

6450-01-P

DEPARTMENT OF ENERGY

**Record of Decision and Floodplain Statement of Findings – Nevada Rail Alignment
for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca
Mountain, Nye County, Nevada.**

AGENCY: Office of Civilian Radioactive Waste Management, U.S. Department of Energy.

ACTION: Record of Decision.

SUMMARY: In July 2008, the Department of Energy (Department or DOE) issued the “Final 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-S2) (hereafter referred to as the final Nevada Rail Corridor SEIS), the “Final 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-0369) (hereafter referred to as the final Rail Alignment EIS), and the “Final 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-S1) (hereafter referred to as the final Repository SEIS). The final Nevada Rail Corridor SEIS analyzed the potential impacts of constructing and operating a railroad for shipments of spent nuclear fuel, high-level radioactive waste, and other materials in the Mina corridor, and DOE concluded that the Mina corridor warranted further analysis at the alignment level. This further, more

detailed analysis is presented in the final Rail Alignment EIS, which analyzed the potential environmental impacts of constructing and operating a railroad along rail alignments in both the Caliente and Mina rail corridors. The final Rail Alignment EIS also analyzed the potential environmental impacts from shipments of general freight (also referred to as common carriage shipments or the Shared-Use Option) on a railroad in either corridor.

The final Repository SEIS analyzed the potential environmental impacts of the construction, operation, and eventual closure of a repository at Yucca Mountain. The final Repository SEIS also included the potential impacts from national transportation, as well as the potential impacts in Nevada from the construction and operation of a railroad along specific alignments in the Caliente and Mina rail corridors. DOE concluded in the final Repository SEIS that the potential impacts associated with the repository design and operational plans are similar in scale to the impacts analyzed in the “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-0250F, February 2002) (Yucca Mountain Final EIS).

Based on the analyses in the final Rail Alignment EIS, among other considerations as discussed herein, the Department has decided to construct and operate a railroad along a rail alignment within the Caliente corridor. DOE also has decided to allow shipments of general freight on the rail line (Shared-Use Option). The Department will obtain all regulatory approvals necessary to construct and operate the railroad, and allow common carriage shipments.

ADDRESSES: Copies of the final Nevada Rail Corridor SEIS, final Rail Alignment EIS, final Repository SEIS, and this Record of Decision may be obtained by mailing a request to Dr. Jane Summerson at the U.S. Department of Energy, Office of Civilian Radioactive Waste Management, 1551 Hillshire Drive, Las Vegas, NV 89134, or by calling 1-800-967-3477. These documents also may be obtained via the Internet at <http://www.ocrwm.doe.gov>.

FOR FURTHER INFORMATION CONTACT:

Questions regarding these documents can be submitted to Dr. Jane Summerson by mail or telephone at the above address or phone number. For general information regarding the DOE National Environmental Policy Act (NEPA) process contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (GC-20), U.S. Department of Energy, 1000 Independence Ave., SW, Washington, D.C. 20585, Telephone 202-586-4600, or leave a message at 1-800-472-2756.

SUPPLEMENTARY INFORMATION:

Background

Pursuant to the Nuclear Waste Policy Act of 1982, as amended (NWPA), and NEPA, DOE issued the Yucca Mountain Final EIS in February 2002. The Yucca Mountain Final EIS analyzed a Proposed Action under which DOE would construct, operate, monitor and eventually close a geologic repository at Yucca Mountain, including

shipment of spent nuclear fuel and high-level radioactive waste from 72 commercial and five DOE sites to the Yucca Mountain repository. DOE evaluated the potential environmental impacts of transporting spent nuclear fuel and high-level radioactive waste to the repository under a variety of modes, including legal-weight truck, rail, heavy-haul truck, and barge. Two national transportation alternatives, referred to as the mostly legal-weight truck alternative and the mostly rail alternative, and three Nevada alternatives, referred to as the legal-weight truck alternative, the rail alternative, and the heavy-haul truck alternative, were evaluated. The Department identified the mostly rail alternative as its preferred mode of transportation, both nationally and in the State of Nevada, in the Yucca Mountain Final EIS.

