freight consists at Caliente and picked up by Nevada Rail power for transport to the repository. The latter scenario necessitates a secure transfer facility at Caliente, and some facility for rolling stock storage and servicing.

1.2 Assumptions

The findings of this assessment are based on the following assumptions, consistent with information published by the Department of Energy, current descriptions of the Nevada Rail project, and discussions with DOE staff and stakeholders. The purpose of these assumptions is to provide parameters for the analysis of the economic impacts of Nevada Rail.

- **Mode:** The OCRWM strategy is for HLW and SNF to be transported to Yucca Mountain via 'mostly rail' – entailing construction of a new railroad in Nevada for this purpose.
- **Route:** OCRWM has selected the Caliente Corridor as the preferred route for the Nevada Rail facility.
- **Alignment:** The Caliente Corridor alignment and alternatives identified by OCRWM are the only alignments to be considered for assessing shared-use potential.
- **Implementation:** The Nevada Rail facility will be completed and operational for commencement of waste shipments during 2010.
- **Construction:** Completion of the Nevada Rail facility in advance of the repository will enable the railroad to be used for transportation of construction material and equipment.

- **Exclusivity:** Trains carrying OCRWM shipments, whether the casks are filled or empty, will operate via Nevada Rail exclusive of any other lading.
- **Schedule:** From 3 to 5 loaded trains will operate inbound to Yucca Mountain per week, and as many outbound, empty trains.
- **Speed:** Trains will be limited to an operating speed of 40 miles per hour on the Nevada Rail line.
- **Priority:** Regardless of other uses, OCRWM shipments will be the priority traffic using Nevada Rail.
- **Horizon:** OCRWM shipments to Yucca Mountain will continue for 24 years, through 2034.
- **Operation:** OCRWM has not determined the method by which operating services will be procured for Nevada Rail.
- **Business Case:** The Nevada Rail facility will be constructed, operated and maintained for the purpose of transporting HLW and SNF, and all capital and operational costs for waste transportation will be the responsibility of the federal government. For DOE's purposes, shared use is thus far ancillary to the fundamental business case for the railroad.

1.3 Methodology

1.4.1 Identification of stakeholders

The base data for identifying industries that might be served by shared use of the Nevada Rail line was the corridor business inventory prepared in support of Nye County's Preliminary Transportation Assessment Cooperative Agreement Task 1-A report. This information was supplemented by referrals from Nye County staff and outreach to representatives of government and business interests in each of the three counties.

1.4.2 Information collection

The principal sources of information for this assessment have been interviews with stakeholders throughout the three counties traversed by the Caliente Corridor, including elected officials, agency employees, representatives of corridor businesses, and consultants and academics who have performed related studies. Information regarding the Nevada Rail project has been obtained both via interviews with OCRWM staff and consultants, and from official published information regarding the project. Cost coefficients used for estimating transportation costs are domestic industry averages.

1.4.3 Quantifying economic benefits

The primary benefits of shared use of the Nevada Rail line are anticipated to be the improved economics of transportation available to industries that ship by rail instead of by truck. A survey of corridor businesses identified by the Nye County Department of Natural Resources and Federal Facilities yielded a short list of industries that could conveniently ship via rail, either from dedicated spurs or from team tracks proposed to serve Caliente, Tonopah, and Amargosa Valley. Scenarios for high, mid-range and low freight service were defined using the estimates of these industries' shipping volumes, in tonnage and carloads. Applying average shipping cost differentials and employment statistics yielded potential savings to on-line shippers, money available to increase staffing and production, and resultant employment and economic benefits to the three counties.

2. CONSTRUCTION BENEFITS

The discussion that follows is a summary of current DOE efforts with regard to the sourcing of construction materials and a workforce to build Nevada Rail. The DOE efforts are essentially duplicative of aforementioned Tasks 2.1 through 2.4 that were specified for this study. Per an agreement between DOE and Nye County, this study was to de-emphasize Tasks 2.1 through 2.4. There are two reasons for this. First, DOE has already covered much of this ground. Second, DOE was more desirous of the insight of this study's consultant team with regard to potential commercial uses of the rail line and even passenger service - areas in which DOE has done comparatively little. These items are discussed in the Sections 3 and 4 of this study.

What appears below is a brief presentation of what DOE has done relating to Tasks 2.1 through 2.4. Fuller discussions of these items will be available in the DOE's forthcoming DEIS for Nevada Rail¹.

2.1 Construction materials

Bechtel SAIC Company (BSC), the prime contractor for the DOE's ongoing DEIS, has retained a geotechnical consultant to identify deposits and sources of aggregates for rail line ballast, a hydrology consultant to identify water sources, and a conceptual design consultant to identify sources for rail, ties, tie plates and other manufactured materials for building rail track. Per BSC at the time of this writing, the efforts of the three specialist consultants are underway.

¹ The discussion is based on a conversation in December 22, 2004 with Richard Holder of BSC and Bill Garfield, consultant to BSC.

2.2 Construction workforce and equipment

BSC and its consulting team have not identified a workforce *per se* for the construction of Nevada Rail. The reason is BSC's assumption that the recruiting of the workforce will be the responsibility of the contractor assigned to build the line. BSC does recognize, however, that there may be workers in Nye, Lincoln, and Esmeralda Counties who might wish to participate in the construction of Nevada Rail. However, BSC expects that there would be few in the counties with skill sets specific to rail line construction and even fewer who have actual rail line construction experience, as no existing rail line is near the Nevada Rail route except in Caliente.

BSC likewise has not investigated sources for construction machinery in the counties. The reason is that BSC assumes that the contractors likely will bring their own heavy machinery with them to the construction site. While there may be opportunities for local machinery vendors to supply the project, BSC estimates these opportunities as minimal.

That said, this analysis recognizes that the grading of the rail line will be much like that required for road construction and may be an opportunity for local contractors.

2.3 Work camp location, function and activity

BSC is identifying where the work camps should be located, and has gone so far as to identify specific candidate locations. These work camps will be necessary for construction. Conceivably, they could provide rudimentary housing, a cooking facility, sanitary facilities, a medical facility, a laundry, a small market and some basic recreational amenities. An alternative to housing at the work camps, workers might be able to use in certain areas existing, available housing stock.

BSC has not done any detailed assessment of existing housing opportunities, as utilization of existing housing stock really depends on the construction strategy that the DOE finally adopts. For example, if DOE decides to compress the time frame for construction, labor requirements will intensify, and so, too, will the need for housing. At this point, however, BSC feels its current effort to identify work camp locations is sufficient for the DEIS. That noted, the current alignments to pass through or approach the communities of Caliente, Tonopah, Goldfield, and Beatty, and it is reasonable to assume that at least some workers would find available short term housing and amenities there.

2.4 Construction and work camp access

BSC is anticipating that the rail route will have access roads leading to it from local highways generally every 10 miles. BSC is looking at using existing roads to the maximum extent possible, and is considering new access roads *only where needed*. These roads will be used to bring construction materials and workers to the line. The

roads will remain following the construction of Nevada Rail to provide access for maintenance. BSC is not anticipating that the construction of a road parallel to the rail line would be needed. Further, BSC considers that such a road in itself would become a maintenance issue.

3. POTENTIAL SHARED USE

3.1 Existing freight markets

The report completed in January 2004 by the Nye County Board of Commissioners for Task 1A under the County's Cooperative Agreement with the US Department of Energy states among its conclusions that:

The Caliente and Carlin rail corridors, which have been identified by the DOE as the preferred proposed repository rail corridors, have no appreciable benefit to non-nuclear businesses presently located in the region that might consider becoming rail customers.

Nye County Board of Commissioners: Preliminary Transportation Assessment Cooperative Agreement Task 1A; Prepared for the U.S. Department of Energy under Cooperative Agreement DE-FC28-03RW12223; January 2004

One of the reasons for this finding is that one of the principal criteria for the candidate routes and alternative alignments was their remoteness from human habitation and commerce. Over most its distance, the Caliente Corridor ably satisfies this criterion.

Furthermore, shipment via rail is most efficient for businesses located near the rail line, particularly if their shipments are loaded and unloaded directly from rail cars. Intermediate transport via other modes to or from the rail line, and intermodal transfer impose additional costs that render rail transport decreasingly efficient for businesses located farther from the rail line.

Given these considerations, a new rail line in the Caliente Corridor will not offer broad commercial benefit to businesses throughout Nye, Esmeralda and Lincoln counties. It may, however, represent a more efficient means of freight transport for existing industries located in the immediate vicinity of the rail line. *These industries currently ship insufficient quantities to justify a stand-alone commercial rail operation.* It is possible that the efficiencies provided by rail will allow these existing industries to expand, if the Nevada Rail project allows for commercial use of the tracks.

In December 2004 the Nye County Department of Natural Resources and Federal Facilities completed an exhaustive survey of land uses and ownership over the entire Caliente rail route, in conjunction with the Task 1A report cited above. This survey included businesses that could be candidates for freight shipment via rail, and provided

a basis for the assessment of potential Nevada Rail freight markets. The Nye County survey includes all businesses that are sensitive to the actual alignment of the Nevada Rail route. Not all of these businesses ship freight of commodity types or in quantities that are economical for rail transportation. This assessment considers only businesses in the vicinity of the Caliente alignment and its alternatives that are likely to ship viable quantities of freight via rail. The industries considered were the ones that the study team believes have the potential to ship sufficient quantities to receive savings on transportation costs.

3.1.1 Information collection from existing shippers

In this task, the team was requested to "Provide information on possible commodities that could be shipped on the rail line by local communities if the decision were made to allow common carrier use." The task assumed that the railroad would be constructed, thus the direction was to determine potential users and traffic volumes. The team reviewed the Task 1A report and discussed our efforts with other contractors working for the DOE. As DOE has not yet determined whether or not it is in the best national interest to allow commercial use of the Caliente Corridor, no work has been undertaken to date on traffic studies by their consultants.

The Task 1A report identified a large number of potential shippers along the route. However, many of these industries do not ship quantities suitable for diversion to rail. A listing of likely shippers, presented as Appendix 1, thus includes best estimates of shipments likely to be diverted from truck to rail. Many of the shippers identified in the Nye County Task 1A report are included in the carload counts for team tracks at Caliente, Tonopah, and Amargosa Valley. ("Team track" and similar terms are defined on page 20.) It is assumed that the team track at Tonopah would be located to also serve customers in the Goldfield area. It was also assumed that the team track in Amargosa Valley would serve customers in the Beatty area.

Rail transportation is most effective in shipping large volumes of non-time-sensitive cargo long distances². The study therefore focused on customers that have the potential to ship 1,000 tons (the equivalent of 10 rail cars or about 50 trucks) or more per week. Shippers with smaller weekly amounts are assumed to continue to ship via truck. Occasionally, a customer may require a large one-time shipment (e.g. a large earth-moving machine); this type of shipment is assumed in the team track numbers.

The shipment quantities included in Appendix 1 were derived from in-person interviews with representatives of businesses between Yucca Mountain, Tonopah and Caliente. Additional telephone interviews were conducted with potential shippers as documented

² This is to say, the economic considerations of shipping larger volumes of bulk commodities over longer distances tend to favor rail over truck transportation.

below. Nye County staff and consultants also provided contact information. A number of potential customers were identified, mainly at the southernmost end of the alignment.

Key findings

- 1) The alignment between Tonopah and Yucca Mountain traverses territory that is very lightly populated, with limited industry.
- 2) The alignment between Tonopah and Caliente traverses territory that is essentially unpopulated, except for the nine-mile segment immediately north of Caliente along the former Pioche branch.
- 3) The numbers of car loadings identified do not appear on their own to support a private carrier. However, depending on how trackage use agreements are worked out with DOE, there is a potential for a carrier to cover the "above the rail" costs as a discrete business from the transport of HLW and SNF³.
- 4) If a coal-fired power plant is developed in the Dry Lake Valley area, the portion of the line from Caliente to the power plant has the potential to be self-sufficient.
- 5) The key for any of the respondents is whether or not their cost of transportation will be less if they use rail instead of shipping by truck.
- 6) Freight trains will have to operate at least twice a week to provide an acceptable level of service.
- 7) A minimum of three crews is an estimated requirement to transport a car from Caliente to Yucca Mountain and return. This assumes that operations and servicing are based near the midpoint of the rail line, such as near Tonopah.
- 8) Running maintenance and heavy repair facilities can be located at Caliente, Tonopah, Yucca Mountain, or some combination of all three.
- 9) The benefits of the railroad to Lincoln County are anticipated to arise from rail shipment by tenants of the planned industrial park, and employment created by an interchange between UPRR and the Yucca Mountain rail line. Railroad jobs would include equipment maintenance, track maintenance, operating crews and supervision. Ancillary benefits would include housing for out-of-town crews, retail to support the interchange, and the potential for additional industrial development along the alignment.

³ These costs are fuel, labor, equipment maintenance and leasing costs.

Summary of stakeholder interviews

The Study Team contacted a number of civic and business leaders along with potential shippers to develop our understanding of the potential for commercial railroad services along the Caliente Corridor. Many of the stakeholders noted the potential for the commercial rail service to allow their businesses to expand, but only if using rail will reduce their overall transportation costs.

Several comments noted that the area was originally developed due to gold and other heavy metal mining, and that the rail service could assist in the revitalization of the industry in the area. However, the last major mining effort, the Bullfrog Gold mine at Rhyolite, has been dormant since 2000, reportedly due to a depletion of the ore body. The team did not identify any large mines along the corridor that are currently in production. While some exploratory work is being conducted near Goldfield, to date no production plans are imminent. It is important to note that the operation of modern gold mines does not require significant rail service. Rail service can improve the efficiency of mining operations such as copper or base metals that require the ore to be shipped out for smelting, or the amount of final product a week is over 1,000 tons. Otherwise, modern mines only benefit from rail service for the occasional movement of mining equipment inbound, with the even less frequent inbound shipment of refining materials in tank cars. This type of service can be accommodated by the team tracks proposed along the route.

The list below is a summary of the interviews and information developed:

- 1) **Cind-R-Lite:** Contacted Andy Coop, Mine Manager (775-764-0915). The study team estimated that this industry could generate around 20 carloads going to Riverside in Southern California each month. The shipments would depend on developing a large storage/retail site in Southern California.
- 2) **Farland Refinery Corp:** Contacted Pete Ipson (801-298-9866). There is no potential to revitalize the company's refinery in Tonopah, by virtue of rail haulage. The company is in the process of relocating the facility to another site located north of Warm Springs. There is potential for inbound loads of crude oil and outbound loads of refined product from a site approximately 100 miles east of Tonopah. The volume could be as much as 10 cars a day inbound, and 2 cars outbound daily, from a transloading facility at the Warm Springs summit on Highway 6. Twice a week service would be adequate for their needs. Farland would buy the crude on the spot market, thus the rail haul could be from any oil-producing region. They are currently receiving oil from western Canada. A major factor in their decision to use rail will be the initial infrastructure costs, which they understand will be over \$150,000.