DOE stated in the Yucca Mountain Final EIS that, if it were to select the mostly rail alternative (both nationally and in Nevada), a rail line would need to be constructed to connect the repository site at Yucca Mountain to an existing rail line in the State of Nevada. Accordingly, the Yucca Mountain Final EIS evaluated in detail the potential environmental impacts from the construction and operation of a rail line within five rail corridors – Caliente, Carlin, Caliente-Chalk Mountain, Jean, and Valley Modified. The Department did not identify a preferred rail corridor in the Yucca Mountain Final EIS, but indicated it would do so at least 30 days before making any decision on the selection of a rail corridor in which to construct a rail line in Nevada. On December 29, 2003, the Department announced in the Federal Register that the Caliente rail corridor was its preferred corridor (68 FR 74951).

On April 8, 2004, DOE announced in a Record of Decision the selection of the mostly rail alternative analyzed in the Yucca Mountain Final EIS for transporting spent nuclear fuel and high-level radioactive waste nationally and within Nevada (69 FR 18557). DOE also announced in that Record of Decision that it had selected the Caliente rail corridor in which to examine possible alignments for construction of a rail line in Nevada.

In September 2004, the State of Nevada filed a petition for review with the United States Court of Appeals for the District of Columbia Circuit, pursuant to Section 119 of the NWSA, seeking review of DOE's April 8, 2004, Record of Decision and the transportation-related portions of the Yucca Mountain Final EIS on which it was based. Nevada claimed that in selecting a national transportation mode and Nevada rail corridor for the shipment of radioactive materials to Yucca Mountain, DOE violated NEPA and NEPA implementing regulations and acted in an arbitrary and capricious manner and contrary to law.

In an August 8, 2006, decision, the District of Columbia Circuit denied Nevada's petition and rejected the State's claims on their merits. State of Nevada v. Department of Energy, 457 F.3d 78, 89-93 (D.C. Cir. 2006). The Court held that DOE had met its obligations under the Council on Environmental Quality regulations (40 Code of Federal Regulations (CFR) § 1503.1(a)(2)) with respect to consultation with other agencies; that DOE had appropriately tiered its proposed action analyses under 40 CFR § 1508.28; that DOE had taken the requisite hard look at the potential rail corridor environmental impacts; that DOE's analysis of the environmental impacts of rail corridor selection in its

Yucca Mountain Final EIS was adequate; and that DOE's selection of the Caliente corridor therefore was not arbitrary or capricious.

On April 8, 2004, DOE announced in the Federal Register its intent to prepare an EIS under NEPA for the alignment, construction, and operation of a rail line for shipments of spent nuclear fuel, high-level radioactive waste, and other materials related to the construction and operation of a repository from a site near Caliente, Lincoln County, Nevada, to a geologic repository at Yucca Mountain, Nye County, Nevada (69 FR 18565). The Federal Register notice also announced the schedule for public scoping meetings, and invited comments on the scope of the Rail Alignment EIS to ensure that all relevant environmental issues and reasonable alternatives would be addressed.

During the public scoping process in 2004, DOE received comments suggesting that other rail corridors, in particular the Mina route, be considered. 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 had withdrawn a previous objection to the completion of an EIS studying the potential transportation of spent nuclear fuel and high-level radioactive waste across its reservation.

On October 13, 2006, DOE announced its intent to expand the scope of the Rail Alignment EIS to incorporate analysis of the potential environmental impacts associated with constructing and operating a rail line within the Mina rail corridor (71 FR 60484). DOE indicated that it would supplement the rail corridor analysis of the Yucca Mountain Final EIS by evaluating the Mina rail corridor, and that it would update, as appropriate,

the information and analysis for other rail corridors analyzed in detail in the Yucca Mountain Final EIS. DOE also indicated that it would include an analysis of alternative alignments within the Mina corridor at the same level of detail as the ongoing alignment analysis for the Caliente corridor.

Also on October 13, 2006, DOE announced its intent to prepare a supplement to the Yucca Mountain Final EIS to address modifications to repository design and operation plans since completion of the Yucca Mountain Final EIS (71 FR 60490). DOE indicated that it would evaluate the potential environmental impacts of the construction, operation, and closure of the repository under the modified repository design and operational plans, and would update the analysis and potential environmental impacts of transporting spent nuclear fuel and high-level radioactive waste to the repository under the mostly rail alternative.

On April 17, 2007, the Walker River Paiute Tribal Council announced a resolution withdrawing support for the Tribe's participation in the EIS process, and renewing the Tribe's past objection to the transportation of nuclear waste through its reservation. In light of this, DOE identified the Mina alternative as nonpreferred in the draft Rail Alignment EIS and subsequently in the final Rail Alignment EIS.

On October 12, 2007, the Department announced in the Federal Register the availability of the draft Nevada Rail Corridor SEIS, draft Rail Alignment EIS, and the draft Repository SEIS (72 FR 58071). DOE's Notice of Availability invited interested parties to comment on these NEPA documents during a 90-day public comment period

that ended on January 10, 2008. DOE held eight public hearings at locations in Nevada, California, and Washington, D.C. The Department received about 4,000 comments from nearly 1,100 commenters. DOE has considered all of these comments, and responded as appropriate in the final Nevada Rail Corridor SEIS, the final Rail Alignment EIS, and the final Repository SEIS.

On July 11, 2008, the Environmental Protection Agency announced in the Federal Register the availability of DOE's final Nevada Rail Corridor SEIS, final Rail Alignment EIS, and final Repository SEIS (73 FR 39958). The final Nevada Rail Corridor SEIS provided a corridor-level analysis of the Mina rail corridor, and updated information, as appropriate, regarding the other rail corridors analyzed in detail in the Yucca Mountain Final EIS. DOE concluded in the final Nevada Rail Corridor SEIS that (1) the Mina rail corridor warranted further study at the alignment level as a nonpreferred alternative, and (2) there were no significant new circumstances or information relevant to environmental concerns that would warrant further consideration of the Carlin, Jean or Valley Modified corridors at the alignment level.¹

The final Rail Alignment EIS analyzed the potential impacts of constructing and operating a railroad² for shipments of spent nuclear fuel, high-level radioactive waste, and other materials along the reasonable rail alignments³ in the Caliente and Mina rail

¹ DOE eliminated from further consideration the Caliente-Chalk Mountain rail corridor, which would cross the Nevada Test and Training Range, because of U.S. Air Force concerns that a rail line would interfere with military mission activities.

² A transportation system incorporating the rail line, operations support facilities, railcars, locomotives, and other related property and infrastructure.

³ An engineered refinement of a rail corridor in which DOE would identify the location of a rail line. A rail alignment comprises common segments and alternative segments, as discussed herein.

corridors.⁴ A rail alignment is an engineered refinement of a rail corridor in which DOE would identify the location of a rail line. A rail alignment comprises common segments and alternative segments. A corridor is a strip of land 400 meters (0.25 mile) wide through which DOE would identify an alignment for the construction of the rail line. The final Rail Alignment EIS also analyzed the potential environmental impacts from common carriage shipments along those rail alignments (the Shared-Use Option).

The U.S. Air Force, Surface Transportation Board, Bureau of Land Management, Lincoln County, Esmeralda County, Nye County, and the City of Caliente, Nevada, were cooperating agencies in the preparation of the final Nevada Rail Corridor SEIS and the final Rail Alignment EIS.