- 3) **US Ecology:** Contacted Chadd Hyslop (208-331-8400). USE operates a plant in Idaho that receives over 300,000 tons annually by rail. The facility south of Beatty could accommodate this amount also. The material could come from any point in the US or Canada that is more than 500 miles away. He discussed the benefits in terms of increased employment in Nye County, and the ability to reduce truck traffic. Twice weekly service is acceptable to the company, at least at the conceptual level. The major concern is the ability to make the haul economically feasible considering the 310-routing from the mainline.
- 4) **D&H Mining:** Contacted David and Natalie Spicer (775-553-2459). D&H operates a landscape rock quarry located along the alignment north of Beatty. The company currently ships at most 2,000 tons a week by truck, but is aggressively marketing its product, and expects to be able to ship 100,000 tons annually by rail, if the freight rates are competitive with trucking. Twice weekly service is acceptable to the company, at least at the conceptual level. The major concern is the ability to make the haul economically feasible, considering the 310-mile routing from the mainline. It is also developing a bottled water product line, which would be shipped in boxcars to market, if the opportunity existed. Mr. Spicer is very optimistic about his ability to utilize the rail line, if shared use is allowed.
- 5) **Ponderosa Dairy:** Contacted Ed Goodhart (775-372-1300). The dairy ships in approximately 1,000 tons weekly of animal feed grains, such as corn, beet pellets, cottonseed, and others, via truck from a transload in Las Vegas. Rail would only be an option if it lowered the transportation costs.
- 6) **Metallic Goldfield Inc.:** Contacted Ed Devenyns (775-826-2463). The company currently has rights to a large potential mineral producing area east of Goldfield. Future explorations may develop a future ore body that would benefit from rail, although none is currently identified. Mr. Devenyns is concerned that the current alignment proposed passes through the Goldfield Mining District, and may preclude mining in the area. He wishes the line to be re-routed to the west of Goldfield.
- 7) **Natural Pozzolan of Nevada:** Contacted Dr. Steve Klomp (775-728-4432). Dr. Klomp is developing a large deposit of Pozzolan, a cement additive that extends the life and increases the strength of concrete, north of Caliente. He stated that a rail line would allow him to expand his market and operation significantly. Trucking the product to market is currently costing as much as \$75 per ton to Colorado, significantly higher than a comparable rail haul rate. The company could expand to over 300,000 tons annually if rail service were available. Dr. Klomp also believes that the product could be shipped to the

NYE COUNTY, NEVADA

Department of Natural Resources and Federal Facilities

Transportation Assessment of the OCRWM Nevada Rail Caliente Corridor

Yucca Mountain repository as a constituent in the sizable volumes of cement that will be mixed there.

- 8) **Nye County:** Contacted Commissioner Candice Trummell (775-209-3824). Ms. Trummell talked about the potential for the growth of the northern portion of Nye County if the rail line were open to commercial traffic.
- 9) **Esmeralda County:** Contacted George McCorkle and Robison Sidler (775-485-3419). The current alignment operates east of Goldfield, and actually never enters Esmeralda County. The county is working on a plan to relocate the Goldfield airport to a point west of the community, and develop a light industrial/manufacturing complex adjacent to the airport. Creation of the complex will also require the construction of housing and other supporting facilities that currently do not exist in the area that could generate inbound loads of construction materials. If light manufacturing is attracted to the area, the potential exists for inbound plastic pellets⁴ for plants using injection molding to create final plastic product.
- 10) **Lincoln County:** Contacted City of Caliente Mayor Kevin Phillips (775-726-3891). Caliente is working on the development of a small (60 acre) industrial park south of the community. The industrial park could be served by rail; if an interchange yard between the UPRR and the Yucca Mountain line were to be created. The community is actively marketing small companies that could relocate to Caliente from Las Vegas or Southern California.
- 11) **Lincoln County:** Contacted Mike Baughman, Intertech Services (775-883-2051). Lincoln County is working aggressively to attract new business from Southern California and Las Vegas to the area. Potential use of the rail line includes hay pellets from the Rachel area for export, cement additives from Pioche, and in the future, a coal fired power plant in the Dry Lake Valley where the Nevada Rail alignment crosses the alignment of the proposed Southwest Interstate power line and the Lincoln County Water Authority water line. The amount of coal delivered to a typical power plant is sufficient to support the rail line from Caliente to the Dry Lake Valley.

This study recognizes that there may be other potential rail shippers in the Amargosa Valley which the study team did not identify during the course of its investigation. Documenting the existence of such shippers will be a key task in any further study of Nevada Rail's commercial traffic potential.

⁴ Plastic in pellet form is produced at the refinery as the raw material for the manufacturing of plastic goods. It is often shipped to the manufacturing facility in 100-ton cars. The cars are also frequently used for on-site storage of the raw material.

3.1.2 Freight transportation demand

Appendix 1 presents three scenarios for freight shipments by businesses served by the Caliente Corridor. These low, medium and high scenarios correspond to the ranges of shipment quantities estimated for each potential shipper, and are summarized by commodity type in Table 2. The total quantities of material shipped for each commodity type annually are used to quantify potential benefits to the region served by the Caliente corridor.

Table 2: Nevada Rail Freight Transport Annual Demand Scenarios

Commodity	Low		Mid-Range		High	
	Tons	Carloads	Tons	Carloads	Tons	Carloads
Farm Products	40,000	400	50,000	500	60,000	600
Coal	---	---	---	---	2,079,840	20,798
Non-Metallic Minerals	100,000	1,000	150,000	1,500	300,000	3,000
Chemicals	33,698	337	50,546	505	67,395	674
Petroleum & Coal Products	165,867	1,659	248,801	2,488	331,734	3,317
Stone, Clay, Glass, Concrete	136,000	1,360	254,000	2,540	272,000	2,720
Waste and Scrap Materials	100,000	1,000	150,000	1,500	200,000	2,000
All Other Commodities	84,000	840	126,000	1,260	168,000	1,680
	659,565	6,596	1,029,347	10,293	3,478,969	34,789

It should be noted that the "high" scenario includes the coal-fired electric power plant planned to be located in the Dry Lake Valley. The above estimates of carloads and tons were derived from shipper comments and the study team's professional opinion of the commercial rail traffic potential of Nevada Rail.

3.2 Potential new markets

Each of the counties that are the subjects of this study have identified opportunities for economic development that could be enhanced by the implementation and operation of the Nevada Rail and the geologic repository itself. The principal economic development strategies of these counties involve establishing industrial and business parks and attracting new businesses. The importance of the rail line to their development depends on the types of industries they attract, their scale, and proximity to the rail line.

3.2.1 Economic development initiatives

Lincoln County's 2003 Comprehensive Economic Development Strategy identifies several opportunities that may directly or indirectly benefit from the presence of a freight railroad. Industrial Parks are proposed in the vicinities of Alamo and Caliente, both of which are in early development and discussion with potential tenants. The Meadow Valley Industrial Park, in Caliente, may include such industries as recycling of plastics, tires and wood products, beverage bottling, trucking, and hay cubing; all of which could ship via rail. Among industries in their earliest stages is the development of Pinyon-Juniper biomass material as a feedstock for modular electrical generation plants. In addition, the City of Caliente is considering the potential of an intermodal transfer facility for goods being shipped to the geologic repository. Rail facilities in Caliente are planned to include a team track to serve industries distributed through the area.

Esmeralda County is sparsely populated, and has historically relied on mining and agriculture as its principal economic drivers. Its principal population center and county seat, Goldfield, is located close to the Caliente Corridor alignment where it traverses the western boundary of the Nellis Air Force Range. Development of a business park in Goldfield could be enhanced by the proximity of the Caliente Corridor and a dedicated spur. Alternately, a siding and team track in Tonopah could also serve Goldfield industries. While the main resource industry in Esmeralda County is mining, rail access is not necessarily a catalyst to its development, particularly for minerals such as gold, which is typically extracted on site. There are several initiatives to evaluate alternative uses of closed mining facilities, including re-processing of mine tailings, and use of open pits for sanitary landfills.

Nye County, as can be seen in Appendix 1, has the greatest number of industries of sufficient scale and close to the Caliente Corridor alignment that may benefit from shared use of the rail line. Industrial parks are also being planned for Nye County, at Tonopah and Amargosa Valley. The Round Mountain Mining Corporation operates a large gold mine in the Big Smoky Valley, north of Tonopah, an operation of sufficient scale that a rail line might serve it for the transport of chemicals, materials and equipment, transloaded at a team track in Tonopah.

3.2.2 Industries to serve repository or rail line

Given the scale of the Yucca Mountain repository, it is possible that any of the industrial parks in planning by Nye, Esmeralda or Lincoln counties could attract businesses focused on service to the repository itself or the Nevada Rail line. None of the counties yet has a complete sense of the types and scale of businesses that could develop around the repository, nor have they targeted candidates for location in their planned facilities.

An example of a resource industry that could serve the repository is Natural Pozzolan, a producer of additives to aid the curing of concrete. The repository itself is likely to be a large consumer of concrete products for the lining of storage drifts. Natural Pozzolan would be a likely local source for concrete additives.

3.3 Potential capital enhancements - locations of sidings and spurs

This study outlines the operating purpose of different siding types; and provides a conceptual location or locations for each type. The information is based on previous experience in developing freight railroad facilities, along with interviews with potential freight railroad customers.

Table 3 shows the difficulty of access for each potential customer. "Low" access difficulty indicates a facility that is along the main line, with little or no new track required to serve the customers. "Medium" indicates a facility that requires investment by the customer, and is not along the alignment. "High" indicates a facility that cannot be served by the current alignment, but could if the alignment was shifted, or a branch line was to be constructed. The commercial-use "Beatty Branch" alignment would start north of Beatty, roughly paralleling the route of Highway 95 for approximately 24 miles to a point north of Amargosa Valley. This branch would serve several of the potential major customers, such as US Ecology, Cind-R-Lite and the Ponderosa Dairy, as well as other potential customers in the region. However, extending the line to serve Pahrump directly would require an estimated additional 41 miles of track, or a total length of 65 miles from the Caliente Corridor. Such a distance, longer than the road haul distance from Las Vegas, is not economically viable. This assessment did not include conceptualization of the alignment for a Beatty Branch, or locations of customers along such a facility. The exact location of the alignment would be based on terrain, roadway access, constructability, and a detailed operating and customer study.

Table 3: Type of Spur by Customer

Customer	Location	Type of Track	Mode of Access	Difficulty of Access	Comments/Notes
Caliente Team Track	Caliente	Team Track	Along Main Line	Low	Also includes carloads to the Caliente Industrial Park.
Tonopah Team Track	Tonopah	Team Track	Along Main Line	Low	Assumes a location that serves both Tonopah and Goldfield
Amargosa Valley Team Track	Amargosa Valley	Team Track	Beatty Branch	High	Assumes location at south end of Beatty Branch that serves both Beatty and Amargosa Valley
Natural Pozzolan	Pioche	Industrial Spur	10 mile truck haul to Main Line	Medium	Spur track with movable loader at lower levels of shipping, loading tipple as business grows.
Cjnd-R-Lite	Amargosa Valley	Industrial Spur	15 mile truck haul to Beatty Branch	High	Spur track with movable loader at lower levels of shipping, loading tipple as business grows.
US Ecology	Amargosa Valley	Industrial Spur	Beatty Branch	High	Spur track with container handling area at end.
D&H Mining	Beatty	Industrial Spur	Along Main Line	Low	Spur track with movable loader at lower levels of shipping, loading tipple as business grows.
Farland Refinery Corp	Willow Pass	Industrial Spur	50 mile truck haul to main line	Medium	Inbound crude and outbound transfer racks.
Ponderosa Dairy	Amargosa Valley	Team Track	20 mile truck haul to Beatty Branch	High	Movable loader/unloader as part of Team Track facilities, truck access.

Track types

Passing track: A passing track is a double-ended track that is used to allow trains headed in different directions to pass each other. Passing tracks should be located to minimize delays to trains, but are rarely long enough to permit trains to pass without one train stopping. For the Caliente Corridor service, passing tracks of 4,000 feet in length appear to be sufficient. This length will allow two commercial freight trains to pass without extra switching. The commercial trains are expected to average 60 cars in length. This is based on the estimated commercial service frequency of twice a week service for the low estimate, three times a week for the mid-range and daily for the high service level. The commercial trains are expected to be significantly longer than DOE container trains. Each passing track should also have a short (less than 1,000 feet) single ended track at one end for use by maintenance-of-way forces or to temporarily store malfunctioning equipment. Passing tracks should be located approximately every 30 miles to minimize delays between opposing trains. This study did not look at the exact locations of the passing tracks. The exact location and number of passing tracks will be based on terrain, roadway access, constructability, and a detailed operating study.

Team track: A team track is a short (1,000 feet or less) track off of a passing track that is available for use by any customer. The track can be either single or double ended. Team tracks normally have a paved area where trucks can access the freight cars, along with a loading dock for transferring machinery or pallets, and a small pit for augers to unload grain or other small, free-flowing commodities. The study assumed a team track at Caliente, Tonopah (which also would serve customers around Goldfield), and at the south end of the line between Beatty and the Amargosa Valley. As was the case of passing tracks, this study did not look at the exact locations of the team tracks. The exact location and number of team tracks will be based on terrain, roadway access, constructability, and a detailed operating study.

Industry spur: An industry spur is a track off either the main line or a passing track that is devoted to a single customer. Industry spurs are normally single ended and vary in size and length depending on the needs of the individual customer. The supporting infrastructure also varies with the type and amount of commodity being shipped at the site. Crude oil requires loading racks with flexible pipes and steam lines to allow unloading during the winter months. Landscape rock could be loaded via a front-end loader with a level area along side the tracks for smaller shipments, to pass through loading tipples for larger amounts. Industrial spurs would be needed in the Caliente Industrial Park, near Panaca for Natural Pozzolan, Warm Springs for Farland Refining, north of Beatty for D&H Mining. This study did not define exact locations for industry spurs, which would be based on terrain, roadway access, constructability, and a detailed operating study.

Branch line: A branch line is a rail line off of the main line that serves one or more shippers. Branch lines typically are longer than industrial spurs. The study identified the need for the Beatty Branch, a 24-mile line running from Beatty south to the Amargosa Valley to serve US Ecology, Cind-R-Lite and Ponderosa Dairy. This study did not look at a precise alignment for this branch.

Loading/unloading loop: A loading/unloading loop is a track off of the main line or a passing track that is used for the loading or unloading of unit trains⁵. The infrastructure on a loading/unloading loop must be of sufficient size to load/unload the train within 72 hours or less. This type of facility would be required if the Dry Lake Valley power plant is constructed, and might also be necessary to support the 'High' demand estimates for Natural Pozzolan, D&H Mining, US Ecology and Cind-R-Lite.

This analysis does not include cost calculations for improvements to support commercial freight service on Nevada Rail. The cost requirements would be the subject of a more detailed analysis. Funding sources would be discussed at that time. Conceivably, federal sources could be used to build a branch line, like the assumed Beatty Branch, with commercial operations supporting the ongoing maintenance needs of the branch.

3.4 Passenger operations

County officials were queried regarding the viability of the Nevada Rail system to integrate with local needs and expectations for mass transit between rural communities along the corridor. Conversations with local officials indicated that the concept was included in this study to ensure that all potential use options are considered. The study team's efforts were based on the assumption that the line was in place, and that DOE will permit civilian passenger service along the route. What follows is a brief discussion of the challenges and benefits of passenger service along the Caliente Corridor, including capital and operating costs, ridership and subsidy requirements. Findings reflect the experience of a number of passenger rail feasibility studies over the past years for clients across the United States.

3.4.1 Intercity rail

This analysis considers the ridership and costs of implementing an intercity passenger rail service operating between Beatty, Goldfield, Tonopah and Caliente – a distance of approximately 300 miles. The service would operate three round trips per day. At an average speed of 50 mph, the trip would take six hours one way. The discussion that follows considers the ridership, revenue and costs of this service.

5 A "Unit Train" is a train that shuttles between a single shipper (such as a mine) and receiver (such as a power plant). The elimination of intermediate terminals and switching provides the railroad with significant operating savings. However, the train must be of sufficient size (normally 60 cars or more) to realize the savings.

Ridership

Passenger rail ridership is normally estimated as a percentage of the travel market. In heavily developed corridors, with significant traffic, commuter rail with a high service level of multiple trains operating during peak work hours over distances of 20 to 80 miles can attract between 5 and 9 percent of the market. Intercity rail, with fewer frequencies traveling longer distances, typically earns far less a share of the travel market. Nationwide, passenger rail attracts less than 1 percent of the market.