The final Repository SEIS analyzed the potential environmental impacts of national transportation, as well as the potential impacts in Nevada, from the construction and operation of a railroad along specific alignments in either the Caliente or the Mina corridor to ensure that the full scope of potential environmental impacts associated with the proposed construction and operation of the repository were considered. DOE concluded in the final Repository SEIS that the potential impacts associated with the repository design and operational plans are similar in scale to the impacts analyzed in the Yucca Mountain Final EIS. Nye County was a cooperating agency in the preparation of the final Repository SEIS.

⁴ A corridor is a strip of land 400 meters (0.25 mile) wide through which DOE would identify an alignment for the construction of the rail line.

Proposed Action and Alternatives in the Final Rail Alignment EIS

The final Rail Alignment EIS examined a Proposed Action and a No Action Alternative. The Department's Proposed Action is to determine an alignment (within a corridor), and construct and operate a railroad in Nevada to transport spent nuclear fuel, high-level radioactive waste, and other materials from an existing rail line to a repository at Yucca Mountain.

Under the No Action Alternative, DOE would not select a rail alignment within either the Caliente or Mina rail corridors for the construction and operation of a railroad. If DOE were not to select a rail alignment in either the Caliente or Mina rail corridor, the future course that it would pursue to meet its obligation under the NWPA is uncertain.

There are two implementing alternatives under the Proposed Action – the Caliente Implementing Alternative, under which the Department would construct the proposed railroad in the Caliente rail corridor, and the Mina Implementing Alternative, under which the Department would construct the proposed railroad in the Mina rail corridor. In each rail corridor, DOE evaluated a series of common segments and the range of reasonable alternative segments. Common segments are portions of the rail alignment for which DOE has identified a single route for the rail line. Alternative segments are portions of the rail alignment for which DOE has identified multiple routes for the rail line.

DOE also evaluated the Shared-Use Option under each implementing alternative. Under the Shared-Use Option, DOE would allow common carriage shipments on the rail line.

In addition to evaluating the potential impacts of constructing and operating the railroad, the final Rail Alignment EIS identified and evaluated the facilities needed to construct the railroad, such as quarries and construction camps, and to operate the railroad, such as staging yards and maintenance facilities, under each implementing alternative. Additional descriptive information for these facilities, as well as other aspects of the implementing alternatives, may be found in Chapter 2 of the final Rail Alignment EIS.

Caliente Implementing Alternative – Preferred Alternative

A rail line in the Caliente rail corridor would extend north from Caliente, Nevada, turn west and proceed to near the northwest corner of the Nevada Test and Training Range, and then continue south-southeast to Yucca Mountain (see Figure S-3 of the Summary to the final Rail Alignment EIS). The rail line would range in length from about 528 to 541 kilometers (328 to 336 miles), depending on the combination of alternative segments.

There are six common segments along the Caliente rail alignment starting with common segment 1 south of Panaca, Nevada, and moving west sequentially to common segment 6 near Yucca Mountain. DOE evaluated alternative segments at six locations

along the Caliente rail alignment starting at the interface with the Union Pacific Railroad mainline near Caliente, Nevada (two alternative segments referred to as Caliente and Eccles), and moving west to Garden Valley (Garden Valley segments 1, 2, 3 and 8), southwest of the South Reville Wilderness Study Area (South Reville segments 2 and 3), near the town of Goldfield (Goldfield segments 1, 3 and 4), north of Scottys Junction (Bonnie Claire segments 2 and 3), and near Oasis Valley (Oasis Valley segments 1 and 3). These common segments and alternative segments are shown in Figure S-3 of the Summary to the final Rail Alignment EIS.

DOE anticipates that it would take 4 to 10 years to construct the proposed railroad. Construction of the railroad would include construction of the rail line, the infrastructure necessary to support the construction and operation of the railroad (for example, water wells, ballast⁵ quarries, construction camps), and operations support facilities. Construction activities would occur inside a 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 by up to 300 feet. Alternatively, the construction right-of-way would be more narrow than 300 meters (1,000 feet) when passing through certain areas such as private lands and wetlands. The total construction footprint would be approximately 164 square kilometers (40,600 acres). Obtaining a right-of-way for access to public land for construction of the railroad would be subject to approval by the Bureau of Land Management.