As noted, a key factor in determining ridership is the number of trains a day, or headways. A service with one train a day is not viable in today's travel market, simply because it does not provide enough flexibility for riders to make it an attractive option. A reasonable minimum number of daily trains in each direction to provide a corridor service is three – basically, a morning, mid-day and evening schedule of service. To provide three departures a day, a fleet of at least eight self-powered vehicles would be required. This assumes that a train set makes a single one-way trip a day, with a spare sets for routine maintenance cycles. Even such a service level, which is comparable to Amtrak/Caltran's sponsored San Joaquin service between Oakland/Sacramento and Fresno (with distances that are similar to a Beatty-Caliente passenger service), would be unlikely to attract more than a handful of riders per day.

A review of Journey to Work data compiled from the U.S. Census for 2000 indicates that there are 20 work trips from the general Tonopah area to the general Beatty area, and 4 work trips from the general Caliente area and the general Beatty area per day. This calculates to 24 home-to-work round trips or 48 one-way trips per day. This study assumes that these trips would occur mostly on weekdays. However, not all trips occur every weekday. For this analysis, 80 percent, or 38 trips are assumed to occur every weekday. Assuming at best a 1 percent mode share, there is less than 1 work trip per day could be attracted to an intercity passenger rail service between Beatty and Caliente. While the data above does not include leisure, student, mid-day or weekend travel, it is unlikely that these markets could significant boost ridership, which for this analysis is considered statistically insignificant.

Capital costs

Capital costs for the service will be for self-propelled Diesel Multiple Unit (DMU) train sets, stations, and a support facility in Tonopah. DMU train sets are assumed, as they are more cost effective than traditional locomotive-hauled train sets in light passenger density corridors. Station costs include a platform, parking, passenger shelter, and a station track allowing trains to 'layover' (be stored), as required (depending on schedules, some trains may layover overnight at the ends of the line at Beatty and Caliente). The station costs do not include the construction costs for access from Beatty, Goldfield and Tonopah town centers. Depending on the alignment finally

selected, the centers of these communities would be from about 3 to 10 miles from the rail line. The support facility in Tonopah would perform fueling and cleaning, running maintenance, major overhauls, and the federally mandated inspections of the rolling stock. These capital costs total to \$54 million, as summarized in Table 4.

Table 4: Capital Costs for Passenger Service

Item	Cost Each	Number Required	Total Cost
Train Set ⁶	\$ 4,500,000	8	\$ 36,000,000
Stations ⁷	\$ 1,500,000	4	\$ 6,000,000
Maintenance and Storage Facility ⁸	\$ 12,000,000	1	\$ 12,000,000
Total Estimated Capital Costs:			\$ 54,000,000

Operating costs

To estimate costs, this analysis looked to unit costs experienced by passenger rail operations and made adjustments as necessary to fit the profit of a passenger service operating on between Beatty and Caliente.

The Metrolink commuter rail system in Los Angeles pays about \$41 per train mile for its operations on its lines. This figure includes crew expenses, maintenance of way, maintenance of equipment, insurance, and administrative costs. When considering a Beatty-Caliente passenger service, the \$40 per train mile figure can be discounted, as insurance liability costs (a function of ridership) would be minimal and maintenance way expenses of the rail line will be the responsibility of the DOE. Estimated new operating costs appear in Table 5. For this analysis, a \$25 per train mile operating cost is assumed.

⁶ A train set is defined as a two car Diesel Multiple Unit (DMU) train, with capacity for approximately 120 riders.

⁷ Caliente, Tonopah, Goldfield and Beatty. Assumes 200' platform, parking, restrooms, a passenger shelter, and a station track for layovers, as needed.

⁸ Assumes a maintenance shop building capable of housing 2 train sets, with inspection pits, fueling, cleaning and running maintenance, and storage tracks.

Table 5: Operating Costs for Passenger Service

Trips Per Day	Cost Per Mile	Miles Per Day	Daily Cost	Annual Cost	Revenue ⁹	Subsidy
1	\$25	600	\$15,000	\$5,475,000	N/A	\$5,475,000
2	\$25	1,200	\$30,000	\$10,950,000	N/A	\$10,950,000
3	\$25	1,800	\$45,000	\$16,425,000	N/A	\$16,425,000

Thus the total subsidy for three daily round trips between Beatty and Caliente would be \$16.4 million per year, with negligible offsetting revenue.

3.4.2 Tourist rail option

The other potential service option is to create a historical or tourist-oriented service along a small portion of the route. Successful tourist operations require a large population base to draw from and proximity to an interstate highway, and they are complements to other tourist activities in the area. Few tourist operations are strongly profitable, and most rely heavily on a volunteer labor force to survive. A comparison may be made to the Nevada Northern Railroad in Ely. Starting with a donation of a complete shop and extensive collection of historic equipment, and a larger population base, it relies heavily on volunteers, requires an annual subsidy and constant fund raising to survive. Any tourist operation along the Caliente Corridor would face developing its own shop facilities, equipment fleet, and volunteer pool. Overcoming these challenges does not appear to be feasible at this time.

4. ECONOMIC BENEFITS

In general, investment in a freight transportation system generates a series of economic benefits to the region it serves:

- **Direct Economic Effects** accrue from immediate cost reductions to the businesses that use the transportation system, and the operation of the railroad itself. Reduced transportation costs enable existing businesses to increase production, operations, employment, sales, and development, and may attract new businesses to the region.
- **Indirect Economic Effects** are those that accrue to suppliers of services, goods and materials obtained by the businesses that expand or relocate in response to the benefits of the transportation investment.

⁹ Ridership (and thus revenue) was statically non-existent.

- **Induced Economic Effects** encompass increased spending by the employees of expanded and relocated businesses for basic goods and services.

These benefits accrue in the event of shared use of the Nevada Rail facility to serve local freight customers, whether they are shipping their own freight or are shipping goods and materials to support the repository. Additional benefits specific to freight rail service arise from the reduction of highway traffic due to the diversion of freights from truck to rail. These benefits include reduced congestion, shorter travel time, and improved highway safety. The benefits are clearly of importance to the counties of Nye, Lincoln and Esmeralda and others through which truck-borne HLW and SNF shipments would pass on Nevada highways.

4.1 Direct economic effect: savings to local shippers

Shared use of the new Nevada Rail line may enable local shippers to extend their reach into markets in and beyond Nevada, and to take advantage of economies of scale as their unit production and operating costs decrease. Operated efficiently and responsively, the railroad may enable shippers to plan their production and shipment more accurately, and to reduce inventory costs. Additional economic benefit will result from new businesses locating in the vicinity of the rail line, and the new jobs they create. The availability of efficient freight transportation may enhance the development of planned industrial parks in Caliente, Tonopah and Amargosa Valley.

The principal direct economic benefits of the Nevada Rail line estimated by this study are those accruing to existing and potential new or revived businesses located near the rail line. Of these, some businesses would be able to realize transportation cost savings by diverting all of their shipments from truck to rail. Other businesses, such as precious metal mining operations, process raw material on site and are less likely to ship raw product (ore) via rail.

Given the volumes of freight estimated from on-line shippers in section 3.1.2, a first-order estimate of the immediate economic benefit of the Nevada Rail line to contiguous industries may be calculated, using benchmark transportation cost data. The American Association of State Highway and Transportation Officials, in its 2002 "Freight Rail Bottom Line Report" applied average costs per ton-mile from the year 2000 for shipment of all commodities via freight rail and via trucking, to demonstrate the value of rail system investment to shippers of all commodities, nationwide. The AASHTO study valued the cost of truck shipment at \$0.080 per ton-mile, and rail shipment at \$0.024 per ton-mile. These generalized costs are used to assess the value of shipments of all commodities from industries that would be served by the Nevada Rail line in the Caliente Corridor.

The industries identified in section 3.1 currently ship or receive commodities via truck that could be shipped by rail. The shipments estimated in section 3.1 represent volumes of freight that would be diverted from shipment by truck to rail. Assuming that shipments associated with each of the industries identified in section 3.1.2 travel a minimum of 500 miles, over both Nevada Rail and connecting commercial railroads, the resultant proportionate rail and trucking costs may be estimated, and proportionate annual shipping cost savings may be derived, as shown in Table 6.

Table 6: Estimated Annual Savings to Nevada Rail Freight Shippers

		Freight Demand Scenario		
		Low	Mid-Range	High
Annual Shipments	(Tons)	659,565	1,029,347	3,478,970
Assumed Minimum Shipping Distance	(Miles)	500	500	500
Truck Shipping Cost / Ton-Mile	\$0.080	\$ 26,382,600	\$ 41,173,880	\$ 139,158,800
Rail Shipping Cost / Ton-Mile	\$0.024	\$ 7,914,780	\$ 12,352,164	\$ 41,747,640
Estimated Annual Savings:	70%	\$ 18,467,820	\$ 28,821,716	\$ 97,411,160

4.2 Direct economic effect: new employment

The new employment attributable to the implementation of the railroad would include the jobs associated with its operation and maintenance, and the jobs created by the expansion of existing businesses served by the railroad, and by the location or start-up of new businesses to be served by the railroad.

4.2.1 New employment associated with commercial freight railroad operations

As OCRWM has not yet defined an operating plan for the Nevada Rail, the employment benefit that would accrue to Nye, Lincoln and Esmeralda Counties from rail operations for the transportation of HLW and SNF cannot be estimated with any certainty. These operations may generate jobs within the counties, but may also be procured in such a manner that operating crews and staff are resident elsewhere. It is possible, however, to estimate the number of jobs associated with the operation of commercial freight trains in a shared-use scenario, assuming that commercial freight is operated and managed discretely from the HLW and SNF traffic.

Appendix 2 illustrates estimates of employment and compensation sized to the freight traffic scenarios forecast for the industries that would be served by the railroad. Table 7 summarizes the employment and compensation estimated for each scenario.

(This space intentionally left blank.)

Table 7: Estimated New Railroad Employment

Low Service Scenario (Wednesday and Saturday Service)				
Railroad Occupation	FTE	Annual Wage	40% Benefit	Annual Compensation
General Manager	1	\$ 80,000	\$ 32,000	\$ 112,000
Manager Operating Practices	1	\$ 60,000	\$ 24,000	\$ 84,000
Accounting Clerk	1	\$ 30,000	\$ 12,000	\$ 42,000
Train Crew (Engineer and Conductor)	3	\$ 55,000	\$ 22,000	\$ 231,000
Locomotive Electrician	1	\$ 35,000	\$ 14,000	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	\$ 14,000	\$ 49,000
Total Employment:	8	Total Compensation:		\$ 567,000

Mid-Range Service Scenario (Monday, Wednesday and Friday Service)				
Railroad Occupation	FTE	Annual Wage	40% Benefit	Annual Compensation
General Manager	1	\$ 80,000	\$ 32,000	\$ 112,000
Manager Operating Practices	1	\$ 60,000	\$ 24,000	\$ 84,000
Accounting Clerk	1	\$ 30,000	\$ 12,000	\$ 42,000
Train Crew (Engineer and Conductor)	5	\$ 55,000	\$ 22,000	\$ 385,000
Locomotive Electrician	1	\$ 35,000	\$ 14,000	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	\$ 14,000	\$ 49,000
Total Employment:	10	Total Compensation:		\$ 721,000

High Service Scenario (Daily Service)				
Railroad Occupation	FTE	Annual Wage	40% Benefit	Annual Compensation
General Manager	1	\$ 80,000	\$ 32,000	\$ 112,000
Manager Operating Practices	1	\$ 60,000	\$ 24,000	\$ 84,000
Accounting Clerk	1	\$ 30,000	\$ 12,000	\$ 42,000
Train Crew (Engineer and Conductor)	9	\$ 55,000	\$ 22,000	\$ 693,000
Locomotive Electrician	1	\$ 35,000	\$ 14,000	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	\$ 14,000	\$ 49,000
Total Employment:	14	Total Compensation:		\$ 1,029,000

New employment associated with freight railroad operations is estimated to range from 8 to 13 jobs, with a corresponding direct economic benefit to the three counties of \$567,000 to \$952,000.

4.2.2 New employment associated with corridor businesses

Estimated new employment associated with businesses to be served by shared use of Nevada Rail includes jobs created among existing industries and potential new or revived businesses, including those that would use team tracks in Tonopah, Amargosa Valley and Caliente.

The immediate economic benefit of the Nevada Rail line is expressed as the savings in shipping costs attributed to industries that ship more than 1,000 tons per week, and that are located near the Caliente Corridor rail alignment. Additional benefit is attributed to industries that would ship less than 1,000 tons per week, using team tracks in Caliente, Tonopah, or the Amargosa Valley. The overall estimated savings in shipping costs is allocated as a function of the proportionate tonnage shipped or received by each county, as shown in Table 8. This distribution varies among the low, mid-range and high scenarios, particularly as a result of including the coal-fired Dry Lake Valléy Power Plant in the 'high' scenario.

Table 8: Distribution of Estimated Annual Savings Among Counties

County	Freight Demand Scenario					
	Low		Mid-Range		High	
Lincoln	20.0%	\$ 3,696,001	19.2%	\$ 5,543,999	70.3%	\$ 68,427,526
Nye	79.4%	\$ 14,659,819	80.2%	\$ 23,109,717	29.5%	\$ 28,759,634
Esmeralda	0.6%	\$ 112,000	0.6%	\$ 168,000	0.2%	\$ 224,000

These estimates are presented to give a sense of the order of magnitude and relative distribution of savings to local industries that shipment via Nevada Rail may enable.

These economies to local shippers can be translated into other direct economic benefits, in particular the creation of new jobs. A true input-output analysis, quantifying the effect of investment in specific industries and the resultant economic benefits, is beyond the scope of this study. However, the employment value of the projected annual transportation savings can be estimated based again on the assumed minimum shipping distance of 500 miles. If it is assumed that 60 per cent of the estimated annual transportation savings is translated directly into wages and salaries for new employment, the amounts available to support new jobs are as indicated in Table 9.

Table 9: Distribution of Estimated Annual Employment Income Among Counties

County	Freight Demand Scenario		
	Low	Mid-Range	High
Lincoln	\$ 2,217,601	\$ 3,326,399	\$ 41,056,516
Nye	\$ 8,795,891	\$ 13,865,830	\$ 17,255,780
Esmeralda	\$ 67,200	\$ 100,800	\$ 134,400

These estimated amounts to support new employment may be converted to numbers of new jobs by assessing the average annual wages paid in each of the three counties. The State of Nevada, Department of Employment, Training & Rehabilitation publishes the results of its Nevada Occupational Employment Statistics (OES) Wage survey on its web site, providing wage estimates for more than 800 occupations by area and industry (<http://detr.state.nv.us/lmi/data/wages/TOC000.htm>): Rather than determining the specific types of employment that might be generated by shared use of the railroad and their applicable wage levels, we use an average wage for all employment in each of the three counties – Nye, Lincoln and Esmeralda – weighted by the numbers of people employed in each of those county, as shown in Table 10:

Table 10: Weighted Average 2004 Wage in Three Nevada Counties

County	Average Annual Wage among All Jobs	Number Employed	Total Wages
Lincoln	\$ 19,340	1,060	\$ 20,500,400
Nye	\$ 18,730	14,320	\$ 268,213,600
Esmeralda	\$ 13,930	400	\$ 5,572,000
Total:		15,780	\$ 294,286,000

Weighted Average 2004 Annual Wage for all Three Counties: **\$ 18,649**

Source: Nevada 2004 Occupational Employment and Wages; Nevada Department of Employment, Training & Rehabilitation

If it is assumed that employees of these industries are paid an average benefit representing 40 per cent of the basic annual wage, or \$7,460, the total average annual compensation per employee is \$26,109.

Table 11 shows how dividing this calculated average annual compensation into the estimated total new employment income for each of the three counties yields an

estimate of the number of new jobs created as an effect of shared use of the Nevada Rail system. Table 11 also indicates the proportionate increase in the numbers of persons employed in each county, and in the three counties overall, over the numbers of persons employed in 2004, cited in Table 10.

Table 11: Estimated New Non-Railroad Employment

County	Freight Demand Scenario		
	Low	Mid-Range	High
Lincoln	85 (+8.0%)	127 (+12.0%)	1,573 (+148.4%)
Nye	337 (+2.4%)	531 (+3.7%)	661 (+4.6%)
Esmeralda	3 (+0.6%)	4 (+1.0%)	5 (+1.3%)
Total:	424 (+2.7%)	662 (+4.2%)	2,239 (+14.2%)

4.2.3 Aggregate new employment

Combining the new jobs and compensation estimated for railroad and non-railroad employment yields estimates of total new jobs and compensation resulting from shared use of the Nevada Rail line, as shown in Table 12.

Table 12: Total Employment and Compensation

County	Freight Demand / Service Scenario					
	Low		Mid-Range		High	
	Jobs	Compensation	Jobs	Compensation	Jobs	Compensation
Lincoln	85	\$ 2,217,601	127	\$ 3,326,399	1,573	\$ 41,056,516
Nye	337	\$ 8,795,891	531	\$ 13,865,830	661	\$ 17,255,780
Esmeralda	3	\$ 67,200	4	\$ 100,800	5	\$ 134,400
Railroad (not specific to county)	8	\$ 567,000	10	\$ 721,000	13	\$ 1,029,000
Total:	432	\$ 11,647,692	672	\$ 18,014,030	2,252	\$ 59,475,696

Total new employment among the Nye, Lincoln and Esmeralda counties as a direct effect of shared use of the Nevada Rail line is estimated to range from 432 to 2,252

jobs, with a corresponding annual economic benefit to the three counties between 11 million and 60 million dollars annually.

4.3 Indirect and induced effects

The calculation of specific indirect and induced effects accruing to each industry served by the freight railroad are beyond the scope of this study. Accurate assessment of these effects typically involves the calculation of multipliers for specific industries, which are then used to determine subsequent monetary benefits for each unit invested in that industry. Whereas national average multipliers may be used, the population density and economic activity of Nye, Lincoln and Esmeralda counties would likely be well skewed away from the national data on which such averages are based. Rather than misrepresent the actual economic potential of the railroad or impose layers of assumptions, this calculation is left to more detailed subsequent study.

4.4 Benefits of freight traffic diversion

Diverting freight traffic normally carried by trucks to trains results in benefits to highway system users, particularly in the reduction of congestion, travel time and accidents.

To calculate the diversion of freight volumes from truck to rail, the freight demand scenarios in Appendix 1 are applied to the estimated proportions of freight currently shipped via truck that would be diverted to rail. Assuming an average weight of 20 tons per truckload across all commodities, the annual freight transportation demand of the subject industries is converted to truckloads, and doubled to include both loaded and unloaded truck trips. Applying the diversion factors yields the numbers of trucks that would no longer use the highways, corresponding to the low, mid-range and high freight demand scenarios depicted in Appendix 1. These calculations are shown in Appendix 3, and summarized in Table 13.

Table 13: Truckloads Diverted to Rail

Interval	Freight Demand Scenario		
	Low	Mid-Range	High *
Daily	158	204	311
Weekly	954	1,276	1,934
Monthly	4,136	5,529	8,382
Annually	49,631	79,197	107,763

* 'High' scenario does not include Dry Lake Valley coal-fired power plant (Lincoln County).

Calculating reductions in projected highway congestion, travel time and accident rates is the subject of more detailed assessment than the scope of this study allows. Instead, the volumes of freight traffic diverted from truck to rail may be compared with the volumes of truck traffic generated by corridor industries in the absence of the option to ship freight via the Nevada Rail line. This comparison yields a sense of the significant reductions in the probabilities of delay, congestion and accidents attributable to the presence of heavy trucks on Nevada highways, as shown in Table 14.

Table 14: Proportionate Reduction in Delay, Congestion and Accidents Related to Heavy Trucks

Interval	Freight Demand Scenario		
	Low	Mid-Range	High *
Total Truck Trips	65,957	102,935	139,913
Diverted Truck Trips	49,631	79,197	107,763
% Reduction	75%	74%	77%

* 'High' scenario does not include Dry Lake Valley coal-fired power plant (Lincoln County).

Because of the accompanying increase in rail traffic, there is a corresponding increase in the probability of delay and accident on the rail line. Table 15 compares national average accident rates for freight shipment via truck with those for the Union Pacific and Burlington Northern Santa Fe railroads. These data illustrate that the accident rate per million ton-miles for rail is significantly lower than those for shipment via truck.

Table 15: Comparison of Accident Rates for Freight Shipment via Truck and Rail

Shipment Mode	Accidents Per Ton-Miles of Rural Travel		% Improvement for Rail	
	Fatality Rates	Injury Rates	Fatality Rates	Injury Rates
Rail	0.0001	0.002	---	---
Truck: Rural Interstate	0.0007	0.0040	- 86%	- 50%
Truck: Other Rural Arterial	0.0027	0.0157	- 96%	- 87%
Truck: Other Rural Road	0.0020	0.0118	- 95%	- 83%

Source: State of Washington Department of Transportation – Benefits of Freight Rail (2001). The figures cited above are national statistics.

5. OTHER OPPORTUNITIES

Construction and operation of Nevada Rail may offer substantial benefits to the counties of Nye, Lincoln and Esmeralda beyond those of the transportation capacity it offers local shippers. In particular, the business case for the rail line is the Federal government's mandate to safely ship SNF and HLW to Yucca Mountain over a period of 24 years. The federal government will be funding the operation of this service and maintenance of the railroad, whether there is shared use by local freight or not. The affected units of Nevada state and local government should derive as much benefit from this business case as they can. Greater involvement in DOE's process of project definition, specification and procurement may enable the three counties, as well as other counties and the State of Nevada, to contribute to decisions that are key to their economies. While more discussion with OCRWM is required to clearly articulate their process and the potential for local involvement, this analysis suggests areas in which the counties may pursue greater participation and derive greater economic benefit.

5.1 OCRWM Nevada Rail procurement process

The Office of Civilian Radioactive Waste Management follows a prescribed process in defining and implementing large procurements. For the transportation of SNF and HLW to Yucca Mountain, these acquisitions include:

- The Nevada Rail line, from the interchange point with the Union Pacific main line to the Geologic Repository;
- The facilities for maintenance of OCRWM rolling stock and the Nevada Rail line;
- The dedicated rolling stock which will transport the SNF and HLW from their temporary storage sites over commercial railroads and Nevada Rail;
- Transportation services from temporary storage sites to the Geologic Repository, either continuously or with a transfer from commercial railroads and Nevada Rail; and
- Maintenance and management of the Nevada Rail line.

While these components of the OCRWM transportation system have been studied and discussed at length, DOE has not openly articulated their acquisition strategy for any of them. OCRWM has defined a time line and critical path, based on the assumption that shipment of SNF and HLW will start in 2010. Still, the transportation system implementation plan requires strategies for all these elements, and perhaps more, including definition of DOE's own ongoing role in the operation and maintenance of the rail line.

This analysis suggests that the counties of Nye, Lincoln and Esmeralda jointly assess the total OCRWM transportation program, and identify decisions in which the counties jointly have a stake or the opportunity for economic benefit. These key DOE decisions include, but are not limited to:

- Alternative alignment selection,
- Operating plan (both dedicated HLW/SNF trains and local freight),
- Safety and Security plans,
- Locations of passing sidings,
- Locations of spurs,
- Function and configuration of interchange and yard facilities at Caliente,
- Function and configuration of facilities to maintain all transportation infrastructure/equipment other than HLW/SNF casks,
- Relationship of Nevada rail procurement/operations with DOE national transportation/procurement strategy,
- Plan for operating, maintaining and managing the Nevada Rail line for HLW and SNF shipments,
- Construction and activation planning.

Once these decisions are identified, the counties together could engage the DOE directly with the goal of maximizing the consequent opportunities for local business, residents, and workers.

5.1.1 Purpose and need for rail line

The OCRWM is engaged in a project-specific EIS for the Nevada Rail line, within the Caliente corridor. The EIS process will help the OCRWM define the preferred specific alignments in the corridor for construction. An essential part of the EIS is articulation of a statement of purpose and need for the railroad. Criteria and weighting factors will be based on the statement of purpose and need, and decisions will be analyzed in their context.

Economic benefit from Nevada Rail can be maximized for affected units of local and State government only if their interests are incorporated in the purpose and need for the system. Otherwise, the rail line may be configured, built and operated to optimally transport HLW and SNF, but not to benefit local economies. The involvement of the three counties in OCRWM's definition of the purpose and need for Nevada Rail will enable them to incorporate their interests and influence subsequent decisions.

5.1.2 Local business preferences

In addition to the potential benefits of freight transportation capacity offered by the railroad, there are likely numerous opportunities for participation by local businesses in the line's planning, construction operation and maintenance. Line grading is one example. Housing may be another. Although these opportunities have not been researched by BSC (see Section 2), it is reasonable to assume that they exist. A policy to maximize the opportunities for existing and new local businesses should be articulated in DOE's acquisition plans, project specifications, and proposal evaluation procedures.

The three counties should work with DOE to define all support functions for Geologic Repository and transportation that represent commercial/institutional opportunities for the affected units of local and State government, including maintenance, administration, planning, material and service supply, safety and security, emergency response, communications, and utilities.

The three counties should further work with DOE and the General Services Administration to define procurement processes and selection criteria that maximize opportunity for local businesses to benefit from construction and operation of Nevada Rail.

5.2 Line ownership

To date, determinations regarding ownership and operational responsibility for Nevada Rail have resided with DOE, resulting in assumptions and scenarios that involve DOE and commercial suppliers, without considering roles for State and local authorities. The three counties, as well as other counties and the State of Nevada, may be able to realize significant benefit via an active role in ownership and operations, consistent with state and federal statutes. Such roles may further enable DOE to reduce their responsibility, staffing and cost for stewardship and oversight of the rail line.

The three counties should define and assess DOE procurement options that will enable affected units of local and State government to participate as more than recipients of ancillary benefits from Nevada Rail, including:

- State ownership of the rail line;
- Joint county (JPA¹⁰/state entity) ownership;
- Creation of new public entities for operation (port authority, special-purpose corporation, public-private partnership);

¹⁰ Joint Powers Authority, also known as an Interlocal agreement.

- Determination of procurement strategy - DB-M¹¹, DBOM¹², etc.
- Determination of operating entity - contracted; concessioned to state/joint counties; state/joint counties railroad; belt railroad/transit agency models; etc.

The fundamental assumption of this activity is that the Federal government is going to finance transport of HLW and SNF over the next 24 years. This assessment should find ways to direct as much of the federal investment as possible into the local economy.

It is worth mentioning that a commercial freight rail operation on the line implies a common carrier obligation specified by federal law. The obligation requires the freight carrier to provide transportation services on a non-discriminatory basis to all shippers willing and capable of paying the freight rates. The obligation will conceivably outlive the HLW and SNF shipments. When this happens, the full burden of covering maintenance of way expenses will fall to the line's owner (this analysis assumes that the maintenance costs of the line to that point will be paid by the Federal government and the HLW / SNF shippers). This is to say that the owner will inherit the full burden of the common carrier obligation.

If line revenues from the remaining shippers are insufficient to cover the maintenance of way costs, the owner may seek to increase rates. If the owner cannot do this, it can seek permission from the U.S. Surface Transportation Board to discontinue service and eventually abandon the line. If Nye, Esmeralda, and Lincoln Counties were to seek ownership of the line, they should investigate further the responsibilities attendant with assumption of the common carrier obligation.

One ownership strategy might be for the counties to start planning to draw new rail shippers to the rail line by means of an economic development program aimed at both increasing employment and the line's total revenue base. With increased freight rail revenues, the absorption of the future maintenance of way costs in a post HLW / SNF shipment world would become less potentially challenging.

5.3 Operations

To assure that benefits to local businesses and economies are maximized, the three counties should work directly with DOE to define a shared-use operating plan, including location and configuration of sidings and spurs; fleet sizing; type and amount of motive power; train scheduling, train control, signaling and communication, and operational integration between HLW/SNF and commercial freight.

¹¹ Design, Build and Maintain

¹² Design, Build, Operate and Maintain

The operational assessment should further assess:

- Interim operating strategies in the event Nevada Rail is not completed and commissioned in time to initiate shipments to the repository;
- Means in which the Nevada Rail line may be employed to help accelerate construction of the repository, the railroad, or other installations; and
- Strategies for response and recovery in the event of service interruptions, system failure, natural disasters, etc.

5.4 Alternative institutional models

The existing relationships among the three counties may not enable them to make best use of their resources and interests in dealing with the DOE. Greater cooperation, alignment and institutional weight may help the counties in future participation with the DOE and with the State of Nevada. Embedded in such a structure must be an algorithm for distribution of costs/efforts/benefits. We suggest that the three counties discuss the advantages and disadvantages of greater institutional affiliation, and if appropriate, assess and decide on an organization of legitimate legal standing to represent their joint interests. The three counties should assess such alternative institutional forms, including a state legislated agency, a Joint Powers Authority (Interlocal agreement), among others.

6. CONCLUSION

The foregoing analysis has responded to the items specified in the Scope of Work for this study.

6.1 Construction benefits

The analysis summarized work now underway by DOE consultants pertaining to the construction of the line. BSC, the prime planning and design contractor for the OCRWM, has retained consultants to identify deposits and sources for rail line ballast, water sources, and commercial sources for rail, ties, tie plates and other manufactured materials for building rail track. These consultants' efforts are in progress, and as yet have not yielded any information applicable to this study.

BSC has not identified a workforce for the construction of Nevada Rail, citing that workforce recruitment will be the responsibility of the contractor assigned to build the line. BSC expects that there would be few firms or individuals in the counties with skill sets specific to rail line construction and even fewer who have actual rail line construction experience.

BSC likewise has not investigated sources for construction machinery in the counties, assuming that construction contractors will bring their own heavy machinery with them to the construction site. BSC estimates that opportunities for local machinery vendors are minimal. This analysis does believe, however, that opportunities for the grading of the line may exist for local contractors.

Notwithstanding the preliminary findings of DOE's contractors regarding rail line construction, the counties of Nye, Lincoln and Esmeralda should work with DOE to be given first consideration for the provision of materials and services. As the site of the Caliente Corridor, the counties should be completely informed on the commercial opportunities related to its construction and be given every opportunity and sufficient lead time to develop economically feasible responses.

6.2 Potential shared use

Elected officials, agency staff, development authority staff, and individual business operators throughout the corridor expressed enthusiasm for the shared use of the Nevada Rail line for commercial freight transportation. Four communities (Caliente, Tonopah, Goldfield and Amargosa Valley) are planning business parks and hope that direct rail access can enhance their parks' attractiveness to new businesses. Numerous industries contiguous to the rail line could feasibly ship freight via rail if the option was available.

Beyond the business parks, this analysis quantified the commercial traffic potential that could be attracted to or induced by commercial rail operation on the Caliente Corridor. The study assumed a range of rail traffic scenarios, with a mid-range showing 1 million tons, or about 10,000 rail carloads of traffic per year, assuming that the rates for rail service were competitive with trucking from Las Vegas.

The study did not find a compelling reason for initiation of intercity or commuter passenger rail service on the Caliente Corridor, nor did it find potential for a tourist railroad use of the line.

6.3 Economic benefits

Based on the freight rail traffic analysis, the analysis indicates that there will be sizable transportation cost savings to shippers in Nye, Esmeralda, and Lincoln Counties related to the commercial use of the Nevada Rail line. These savings will enable these industries to make investments to increase productivity, expand into new markets, and increase employment. The commercial railroad itself will be the source of new jobs. The fact that the rail line will be operated for at least 24 years underscores the fact that it should provide economic benefit to the affected counties and the state.

It is logical to anticipate that the new employment directly attributable to the commercial freight rail operation will lead to still other indirect and induced effects. Jobs at a railroad headquarters in Tonopah, for example, will mean more groceries purchased at local supermarkets. New employment at industries throughout the corridor will generate economic benefit for local service and retail businesses. Furthermore, diversions of freight now traveling by truck to rail will benefit the counties and the State of Nevada by reducing delays, congestion, and accidents on the highway system.

6.4 Other Opportunities

There are many areas pertaining to the implementation and operation of Nevada Rail that provide opportunities for Nye, Lincoln, and Esmeralda Counties to benefit. However, freight operations to serve local industries need to be defined among the purposes of the line, or these opportunities may be denied or overlooked. As OCRWM engages in alternative alignment selection, construction planning, and rail operations planning, the three counties need to be recognized as stakeholders, and have a voice in decisions that will affect their economies. To reap the greatest reward, the counties would serve themselves well by working together to identify where their opportunities and benefits lie and pursuing them directly with DOE.

This analysis has shown that even for a low level of commercial freight activity on the rail line, there are substantial benefits to shippers and residents in all three counties. Consequently, it seems reasonable that the counties involve themselves directly with DOE to ensure that a viable commercial freight rail operation, contributing to the bottom line of local shippers and increasing local payrolls, can be established.

Appendix 1
Existing Businesses Served by Caliente Corridor
Estimated Rail Freight Shipments

Estimated Rail Freight Shipments by Existing Businesses Served by Caliente Corridor

Low Estimate

Customer	Commodity	Estimated Tonnage				Estimated Carloads				Originating Station	Destination Station
		Day	Week	Month	Year	Day	Week	Month	Year		
Caliente Team Track	General Carloads	88	615	2,667	32,000	1	6	27	320	500 miles +	Caliente
Tonopah Team Track	General Carloads	22	154	667	8,000	0	2	7	80	500 miles +	Tonopah
Amargosa Valley Team Track	General Carloads	22	154	667	8,000	0	2	7	80	500 miles +	Amargosa Valley
Natural Pozzolan	Concrete Additive	274	1,923	8,333	100,000	3	19	83	1,000	Pioche	USA
Cind-R-Lite	Landscape Rock	99	692	3,000	36,000	1	7	30	360	Yucca Mountain	Riverside, Ca
US Ecology	Class 1 Disposal	274	1,923	8,333	100,000	3	19	83	1,000	500 miles +	Beatty
	Reagents	7	48	208	2,500	0	0	2	25	500+	Beatty
D&H Mining	Bottled Water	99	692	3,000	36,000	1	7	30	360	Beatty	So Cal/AZ
	Landscape Rock	274	1,923	8,333	100,000	3	19	83	1,000	Beatty	So Cal/AZ
Farland Refinery Corp	Crude Oil	638	3,190	13,822	165,867	6	32	138	1,659	US/Canada	Warm Springs
	Petrochemicals	120	600	2,600	31,198	1	6	26	312	Warm Springs	USA
Ponderosa Dairy	Animal Feed	110	769	3,333	40,000	1	8	33	400	Midwest/TX	Amargosa Valley
Totals		2,027	12,683	54,963	659,565	20	127	549	6,596		

Estimated Rail Freight Shipments by Existing Businesses Served by Caliente Corridor

Mid-Range Estimate

Customer	Commodity	Estimated Tonnage				Estimated Carloads				Originating Station	Destination Station
		Day	Week	Month	Year	Day	Week	Month	Year		
Caliente Team Track	General Carloads	132	923	4,000	48,000	1	9	40	480	500 miles +	Caliente
Tonopah Team Track	General Carloads	33	231	1,000	12,000	0	2	10	120	500 miles +	Tonopah
Amargosa Valley Team Track	General Carloads	33	231	1,000	12,000	0	2	10	120	500 miles +	Amargosa Valley
Natural Pozzolan	Concrete Additive	411	2,885	12,500	150,000	4	29	125	1,500	Pioche	USA
Cind-R-Lite	Landscape Rock	148	1,038	4,500	54,000	1	10	45	540	Yucca Mountain	Riverside, Ca
US Ecology	Class 1 Disposal	411	2,885	12,500	150,000	4	29	125	1,500	500 miles +	Beatty
	Reagents	10	72	313	3,750	0	1	3	38	500+	Beatty
D&H Mining	Bottled Water	148	1,038	4,500	54,000	1	10	45	540	Beatty	So Cal/AZ
	Landscape Rock	548	3,846	16,667	200,000	5	38	167	2,000	Beatty	So Cal/AZ
Farland Refinery Corp	Crude Oil	638	3,190	13,822	248,801	6	32	138	2,488	US/Canada	Warm Springs
	Petrochemicals	120	600	2,600	46,796	1	6	26	468	Warm Springs	USA
Ponderosa Dairy	Animal Feed	137	962	4,167	50,000	1	10	42	500	Midwest/TX	Amargosa Valley
Totals		2,769	17,901	77,569	1,029,347	24	178	776	10,294		

Estimated Rail Freight Shipments by Existing Businesses Served by Caliente Corridor

High Estimate

Customer	Commodity	Estimated Tonnage				Estimated Carloads				Originating Station	Destination Station
		Day	Week	Month	Year	Day	Week	Month	Year		
Caliente Team Track	General Carloads	175	1,231	5,333	64,000	2	12	53	640	500 miles +	Caliente
Tonopah Team Track	General Carloads	44	308	1,333	16,000	0	3	13	160	500 miles +	Tonopah
Amargosa Valley Team Track	General Carloads	44	308	1,333	16,000	0	3	13	160	500 miles +	Amargosa Valley
Natural Pozzolan	Concrete Additive	822	5,769	25,000	300,000	8	58	250	3,000	Pioche	USA
Cind-R-Lite	Landscape Rock	197	1,385	6,000	72,000	2	14	60	720	Yucca Mountain	Riverside, Ca
US Ecology	Class 1 Disposal	548	3,846	16,667	200,000	5	38	167	2,000	500 miles +	Beatty
	Reagents	14	96	417	5,000	0	1	4	50	500+	Beatty
D&H Mining	Bottled Water	197	1,385	6,000	72,000	2	14	60	720	Beatty	So Cal/AZ
	Landscape Rock	548	3,846	16,667	200,000	5	38	167	2,000	Beatty	So Cal/AZ
Farland Refinery Corp	Crude Oil	1,000	5,000	21,665	331,734	10	50	217	3,317	US/Canada	Warm Springs
	Petrochemicals	240	1,200	5,200	62,395	2	12	52	624	Warm Springs	USA
Ponderosa Dairy	Animal Feed	164	1,154	5,000	60,000	2	12	50	600	Midwest/TX	Amargosa Valley
Totals		3,993	25,528	110,615	1,399,129	38	255	1,106	13,991		
Dry Lake Valley Power Plant*	Coal	4,000	20,000	86,660	2,079,840	40	200	867	20,798	Western USA	Dry Lake Valley
Totals**		7,993	45,528	197,275	3,478,969	78	455	1,973	34,790		

* Inbound coal traffic, estimated at two 110-car unit trains weekly, triples the estimated car load, and is shown separately from the remainder of the estimate.

** Loaded cars only are shown. There will be an equal amount of returning empty cars on the railroad.

Appendix 2
Commercial Railroad Employment Requirements

Commercial Railroad Employment Requirements

Wednesday and Saturday Service to Customers

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Monday	1	Tonopah	Caliente	Line Haul	1	1
Tuesday	1	Caliente	Tonopah	Line Haul	1	1
Wednesday	1	Tonopah	Tonopah	Beatty Turn	1	1
Thursday	1	Tonopah	Caliente	Line Haul	1	1
Friday	1	Caliente	Tonopah	Line Haul	1	1
Saturday	1	Tonopah	Tonopah	Beatty Turn	1	1

Occupation	FTE	Rate	Benefits Load	Annual Labor Cost
General Manager	1	\$ 80,000	0.4	\$ 112,000
Manager Operating Practices	1	\$ 60,000	0.4	\$ 84,000
Accounting Clerk	1	\$ 30,000	0.4	\$ 42,000
12 starts (6 engineer-6 conductor) a week	3	\$ 55,000	0.4	\$ 231,000
Locomotive Electrician	1	\$ 35,000	0.4	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	0.4	\$ 49,000
	8			\$ 567,000

Commercial Railroad Employment Requirements

Monday / Wednesday / Friday Service to Customers

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Monday	1	Tonopah	Caliente	Line Haul	1	1
Tuesday	1	Caliente	Tonopah	Line Haul	1	1
Wednesday	1	Tonopah	Tonopah	Beatty Turn	1	1
Thursday	1	Tonopah	Caliente	Line Haul	1	1
Friday	1	Caliente	Tonopah	Line Haul	1	1

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Monday	2	Tonopah	Tonopah	Beatty Turn	1	1
Tuesday	2	Tonopah	Caliente	Line Haul	1	1
Wednesday	2	Caliente	Tonopah	Line Haul	1	1
Thursday	2					
Friday	2	Tonopah	Tonopah	Beatty Turn	1	1

Occupation	FTE	Rate	Benefits Load	Annual Labor Cost
General Manager	1	\$ 80,000	0.4	\$ 112,000
Manager Operating Practices	1	\$ 60,000	0.4	\$ 84,000
Accounting Clerk	1	\$ 30,000	0.4	\$ 42,000
18 starts (9 engineer-9 conductor) a week	5	\$ 55,000	0.4	\$ 385,000
Locomotive Electrician	1	\$ 35,000	0.4	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	0.4	\$ 49,000
	10			\$ 721,000

Commercial Railroad Employment Requirements

Daily Service to Customers

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Sunday						
Monday	1	Tonopah	Caliente	Line Haul	1	1
Tuesday	1	Caliente	Tonopah	Line Haul	1	1
Wednesday	1	Tonopah	Caliente	Line Haul	1	1
Thursday	1	Caliente	Tonopah	Line Haul	1	1
Friday	1	Tonopah	Tonopah	Beatty Turn	1	1
Saturday						

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Sunday	2	Tonopah	Caliente	Line Haul	1	1
Monday	2	Caliente	Tonopah	Line Haul	1	1
Tuesday	2	Tonopah	Tonopah	Beatty Turn	1	1
Wednesday	2	Tonopah	Tonopah	Beatty Turn	1	1
Thursday	2	Tonopah	Tonopah	Beatty Turn	1	1
Friday						
Saturday						

Schedule	Job #	Start	Finish	Work Type	Engineer	Conductor
Sunday	3	Caliente	Tonopah	Line Haul	1	1
Monday	3	Tonopah	Tonopah	Beatty Turn	1	1
Tuesday	3	Tonopah	Caliente	Line Haul	1	1
Wednesday	3	Caliente	Tonopah	Line Haul	1	1
Thursday						
Friday						
Saturday	3	Tonopah	Caliente	Line Haul	1	1

Occupation	FTE	Rate	Benefits Load	Annual Labor Cost
General Manager	1	\$ 80,000	0.4	\$ 112,000
Manager Operating Practices	1	\$ 60,000	0.4	\$ 84,000
Accounting Clerk	1	\$ 30,000	0.4	\$ 42,000
30 starts (15 engineer-15 conductor) a week	9	\$ 55,000	0.4	\$ 693,000
Locomotive Electrician	1	\$ 35,000	0.4	\$ 49,000
Locomotive Mechanic	1	\$ 35,000	0.4	\$ 49,000
	14			\$ 1,029,000

Appendix 3
Estimated Diversion of Freight from Truck to Rail

Estimated Diversion of Freight from Truck to Rail

Low Estimate

Customer	Commodity	Annual Tonnage	Equivalent Truck Trips	% Diverted From Truck	Estimated Number of Diverted Trucks			
					Day	Week	Month	Year
Caliente Team Track	General Carloads	32,000	3,200	50%	4	31	133	1,600
Tonopah Team Track	General Carloads	8,000	800	100%	2	15	67	800
Amargosa Valley Team Track	General Carloads	8,000	800	100%	2	15	67	800
Natural Possolan	Concrete Additive	100,000	10,000	100%	27	192	833	10,000
Cind-R-Lite	Landscape Rock	36,000	3,600	50%	5	35	150	1,800
US Ecology	Class 1 Disposal	100,000	10,000	50%	14	96	417	5,000
	Reagents	2,500	250	50%	0	2	10	125
D&H Mining	Bottled Water	36,000	3,600	50%	5	35	150	1,800
	Landscape Rock	100,000	10,000	50%	14	96	417	5,000
Farland Refinery Corp	Crude Oil	165,867	16,587	100%	64	319	1,382	16,587
	Petrochemicals	31,200	3,120	100%	12	60	260	3,120
Ponderosa Dairy	Animal Feed	40,000	4,000	75%	8	58	250	3,000
Totals:		659,567	65,957		157	954	4,138	49,632

Mid-Range Estimate

Customer	Commodity	Annual Tonnage	Equivalent Truck Trips	% Diverted From Truck	Estimated Number of Diverted Trucks			
					Day	Week	Month	Year
Caliente Team Track	General Carloads	48,000	4,800	50%	7	46	200	2,400
Tonopah Team Track	General Carloads	12,000	1,200	100%	3	23	100	1,200
Amargosa Valley Team Track	General Carloads	12,000	1,200	100%	3	23	100	1,200
Natural Possolan	Concrete Additive	150,000	15,000	100%	41	288	1,250	15,000
Cind-R-Lite	Landscape Rock	54,000	5,400	50%	7	52	225	2,700
US Ecology	Class 1 Disposal	150,000	15,000	50%	21	144	625	7,500
	Reagents	3,750	375	50%	1	4	16	188
D&H Mining	Bottled Water	54,000	5,400	50%	7	52	225	2,700
	Landscape Rock	200,000	20,000	50%	27	192	833	10,000
Farland Refinery Corp	Crude Oil	248,801	24,880	100%	64	319	1,382	24,880
	Petrochemicals	46,800	4,680	100%	12	60	260	4,680
Ponderosa Dairy	Animal Feed	50,000	5,000	75%	10	72	313	3,750
Totals:		1,029,351	102,935		203	1,275	5,529	76,198

High Estimate

Customer	Commodity	Annual Tonnage	Equivalent Truck Trips	% Diverted From Truck	Estimated Number of Diverted Trucks			
					Day	Week	Month	Year
Caliente Team Track	General Carloads	64,000	6,400	50%	9	62	267	3,200
Tonopah Team Track	General Carloads	16,000	1,600	100%	4	31	133	1,600
Amargosa Valley Team Track	General Carloads	16,000	1,600	100%	4	31	133	1,600
Natural Possolan	Concrete Additive	300,000	30,000	100%	82	577	2,500	30,000
Cind-R-Lite	Landscape Rock	72,000	7,200	50%	10	69	300	3,600
US Ecology	Class 1 Disposal	200,000	20,000	50%	27	192	833	10,000
	Reagents	5,000	500	50%	1	5	21	250
D&H Mining	Bottled Water	72,000	7,200	50%	10	69	300	3,600
	Landscape Rock	200,000	20,000	50%	27	192	833	10,000
Farland Refinery Corp	Crude Oil	331,734	33,173	100%	100	500	2,167	33,173
	Petrochemicals	62,395	6,240	100%	24	120	520	6,240
Ponderosa Dairy	Animal Feed	60,000	6,000	75%	12	87	375	4,500
Totals:		1,399,130	139,913		310	1,935	8,382	107,763

Finance Docket No. 35106

EXHIBIT K

Shared Use Option: Commercial Traffic Estimates
Ang-Olson and Gallivan, 2007

Shared Use Option: Commercial Traffic Estimates

Prepared by:
Jeff Ang-Olson, ICF International
Frank Gallivan, ICF International

April 26, 2007

This document summarizes reports from two rounds of interviews conducted with potential shippers on the Caliente and Mina Alignments in 2005 and 2007.¹ It provides brief descriptions of potential shippers interviewed as well as figures for estimated demand for commercial shipments on the Alignments.

Shippers are identified as interested in using the Mina Alignment, interested in using the Caliente Alignment, or interesting in using either Alignment.

Mina Alignment Shippers

Grefco Minerals produces diatomite at a site near the intersections of Highway 360 and Highway 6 in southern Mineral County.

Milestone Minerals will supply high-end crushed marble products from the area of Luning, Nevada. The materials are mined locally from multiple extraction sites and imported to the main crushing and processing facility at Luning.

Premier Chemicals mines magnesium carbonate from a site near Gabbs, Nevada. The company has a processing facility on site, as well as facilities at several other sites nationwide, where they produce other magnesium compounds.

Peninsula Floors is a wholesale residential flooring distributor with nine warehouse locations in the western and southwestern US. The company is headquartered in Livermore, California. They are in the process of opening a new facility in Hawthorne, Nevada that will expand the overall business. This new facility will be the largest warehouse and will act as a distribution hub for nine smaller warehouses in Nevada, California, and Arizona.

Tri State Motors is a nationwide carrier of hazardous and secured materials. The company plans to open a new terminal facility at Hawthorne on 1100 acres that border the Hawthorne Army Depot and US Highway 95. This facility will be used to transload shipments bound for Nevada and other states nearby.

Western Central Petroleum is a fuel distribution company located in Hawthorne, Nevada. Western Central purchases gasoline, heating oil, and kerosene in regional markets and distributes it locally.

¹ ICF Consulting, "RA EIS Shared Use Alternative: Summary of AGEISS Team Interview Findings". August 4, 2005." ; ICF International, "Supplemental Rail Corridor and Rail Alignment EIS (SRCRA EIS) Shared Use Option: Mina Alignment Addendum, Summary of PHE Team Interview Findings." April 18, 2007.

ST Modular is a manufacturer of modular units such as offices, housing, motels, and worker camps. The company has a facility in Bellingham, Washington and is currently opening a new location in Hawthorne.

Nevada Waste Group, located in Reno, has plans to haul municipal waste to a landfill at the old Rawhide mine, east of the Walker River Paiute Reservation.

Caliente Alignment Shippers

Farland Refinery Corp is currently operating the Eagle Springs oil refinery facility, located approximately 100 miles east of Tonopah, and also has a small terminal in Tonopah where it stores petroleum-related product.

Natural Pozzolan is developing a facility to mine pozzolan (a cement additive) along US 93 north of Pioche.

Wilkin Mining and Trucking operates a concrete batch plant in Caliente and a crushing plant near Panaca. There is the potential that the firm would exploit perlite in the Panaca area and ship outgoing product by rail.

Mina or Caliente Alignment Shippers

Badger Mining operates a facility in the Amargosa Valley (Ash Meadows), where it produces zeolite.

Chemetall Foote runs an operation in Silver Peak, Nevada that mines lithium carbonate.

Cind-R-Lite operates a cinder block mine along US 95, near the junction with Highway 373.

D&H Mining operates a landscape rock quarry located along the rail alignment in the Beatty Wash area.

IMV Nevada is operating a mine and processing facility in the Lathrop Wells/Amargosa Valley area. Its specialty product is sepiolite.

Nevada Western Silica Corporation owns the mining claim for a large, high grade silica deposit near Lida Junction, south of Goldfield in Esmeralda County.

US Ecology operates a hazardous waste treatment and disposal facility along US 95, approximately 14 miles southeast of Beatty.

Traffic Estimates

Based on interviews with the firms above, the PHE team estimated the amount of commercial traffic that would be generated on the Caliente and Mina Alignments by commodity type. These estimates assume a railcar payload of 100 tons. Tables 1-3 below provide the estimates. All traffic on the Caliente Alignment is expected to make the full trip to the commercial end of the line. On the Mina Alignment, a portion of the traffic is expected to travel only as far as the Schurz Bypass. The rest would travel to the commercial end of the line.

Table 1: Potential Commercial Train Shipments on the Caliente Alignment

Commodity	Tonnage		Carloads	
	Weekly	Annual	Weekly	Annual
Stone	3,580	186,000	36	1,860
Other Non-metallic Minerals	10,580	550,000	106	5,500
Petrochemicals	5,770	300,000	58	3,000
Waste Materials (non-radioactive)	1,350	70,000	13	700
Other Commodities	920	48,000	9	480
Total	22,200	#####	222	11,540

Table 2: Potential Commercial Train Shipments on the Mina Alignment (to Commercial End of Line)

Commodity	Tonnage		Carloads	
	Weekly	Annual	Weekly	Annual
Stone	18,580	966,000	186	9,660
Other Non-metallic Minerals	5,310	276,000	53	2,760
Petrochemicals	260	14,000	3	140
Waste Materials (non-radioactive)	1,350	70,000	13	700
Other Commodities	5,580	290,000	56	2,900
Total	31,080	1,616,000	311	16,160

Table 3: Potential Commercial Train Shipments on the Mina Alignment (Schurz Bypass only)

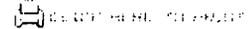
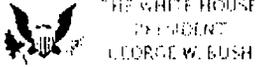
Commodity	Tonnage		Carloads	
	Weekly	Annual	Weekly	Annual
Stone	0	0	0	0
Other Non-metallic Minerals	0	0	0	0
Petrochemicals	0	0	0	0
Waste Materials (non-radioactive)	21,060	1,095,000	211	10,950
Other Commodities	0	0	0	0
Total (all traffic)	21,060	1,095,000	211	10,950

Total freight demand on the lines would be equivalent to 222 carloads a week on the Caliente Alignment. On the Mina Alignment there would be demand for 311 carloads to travel the entire line. An additional 211 cars would travel only as far as the Schurz Bypass.

Assuming trains would consist of approximately 60 cars, commercial rail service operating four times a week would be sufficient to serve the estimated demand on the Caliente Alignment. On the Mina Alignment, five trains per week would make the trip to the commercial end of the line. An additional four trains a week would travel only on the existing UP branch to Wabuska and a portion of the existing DOD line including the Schurz Bypass.

Finance Docket No. 35106

EXHIBIT L
Presidential Letter to Congress



For Immediate Release
Office of the Press Secretary
February 15, 2002

Presidential Letter to Congress

Text of a Letter from the President to the Speaker of the House of Representatives and the President of the Senate

February 15, 2002

Dear Mr. Speaker: (Dear Mr. President:)

In accordance with section 114 of the Nuclear Waste Policy Act of 1982, 42 U.S.C. 10134 (the "Act"), the Secretary of Energy has recommended approval of the Yucca Mountain site for the development at that site of a repository for the geologic disposal of spent nuclear fuel and high level nuclear waste from the Nation's defense activities. As is required by the Act, the Secretary has also submitted to me a comprehensive statement of the basis of his recommendation.

Having received the Secretary's recommendation and the comprehensive statement of the basis of it, I consider the Yucca Mountain site qualified for application for a construction authorization for a repository. Therefore, I now recommend the Yucca Mountain site for this purpose. In accordance with section 114 of the Act, I am transmitting with this recommendation to the Congress a copy of the comprehensive statement of the basis of the Secretary's recommendation prepared pursuant to the Act. The transmission of this document triggers an expedited process described in the Act. I urge the Congress to undertake any necessary legislative action on this recommendation in an expedited and bipartisan fashion.

Proceeding with the repository program is necessary to protect public safety, health, and the Nation's security because successful completion of this project would isolate in a geologic repository at a remote location highly radioactive materials now scattered throughout the Nation. In addition, the geologic repository would support our national security through disposal of nuclear waste from our defense facilities.

A deep geologic repository, such as Yucca Mountain, is important for our national security and our energy future. Nuclear energy is the second largest source of U.S. electricity generation and must remain a major component of our national energy policy in the years to come. The cost of nuclear power compares favorably with the costs of electricity generation by other sources, and nuclear power has none of the emissions associated with coal and gas power plants.

This recommendation, if it becomes effective, will permit commencement of the next rigorous stage of scientific and technical review of the repository program through formal licensing proceedings before the Nuclear Regulatory Commission. Successful completion of this program also will redeem the clear Federal legal obligation safely to dispose of commercial spent nuclear fuel that the Congress passed in 1982.

This recommendation is the culmination of two decades of intense scientific scrutiny involving application of an array of scientific and technical disciplines necessary and appropriate for this challenging undertaking. It is an undertaking that was mandated twice by the Congress when it legislated the obligations that would be redeemed by successful pursuit of the repository program. Allowing this recommendation to come into effect will enable the beginning of the next phase of intense scrutiny of the project necessary to assure the public health, safety, and security in the area of Yucca Mountain, and also to enhance the safety and security of the Nation as a whole.

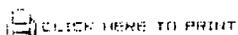
Sincerely,

GEORGE W. BUSH

###

Return to this article at:

<http://www.whitehouse.gov/news/releases/2002/02/20020215-10.html>



<http://www.whitehouse.gov/news/releases/2002/02/print/20020215-10.html>

1/25/2008

Finance Docket No. 35106

EXHIBIT M

Selected Public Comments in Support of Shared Use
From the 2004 Scoping Process

Summary

In April 2004, the Department of Energy published in the Federal Register a "Notice of Intent to Prepare an Environmental Impact Statement for the Alignment, Construction, and Operation of a Rail Line to a Geologic Repository at Yucca Mountain, Nye County, NV." 69 Fed. Reg. 18565 (April 8, 2004).

In response to the invitation for public comments through this scoping process, the Department of Energy received about 30 comments expressing an opinion regarding shared use of the rail line. All but one of those comments expressed an opinion in support of shared/commercial use of the rail line. Comments were received from stakeholders such as local governments, local residents, and business representatives.

The Department of Energy has selected five of those comments for inclusion in this Application. Comments have been included exactly as presented by stakeholders; there have been no redactions. The index below states the name of the commenter, their title, and the page number of their comment regarding shared use within their set of comments.

Index

Spencer W. Hafen Chairman Board of County Commissioners Lincoln County, Nevada	Page 2 of 2
Les W. Bradshaw Department Manager Nye County Department of Natural Resources & Federal Facilities	Page 8 of 11
Ashley Moore Councilman City of Caliente Transcript from May 5, 2004 Public Scoping Meeting Caliente, Nevada	Page 1 of 1
Bonni Smith Site Manager Community College of Southern Nevada	Page 1 of 1
Peter H. Hahn Retired Geologist & Prospector	Page 1 of 1



COUNTY COMMISSIONERS

Spencer Hafen
Tim Perkins
Tommy Rowe
Ronda Hornbeck
Hal Keaton

Board of County Commissioners
Lincoln County, Nevada

P.O. Box 685, Pioche, Nevada 89043

Telephone (775) 962-5671

Fax (775) 962-5877

RECEIVED

MAY 25 2004

040169

DISTRICT ATTORNEY

Philip H. Dunleavy

COUNTY CLERK

Corrine Hogan

May 17, 2004

Ms. Robin Sweeney
EIS Document Manager
Office of Transportation
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1551 Hillshire Drive, M/S 011
Las Vegas, Nevada 89134

RE: Comments on the Scope of the Environmental Impact Statement for the Alignment,
Construction, and Operation of a Rail Line to a Geologic Repository at Yucca Mountain,
Nye County, Nevada

Dear Ms. Sweeney:

On behalf of the Board of Lincoln County Commissioners I am pleased to provide the following comments on the scope of the environmental impact statement (EIS) for the alignment, construction, and operation of a rail line to a geologic repository at Yucca Mountain. Lincoln County commends the Department of Energy (DOE) for moving forward with the identification of the preferred mode of transportation (rail) and the preferred rail corridor (Caliente) for further evaluation. Lincoln County concurs with DOE's decision to prepare an EIS which addresses alignment alternatives, rail line construction and operation. The County encourages DOE to prepare a comprehensive EIS which is capable of supporting a final alignment decision which minimizes impacts to private property owners and users of public land including ranchers, miners, off-road vehicle enthusiasts, and hunters and trappers. Where impacts to existing private and public landowners/users can not be avoided, Lincoln County requests that the EIS identify feasible methods to mitigate such impacts, including, where other options do not exist, compensation.

Beyond consideration of land use issues, Lincoln County believes the EIS should identify and evaluate potential economic impacts/benefits of various alignment alternatives and use of Lincoln County contractors, employees and locally derived construction materials in the construction of the rail line. Examples of local resources available to support rail line

construction include local engineers and surveyors; concrete strengthening additives for use in concrete ties and bridges (pozzolan); aggregate for ballast; diesel fuel and gasoline; truck parts and tires; trucking; earthwork contractors; framing contractors; food services and lodging. In addition, the economic impact of using Lincoln County vendors and employment of local residents to maintain and operate the rail line should be evaluated within the EIS.

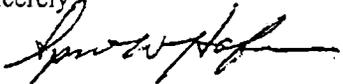
DOE is encouraged to identify and evaluate economic impacts associated with locating various transportation system and rail support facilities for communications and shipment tracking; rail line maintenance; rolling stock storage and maintenance; crew training; and DOE/contractor provided security and/or emergency first response capabilities. The EIS should provide adequate analysis of such facilities in order to support a possible DOE decision.

DOE should identify all reasonable means to maximize favorable rail and transportation system economic impacts on Lincoln County. This should include provisions which allow the shared use of the railroad for general commerce and for the transport of locally procured materials for the construction of a repository. If DOE does not complete construction of the railroad early enough to allow its use for conveying materials during the initial construction of the repository, DOE should evaluate impacts of a rail to truck inter-modal facility at Caliente for shipment of repository construction materials. Lincoln County encourages the placement of this and other pre-operational, non-radiological facilities in the County.

While the EIS for the Yucca Mountain geologic repository evaluated health risks (both radiological and non-radiological) associated with construction and operation of the Caliente rail line and related inter-modal/truck transportation systems, Lincoln County suggests that the current rail alignment EIS identify and evaluate feasible methods to mitigate said risks. Appropriate impact mitigation includes locating transportation facilities and employees in the County. Training, transportation facilities and equipment for emergency first responders, emergency medical services and emergency communications should also be provided to mitigate impacts.

Lincoln County encourages DOE to think broadly when considering the scope of possible decisions to be afforded coverage through the rail alignment EIS. The County would expect the scope of the EIS to include National Environmental Policy Act coverage of all possible rail system related decisions which might need to be made by DOE, including mitigation of impacts. In this regard DOE is encouraged to consider the feasibility of using cooperative agreements with Lincoln County and other local governments along the Caliente rail corridor as a mechanism for impact issue identification/resolution and in developing and implementing effective strategies for mitigating impacts.

Sincerely,



Spencer W. Hafén
Chairman



Nye County

040545

Department of Natural Resources & Federal Facilities

1210 E. Basin Rd. Ste. #6 • Pahrump, Nevada 89060
(775) 727-7727 • Fax (775) 727-7919

04-263-LB (L)

July 7, 2004

Ms. Robin Sweeney
EIS Document Manager
Office of National Transportation
DOE/OCRWM
1551 Hillshire Drive, MS 011
Las Vegas, NV 890134

Nye County Nevada's Comments on the U.S. Department of Energy's Notice of Intent to Prepare an Environmental Impact Statement for Alignment, Construction, and Operation of a Rail Line to a Geologic Repository at Yucca Mountain, Nevada

Dear Ms. Sweeney:

Attached please find the Nye County, Nevada's comments on the above referenced Notice of Intent that was published in the Federal Register on April 8, 2004. These comments were approved by the Nye County Board of Commissioners on June 15, 2004.

If you have any questions regarding these comments, please contact me at 775/727-7727 or e-mail lbradshaw@nyecounty.net.

Sincerely,
NYE COUNTY, NEVADA

for Les W. Bradshaw
Department Manager

LB/vt

cc: Nye County Board of Commissioners
Nye County Manager
AULGs

NYE COUNTY COMMENTS ON PROPOSED EIS ON RAIL TRANSPORTATION IN NEVADA

Introduction

Nye County has been involved in the Yucca Mountain radioactive waste disposal project since the late 1980s. The Nuclear Waste Policy Act was passed in 1982 which authorized the U. S. Department of Energy (DOE) to characterize several sites around the United States, including the Yucca Mountain site, for suitability for designation as the nation's deep geologic high-level radioactive waste (HLW) disposal site. By the late 80s it was apparent that the number of potential sites was going to be reduced. Nye County mounted a Washington DC advocacy program and vigorously worked with lawmakers shaping the Nuclear Waste Policy Amendments Act, passed in 1987. Nye County energetically supported the insertion into the bill of provisions for local government oversight programs funding.

This authorization for local government Yucca Mountain oversight programs contained in the 1987 Amendments Act survives to the present time and forms the basis for Nye County's vigorous independent scientific and socioeconomic oversight programs. Under these programs in the mid-to late 1990s Nye County carefully considered the various options and considerations DOE was evaluating regarding transporting HLW to Yucca Mountain and developed a series of policy positions and statements relative thereto. These policies are summarized below.

Nye County Policies on Rail Transportation

The Nye County Board of Commissioners has made a number of policy statements regarding transportation of nuclear waste.

Resolution 98-21, 18 August 1998

This resolution set forth Nye County policies and preferences regarding mode and route of transportation of nuclear waste to Yucca Mountain. Included in the Resolution as Exhibit A are Criteria¹ recommended to the DOE to be used in making mode and route choices. The Commission stated:

- High-level radioactive waste should not be shipped on highways in the County.^{2,3}

¹ *Nye County criteria for prospective campaigns for shipment of LLRW and SNF/HLW for storage and disposal in Nye County*, 6 pp, including 3 pages of maps. LLRW refers to Low-Level Radioactive Waste, SNF refers to Spent Nuclear Fuel, and HLW refers to High-Level Waste.

² Nye County Board of Commissioners Resolution No. 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*, 18 August 1998, p. 2.

³ Nye County Board of Commissioners Resolution No. 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*, 16 March 1999, p. 2.

- Routing of large-scale, long-term radioactive waste shipping campaigns⁴ for either LLW or HLW on US Hwy 95 between Tonopah and Mercury is unacceptable to Nye County.
 - Hwy 95 is the only public highway linking the Nye, Esmeralda and Mineral county communities of Pahrump, Amargosa Valley, Beatty, Goldfield and Hawthorne. To burden such a public highway with the daily volumes of waste shipments in either of the two shipment campaigns is inequitable to rural Nevada and unacceptable to Nye County.
- Routing of large-scale, long-term campaigns for shipment of either LLW or HLW on NV Hwy 160 through Pahrump is unacceptable to Nye County.
 - Hwy 160 is the 'main street' of Pahrump, one of the State's fastest growing communities. Campaigns for shipment of either LLW or HLW through town could cause unacceptable public safety risks, cumulative radiation effects, and property value effects.
- With a limited number of specified exceptions, shipments of HLW in Nye County should be by rail.⁵
 - Rail shipment is safer than legal-weight or heavy-haul shipping on public highways.
 - If rail is safer for cross-country shipment to Nevada, it is also safer for Nye County.
- New rail construction for use by radioactive waste shipments should be routed no closer than five miles from Nye County communities, unless by special exception approved by the Nye County Commission⁶.
 - New rail construction should avoid direct [negative] effects on existing communities.
 - New rail construction should accommodate rail access to potential industrial sites as warranted by economic development potentials.
 - The Nye County Commission should have an opportunity to approve or disapprove of specific features of proposed rail routes.
- If a rail is constructed for shipment of HLW to the Yucca Mountain area of the NTS, it should also be used for any large-scale long-term shipping campaigns of LLW to the NTS.
- Any campaign for large-scale long-term shipment of LLW or HLW in Nye County should be accompanied by a business plan for the campaign as a whole, identifying the various elements for construction, fabrication and operation, and how these elements will impact Nye County. The Nye County Commission should have a full opportunity to review and comment

⁴ Resolution 98-21, Exhibit A, p. 2, referring to DOE's ongoing low-level radioactive waste transportation and disposal program and the planned high-level waste transportation and disposal program at Yucca Mountain. Low-level waste disposal sites are located on the eastern side of the Nevada Test Site. The planned high-level radioactive waste disposal site at Yucca Mountain is on the western side.

⁵ Resolution 98-21, Exhibit A, p. 2.

⁶ Resolution 98-21, Exhibit A, p. 3.

on such a plan before the shipment campaign and at regular intervals during its implementation⁷.

- o The business plan should account for all related expenditures, procurement, fabrication and operations by DOE contractors.
- o The business plan should account for all present and projected waste inventories at the sites shipping to Yucca Mountain.

Resolution 99-03, 16 March 1999

This resolution reiterated the County's 'adamant'⁸ opposition to shipment of HLW by trucks on public highways within the County⁹. The Commission stated:

- Of all the proposed routes to Yucca Mountain, and considering the County's Route Selection Criteria set forth in Resolution 98-21 seven months earlier, the Commission designated the Caliente-Chalk Mountain route as its preferred route, without expressing a preference for a mode along this route¹⁰.
- If the Chalk Mountain route is not selected, then the Commission's preferred mode is rail along a corridor chosen so as to provide the least chance of radiological exposure to the public¹¹.
- Reiterated its position that transportation of HLW on public highways in Nye County is 'wholly unacceptable' and it opposes such transportation.
- Urged that any new rail built for transportation of HLW be available for private-sector commercial use also.

Resolution 02-22¹², 6 August 2002

In this resolution the Commission stated its intention to:

- Engage the DOE energetically and constructively on Yucca Mountain issues;
- Make recommendations on key issues, including transportation; and
- Use the Community Protection Plan¹³ as a framework for its constructive engagement with DOE and vigorously pursue the objectives regarding transportation articulated in the Plan.

Nye County, Nevada Community Protection Plan¹⁴

In The Community Protection Plan (CPP) the Commission calls for equity in transportation mode/route selection and operations in the Nye County:

- Modes, routes and operational practices in Nye County should be as inherently safe or safer than those used in the national cross-country shipping campaign¹⁵.

⁷ Resolution 98-21, Exhibit A, p. 3.

⁸ Resolution 99-03, p. 2.

⁹ Resolution 99-03, p. 2.

¹⁰ Resolution 99-03, p. 2.

¹¹ Resolution 99-03, p. 3.

¹² Nye County Board of Commissioners Resolution 2002-22, *Resolution stating the intent of Nye County to actively and constructively engage with the U.S. Department of Energy (DOE), the Administration, and Congress as the Yucca Mountain Project proceeds to final design, licensing, and implementation*, 6 August 2002.

¹³ Nye County Board of Commissioners, *Nye County, Nevada Community Protection Plan*, August 2002, 49 pp. The Plan is commonly referred to as the 'CPP'.

¹⁴

2.4

- o 'Best-practice' transportation planning should be utilized during the mode/route selection process, not a politicized selection process resulting in less protection for the destination county than in other areas of the country.¹⁶ If rail is used in the rest of the country, rail, not trucks, should be utilized in Nye County.
- o Nye County should have a special role in determining transportation operational parameters¹⁷.

Further, the Commission reiterated its policy on rail transportation:

- All HLW shipments should be by rail¹⁸;
- Rail route(s) should avoid communities and main highways;
- Routes should be selected in consultation with the Nye County Commission¹⁹;
- No HLW shipments should use the two-lane public highways in Nye County²⁰;

And, the commission renewed its call for integrating two now-separate large-volume, long-term shipping campaigns destined for the Nevada Test Site: LLW and HLW²¹.

- DOE should develop a comprehensive plan for possibly consolidating LLW and HLW shipments.

Preliminary Transportation Assessment²²

In this report the Commission set forth the following statements regarding nuclear waste transportation:

- Any newly-constructed transportation infrastructure or infrastructure improvements must improve the efficiency of the current transportation network in the County. Worse still would be that no railroad is provided at all in Nye County, leaving the county with slow-moving truck traffic on an already limited road network²³.
- It is essential that work on a rail should begin as soon as possible to provide for the transportation of construction of materials to the Yucca Mountain site, reduce traffic on an already limited road network during the construction phase and later during operations, and to be ready for acceptance of waste at Yucca Mountain in 2010.²⁴
- Nuclear waste shipments are best transported by rail²⁵. Highway transportation should be minimized²⁶.
- New rail for nuclear waste transportation should be available for third-party, private-sector commercial use²⁷.

¹⁵ CPP, p. 30.

¹⁶ CPP, p. 45.

¹⁷ CPP, p. 31.

¹⁸ CPP, p. 44.

¹⁹ CPP, p. 45.

²⁰ CPP, p. 44.

²¹ CPP, p. 45.

²² Nye County Board of Commissioners. *Preliminary Transportation Assessment Cooperative Agreement Task 1A*. January 2004. 81 pp. This report is commonly referred to as the Task 1A Report.

²³ Task 1A Report, p. 31.

²⁴ Task 1A Report, p. v, 31.

²⁵ Task 1A Report, p. 35.

²⁶ Task 1A Report, p. v.

- The alignment of the rail should be such that maximum economic benefit to the County is achieved. Consideration should be given to building spurs to facilitate maximization of economic development opportunities²⁸ and public transportation.
- A centralized Transportation Monitoring Center should be established to monitor the movement and location of nuclear waste shipments.
- A communications network should be established to ensure that emergency responders have the ability to communicate at every point along the rail route²⁹.
- If the use of roads for nuclear waste transportation is imposed, the Nye County road network should be both improved and enhanced to ensure that road safety is not compromised and environmental standards are maintained.
- Adequate medical facilities must be located within the County such that in the event of a radiologic or non-radiologic transportation incident medical care is available. A hospital in Pahrump should be the first-response hospital for such incidents along most of the rail corridor³⁰.

DOE Selection of 'Mostly Rail' Scenario

On 8 April 2004 the DOE issued its Record of Decision³¹ (ROD) expressing its preference for the 'mostly rail' scenario for transporting HLW to Yucca Mountain and selecting the 'Caliente Corridor' in which to examine possible alignments within which to construct a new rail line in Nevada. The Caliente Corridor, a strip of land approximately 1200 ft. wide defined in the Final EIS³², is 318-344 miles in length (depending on alternate segments under consideration).

DOE Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for the Caliente Rail Corridor³³

Simultaneously, the DOE declared its intentions to prepare an EIS for the alignment, construction, and operation of a new rail line within the Caliente Corridor for shipping HLW from eastern Nevada, near Caliente, NV to Yucca Mountain near Amargosa Valley, NV. The EIS will consider a strip of land 200 ft. wide within the Caliente Corridor within which to locate the actual rail bed. The DOE is interested, *inter alia*, in identifying and evaluating reasonable alternatives that would reduce or avoid known or potential adverse environmental impacts, national security activities, features having aesthetic

²⁷ Task 1A Report, p. 37.

²⁸ Task 1A Report, p. vi.

²⁹ Task 1A Report, p. 27.

³⁰ Task 1A Report, p. 26.

³¹ US Department of Energy, *Record of decision on mode of transportation and Nevada rail corridor for the disposal of spent nuclear fuel and high-level radioactive waste at Yucca Mountain, Nye County, NV*, 69 Fed. Reg. 68, pp. 18557-18565, commonly referred to as ROD.

³² US Department of Energy, *Final 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*, February 2002, DOE/EIS-0250-F, commonly referred to as Final EIS.

³³ US Department of Energy, *Notice of intent to prepare an environmental impact statement for the alignment, construction, and operation of a rail line to a geologic repository at Yucca Mountain, Nye County, NV*, 8 April 2004, 69 Fed. Reg. 68, pp. 18565-18569, commonly referred to as NOI.

values, and land-use conflicts, or alternatives that should be eliminated from detailed consideration.³⁴

Nye County Recommendations for Issues to be Considered in the EIS

Initially it is noted that the Commission has stated its preference that any rail alignment be at least five miles from any town in Nye County. The Caliente Corridor, as set forth in the Final EIS, crosses through the Town of Beatty on its northern end. Nye County urges the DOE to examine alternative alignments that would result in the final alignment being at least five miles from the town boundary.

The Commission has stated emphatically that DOE should plan its transportation campaign so as to maximize the use of rail and minimize the use of highways. Nye County urges the DOE to plan its EIS work to address the policy statements and positions of the Nye County Board of Commissioners. Specifically:

1. Highway transportation unacceptable - The Board has stated that highway transportation of HLW in Nye County is unacceptable. In particular, the Board has stated its aversion to HLW being on US Hwy 95 and State Route 160. The DOE should examine in the EIS the impacts of its plan to ship some portion of HLW destined for Yucca Mountain by highway within Nevada and specifically within Nye County. The environmental, socioeconomic, political and financial impacts of such a decision should be thoroughly examined. If, in DOE's 'mostly rail' scenario, which it is presently pursuing, a small percentage of the waste is to be trucked to Yucca Mountain, the EIS should thoroughly examine the impacts of the highway shipments and define mitigation measures.
2. All HLW should come by rail to Yucca Mountain - The Board has stated that all shipments should be by rail. The EIS should thoroughly examine the consequences of a mostly rail scenario. Nye County believes that the consequences of a 'mostly rail' scenario would be most favorable to Nye County residents. I.e., that rail transportation poses the least risk to the health and safety of County residents and presents the least environmental risk. Construction of an intermodal facility in Caliente, NV to facilitate rail-to-truck transfer and highway shipping within Nevada during the early years of operating Yucca Mountain is contrary to the Board's stated policy position supporting 'mostly rail'. As stated below (#3), the rail should be built now to be available for the first HLW shipment to Yucca Mountain.
3. Rail should be available for the construction phase - The Board has stated its preference for early rail construction, i.e., that rail should be available during the construction phase to assist with hauling construction materials and equipment to the site, thus alleviating highway traffic associated with the construction phase. Rail would then be available to haul the first waste coming to Yucca Mountain, thus obviating the need for heavy reliance on highway/truck transportation in the early years of waste receipt until a rail is available, as DOE is now planning. Nye

³⁴ NOI, p. 18566.

7

- County advocates building the rail now. The EIS work should examine the favorable outcomes for the Project if rail is available early.
4. Rail alignments should be at least five miles from towns – The Board has stated that rail lines hauling HLW to Yucca Mountain should not be closer than five miles from a town. As presently configured, the rail alignment crosses through the Town of Beatty on its north end. The EIS work should examine alternative alignments to keep the rail out of the Town. An alignment should be found that is acceptable to the Board and the Town of Beatty.
 5. New rail construction should accommodate rail access to industrial and economic development sites – The Board has advocated that new rail construction should be made available to economic and industrial development sites near the rail corridor. As warranted by economic development potentials, the DOE and Nye County should jointly plan for alignment shifts and rail 'spurs' to industrial development sites. All of the Nye County towns along the corridor have plans for industrial development sites whose potentials would be greatly enhanced by rail access. The EIS should thoroughly examine alternative alignments and spurs to accommodate development and growth planning by the towns along the corridor.
 6. The new rail should be available for private-sector commercial use – The Board has advocated that the rail should not be a single-use operation (i.e., hauling HLW to Yucca Mountain). The rail should accommodate present and future private sector efforts along and near the corridor. The DOE's EIS work should examine what existing private-sector activities along presently-planned and alternative alignments would be helped by the presence of a rail, and what potential rail users might desire to locate in Nye County if a rail were available in certain areas. DOE should consult with local governments, local businesses, local land and other property interest holders, local, state and regional development authorities, the rail operators in the region and similar entities to develop a plan for encouraging private-sector use of the Yucca Mountain railroad.
 7. Rail alignments should be jointly planned by DOE and Nye County – In considering how new rail construction in Nye County could be planned so as to minimize the risks from shipping HLW to Yucca Mountain and to maximize the economic development potential DOE should take into account town and county development and growth planning policies and documents. DOE, in its EIS work, should consult with the Board, and with town boards, to be completely cognizant of local development and growth management issues and plans, and thoroughly consider the impacts of the local governments' suggestions and alternatives.
 8. DOE should consider combining the LLW and HLW shipping campaigns to the Nevada Test Site – DOE is presently shipping large volumes of LLW to the Test Site, and is expected to continue for years to come. As with HLW, Nye County has advocated that getting the LLW off the highways would be in the best interests of the health and safety of Nye County residents. In its EIS work, DOE should consider the impacts and potential benefits of combining these two large-scale, long-term radioactive waste shipping campaigns into a single integrated rail-based shipping effort.

9. Nye County should be consulted about, and have a say regarding, DOE's plans for implementing its transportation program – The Board has expressed its desire to be fully informed about DOE plans to construct and operate a transportation program for HLW coming to Yucca Mountain. In its Community Protection Plan the Board called for equity in transportation mode and route selection, and operational parameters. DOE should, on its own initiative, seek out the views of the Board regarding operational aspects of the transportation program. In its EIS work, DOE should fully consider local government preferences regarding transportation.
10. DOE's transportation plans and infrastructure should enhance the overall transportation network in the County – The Board has stated its preference that any new transportation work, construction or infrastructure enhancements should improve the efficiency of the current transportation network in the county and not just provide for a single, dead-end route to Yucca Mountain. In its EIS work the DOE should thoroughly examine the impact of its present plans on this stated Nye County preference.
11. Adequate emergency response and public safety capacity must be established in Nye County – The Board has stated its preference that an adequate emergency response and public safety capacity (including adequate communications) must exist in the County before the first shipment arrives. The additional financial burden necessitated by Nye County's preparation for HLW shipments should be borne by DOE. The County has stated its willingness to work with the DOE in planning, implementing and operating an adequate infrastructure. The DOE's EIS work should examine local preferences for placement and operation of the necessary infrastructure and determine a long term funding mechanism for ensuring continuity over the decades.
12. Adequate medical facilities must be established in Nye County – The Board has expressed its desire that adequate medical facilities exist in the County prior to arrival of the first shipment. The County has expressed its willingness to work with DOE to marshal private-sector and governmental resources to ensure that adequate medical facilities exist in the event of a radiologic transportation incident. The DOE's EIS work should thoroughly examine the ramifications of a radiologic incident and how that incident would be handled in regard to medical facilities.
13. Adverse impacts to existing property interest holders along or near the rail alignment must be minimized – DOE should be very careful to identify property interest holders along and near the proposed rail alignments that might be adversely impacted by the land withdrawal or eventual rail construction. Persons or entities that own valid unpatented mining claims, fee simple title holders, special use permittees, rights-of-way holders, grazing rights holders, and the like should be able to continue their lawful pursuits while DOE continues with its alignment selection process. The EIS should thoroughly examine and define the impacts on these interest holders and suggest alternatives that would be favorable to the maximization of continued use and development.
14. Public access across and along potential alignments should continue – Public access along and across potential alignments should be continued during the

- period that DOE is conducting its evaluation and later during operations. The DOE's EIS work should carefully examine how access should be managed, if at all, during the evaluation and later during the operational phases. For the public to lose the ability to cross the alignment to pursue lawful activities would be a great detriment to the local economy. Activities such as ranching, minerals exploration and extraction, hunting, scientific investigations, fishing, trapping and motorized recreation are examples of activities that should not be interrupted by any phase of DOE's transportation programs. The rail should not be fenced.
15. Ability to continue development of mining claims - Present mining claim holders should be allowed to continue with the development of claims while DOE finalizes its plans for definition of the alignment. It is not fair that claimants' interests should be put on indefinite suspension while DOE makes up its mind. DOE's EIS work should thoroughly examine the impacts of its transportation programs on minerals exploration and development along and adjacent to the alignment and devise mitigation measures as appropriate after consultations with claimants.
 16. Ability to continue present ranching operations - Present ranching operations along and near the proposed alignment should be allowed to continue with no disruptions during definition, construction and operation of a rail line to Yucca Mountain. Ranchers should not be expected to bear any detriment while DOE defines the alignment, constructs the rail, and operates the rail line. The DOE's EIS work should carefully examine the impacts on ranching operations and define mitigation measures to make the ranchers whole. DOE should consult with individual operators along the alignment to devise individualized mitigation packages appropriate for each operation. No rancher should suffer financially as a result of the alignment crossing his/her operation.
 17. A Railroad Plan of Operations should be produced - DOE should disclose early on a Plan of Operations for the railroad. The plan should divulge operational details, required infrastructure, location of infrastructure, numbers of employees, land requirements, communications infrastructure and operational plans, and the like. The DOE's EIS work should use the Plan of Operations to analyze the impacts of the railroad on the local economy, communities and quality of life and devise mitigation measures to offset any negative impacts and to maximize positive economic impacts.
 18. Use of local contractors and suppliers should be maximized - DOE should make every effort to use local businesses as it plans, constructs and operates the rail line. The DOE's EIS work should identify what goods and services are available locally and use these in its Plan of Operations (see #17, above) to the maximum extent possible. There are significant resources available locally that could help DOE plan, build and operate a railroad efficiently and at lower overall cost. The DOE, through its EIS work, should seek out these resources. Nye County expects that DOE decisions on using local building materials, contractors and suppliers, and decisions on location of rail-related infrastructure will be based on 'best business practices' and will not be driven by politics.
 19. Use of local building materials should be maximized - The DOE's EIS work should identify what building materials, such as sand, gravel, ballast, cement,

clays, etc., are available locally and make every effort to develop those local supplies. DOE should consult with local governments, local land and other property interest holders, natural resource management agencies (local, state, and national), local and regional development authorities and the like to become aware of local resources that could be used in rail construction and operations.

20. Impacts on Nye County Public Roads - In 1999 The Board of Commissioners passed Resolution 99-01³⁵ reaffirming the County's long-standing position on roads on the public lands. In that Resolution Nye County reaffirmed that most of the roads crossing the public lands (excepting State highways, certain roads established after Oct. 21, 1976, and certain roads on private land) are Nye County Public Roads. With the Resolution Nye County promulgated a map of the county showing many (but not all) of the roads included in the Resolution. The proposed rail corridor crosses many Nye County Public Roads. In its EIS work the DOE should thoroughly examine the impacts its work along the Corridor will have on all Nye County Public Roads and identify appropriate mitigation measures.

//
//

³⁵ Nye County Board of Commissioners Resolution 99-01, *Resolution declaring Nye County's policy regarding public roads*, 19 January 1999, 7 pp. plus attachments.

18 11

RECEIVED

MAY 05 2004

040016

1 MR. MOORE: My name is Ashley Moore, and I
2 am a councilman for the City of Caliente. Before
3 being on the City Council, which I have been in office
4 for the past three years, I was in favor of
5 transportation of nuclear waste to Yucca Mountain. I
6 am still in favor of this today. I also work here at
7 the Caliente Youth Center, and I'd like to begin by
8 thanking you for holding this important meeting here.
9 My comments will be brief and to the point.

10 As an elected official, I appreciated the
11 recent record of decision by the Department because
12 now we can move along as a city council to prepare to
13 protect the health and safety of our residents and
14 also look to maximize any economic benefit that may
15 come out of the Caliente Corridor.

16 I would like to see the railroad be
17 designated as shared use and multiple use. I would
18 also like to make sure the Department works with the
19 City and ranchers along the route to make sure that
20 the exact rail alignment location is negotiated with
21 them so the rail line provides the maximum economic
22 value and least risk.

23 We have a fire chief that does a great job
24 for us, but he and his volunteers will need the
25 top-of-the-class emergency response training and

0003

1 equipment to be able to respond to any incident. I
2 urge, and I mean strongly urge, DOE to locate safe
3 support facilities, such as the fleet maintenance
4 facility off-site in rural communities, such as right
5 here in Caliente.

6 I would like DOE to develop and implement a
7 job training and labor participation program aimed at
8 maximizing employment of county residents at the
9 intermodal transfer casks, maintenance, and other
10 facilities located in Lincoln County.

11 I would like to see DOE be required to
12 purchase electrical energy to operate and maintain the
13 intermodal transfer and other facilities from Lincoln
14 County Power District.

15 I understand why you come to your decision,
16 and keeping the waste out of the populated areas of
17 the state makes sense. But please don't forget rural
18 Nevada. If we're going to bear the burden of this
19 national transportation campaign, then I think our
20 impacts should be mitigated.

21 Again, thank you for coming to Caliente to
22 get the comments from the residents that would be most
23 impacted by this international impact program. Any
24 job worth doing is worth doing right.

040072

May 5, 2004

RECEIVED
MAY 05 2004

Ms. Robin Sweeney
EIS Document Manager
Office of National Transportation
OCRWM
U.S. Department of Energy
1551 Hillshire Drive, M/S 011
Las Vegas, NV 89134

Dear Ms. Sweeney,

I appreciate the Department hosting this scoping meeting on the Caliente corridor here in Caliente. This type of rural outreach is appreciated since we will probably be most affected by this railroad.

I am the Site Manager for the Community College of Southern Nevada in Lincoln County. I know the Department has already provided a large amount of oversight funds to the CCSN system.

Rural Nevadans are independent and strong-willed people. If we are called upon to help the nation solve this national environmental challenge I believe and support our city's and county's efforts to protect our health and safety and gain any economic benefits that may result from this \$58 billion project.

I urge DOE to make this railroad a shared use and multiple use railroad, and to make sure the exact alignment is negotiated with local ranchers and local communities so the railroad provided the maximum economic value, with the least risk.

I support our making our regional communications system stronger with cellular coverage (that works!) throughout the corridor and county.

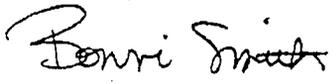
I support locating safe support facilities here in the city and county. At the present time, there are trains going through our city and county that carry extremely hazardous materials. I encourage DOE to make the city of Caliente and Lincoln County emergency responders the best trained and equipped responders in rural Nevada.

Education is essential to local citizens who would be looking for potential employment in different aspects of this project. As the Site Manager for the Community College in Lincoln County, I would also like to see training and classes coordinated through my office.

This project needs to be done right, and if it is done correctly, it can be an economic diversification tool for the city and county, but safety always comes first.

Thank you for this opportunity to voice my thoughts.

Sincerely,



Bonni Smith
P.O. Box 455
Caliente, NV 89008-0455

RECEIVED

MAY 21 2004

040155

U. S. Department of Energy Environmental Impact Statement for the Alignment,
Construction and Operation of a Rail Line to a Geologic Repository at Yucca
Mountain, Nye County, Nevada

SCOPING COMMENT SHEET

Name: Peter H. Hahn

Organization: Retired Geologist & Prospector

Mailing Address: 3608 Big Bend Lane, Reno NV 89509

Telephone: (775) 825-1948

Date: May 12, 2004

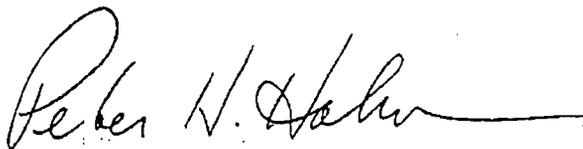
COMMENTS:

I am in favor of the establishment of the Yucca Mountain Repository, and of the rail alternative for transportation of nuclear waste to the site.

I urge that, as much as practicable, the railroad right-of-way be unfenced, to allow free access across the tracks, and not establish artificial boundaries to livestock and wildlife movement.

I urge that, insofar as it does not interfere with DOE operations, the railroad be made available for public access as a common carrier for the transportation of agricultural, livestock and natural resource traffic. In particular, development of industrial mineral resource deposits in central Nevada would likely be encouraged by the availability of rail transportation.

Thank you for the opportunity to attend the scoping session in Reno and to comment. I will appreciate receiving information on the Rail Alignment Environmental Impact Statement by mail.



Finance Docket No. 35106

EXHIBIT N

Notice Required Under 49 C.F.R. § 1150.9

EXHIBIT N
NOTICE REQUIRED UNDER 49 C.F.R. § 1150.9

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 35106

UNITED STATES DEPARTMENT OF ENERGY
--RAIL CONSTRUCTION AND OPERATION--
CALIENTE RAIL LINE IN LINCOLN, NYE,
AND ESMERALDA COUNTIES, NEVADA

NOTICE

APPLICANT: United States Department of Energy

AGENCY: Surface Transportation Board

ACTION: Notice of Filing of an Application for a Certificate of Public Convenience and Necessity

Summary:

The United States Department of Energy ("DOE") has filed an application with the Surface Transportation Board ("Board") requesting a Certificate of Public Convenience and Necessity to construct and operate approximately 300 miles of new rail line connecting existing rail line near Caliente, Nevada, to a proposed geologic repository at Yucca Mountain, Nye County, Nevada.

The purpose of this rail line is to allow the DOE to transport spent nuclear fuel and high-level radioactive waste for disposal at a geologic repository, as well as to provide common carrier rail service to communities in Nevada situated along the rail line.

The DOE, with the Board as a cooperating agency, has prepared a *Draft Supplemental 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 – Nevada Rail Transportation Corridor*, DOE/EIS-0250F-S2D (“Draft Nevada Rail Corridor SEIS”) and *Draft Environmental Impact Statement for a Rail Alignment for the Construction and Operation of a Railroad in Nevada to a Geologic Repository at Yucca Mountain, Nye County, Nevada*, DOE/EIS-0369D (“Draft Rail Alignment EIS”) to assess the environmental impacts of the proposed rail line and to meet the DOE’s obligations under the National Environmental Policy Act. The Draft Nevada Rail Corridor SEIS and the Draft Rail Alignment EIS are available on the DOE’s website at: http://www.ocrwm.doe.gov/transport/draft_eis/index.shtml.

Hard copies are also available at:

DOE Public Reading Room
2341 Postal Drive
Pahrump, Nevada 89048
(775) 751-7480

Documents also can be ordered by calling the OCRWM toll-free information line at 1-800-225-6972.

Any interested party may file written comments on the Application with the Board. Written comments should indicate the matter, Finance Docket No. 35106, and should be filed with the Secretary, Surface Transportation Board, 395 E Street, S.W., Washington, DC 20423-0001. Comments should be submitted on or before April 21, 2008. In accordance with 49 C.F.R. § 1150.10(g), the original and 10 copies of all comments shall be filed with the Board, and a copy of each comment shall be served upon DOE's representatives:

Director, Office of Civilian Radioactive Waste Management
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-6842
Fax: 202-586-6630

Director, Office of Logistics Management
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-4167
Fax: 202-586-1047

Copies of correspondence should also be sent to:

Assistant General Counsel for Civilian Nuclear Programs
ATTN: Bradley L. Levine, GC-52
United States Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Phone: 202-586-5857
Fax: 202-586-6977
Email: Bradley.Levine@hq.doe.gov

In accordance with 49 C.F.R. 1150.10(g) comments should contain the name and address of the commenting party and a statement describing such party's interest, including whether such party supports or opposes the application. In addition, a commenting party may provide a statement of position and a summary of evidence pertaining to the application. If an oral hearing is desired, this request, along with reasons why an oral hearing is warranted, should also be included in the comments.

In accordance with 49 C.F.R. § 1150.10(g), the Board will determine whether to hold a hearing, either oral or through the receipt of written statements, after consideration of all comments and the applicant's reply thereto and an assessment by the Board's Section of Environmental Analysis.

Parties seeking further information concerning this Application or the procedures under which it will be considered may contact:

Joseph Dettmar
Deputy Director, Office of Proceedings
395 E. Street, S.W.
Washington, DC 20423
(202) 245-0395

Copies of the Application are available for public inspection at the offices of the Board at:

Docket Room
395 E. Street, S.W.
Washington, DC 20423

Copies of the Application are also available from Applicant online at:

www.ocrwrm.doe.gov

Hard copies are also available from Applicant at:

DOE Public Reading Room
2341 Postal Drive
Pahrump, Nevada 89048
(775) 751-7480

Documents also can also be ordered by calling the OCRWM toll-free information line at
1-800-225-6972.