⁵ Coarse rock placed under the railroad tracks to support the railroad ties and improve drainage along the rail line.

Construction of the rail line would require DOE to obtain water, ballast, subballast,⁶ steel for bridges, concrete ties, and rail. Water would be obtained by pumping groundwater from water-supply wells along the rail alignment, and under the Caliente Implementing Alternative, a maximum of 107 well sites would be required to supply the estimated 6,100 acre-feet of water necessary for construction.

DOE would obtain ballast by constructing up to four quarries from six potential locations along the Caliente rail alignment. Subballast would be obtained from sites along the rail alignment, from waste rock generated at ballast quarry sites, from materials excavated during rail roadbed⁷ construction, or from the development of new subballast borrow sites established inside the construction right-of-way. The Department would obtain steel, concrete ties, and rail from existing commercial sources.

Construction of the rail line would require DOE to establish construction camps to provide housing for workers and a logistical base from which to conduct construction activities. The Department would establish up to 12 construction camps, with up to six operating at one time, along the Caliente rail alignment.

DOE would construct the rail line in two steps: (1) rail roadbed construction and (2) track construction. The rail roadbed would form the base upon which the subballast, ballast, concrete ties, and rail would be laid. Track construction would involve the

⁶ A layer of crushed gravel used to separate the ballast and roadbed for the purpose of load distribution and drainage.

⁷ Earthwork foundation upon which the track, ties, ballast, and subballast of a rail line are laid.

placement of subballast, ballast, concrete ties, and rail on top of the rail roadbed, building a service road, and establishing power and communication systems.

DOE also would construct bridges, culverts, and at-grade and grade-separated road crossings⁸. The Department would construct up to 240 bridges, 138 large culverts, and five grade-separated crossings of highways along the Caliente rail alignment. Crossings at other paved public roadways would be at-grade where DOE would install active warning devices, such as flashing lights and gates. For crossings at unpaved roads and private crossings, DOE would install passive warning devices, such as stop signs.

After completion of construction, the railroad would operate for up to 50 years. During that time, there would be about 3,000 rail shipments of spent nuclear fuel and high-level radioactive waste to the repository. There also would be shipments of construction materials, diesel fuel, and other supplies to the repository.

Trains carrying spent nuclear fuel and high-level radioactive waste would arrive at an Interchange Yard⁹ on the Union Pacific Railroad mainline near Caliente, Nevada, and proceed to a Staging Yard¹⁰ along either the Caliente or the Eccles alternative segment. DOE evaluated three staging yards in the final Rail Alignment EIS – the Indian Cove and Upland Staging Yards along the Caliente alternative segment, and the Eccles-North Staging Yard along the Eccles alternative segment. A typical train leaving the

⁸ An at-grade crossing occurs when a road and a rail line cross paths at the same elevation. A grade-separated crossing occurs when a road and a rail line cross paths and one passes over the other.

⁹ The Interchange Yard is the intersection between the Union Pacific mainline and the DOE rail line.

¹⁰ The Staging Yard is the rail yard that would temporarily store, service and maintain railcars and locomotives, and assemble trains for trips to the repository at Yucca Mountain.

Staging Yard and transporting radioactive materials for the repository 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 transporting radioactive materials for the repository would depart the Staging Yard and travel to the Rail Equipment Maintenance Yard, the termination point of the railroad and the staging area for the delivery of loaded cask cars and other materials to the repository receiving and inspection area. The Rail Equipment Maintenance Yard would be located less than one mile from the southern boundary of the geologic repository operations area. A railroad crew would bring casks from the Rail Equipment Maintenance Yard to the boundary of the geologic repository operations area. At the boundary, control of the casks would be transferred to the geologic repository operations area for removal of the spent nuclear fuel and high-level radioactive waste. Empty casks would be transferred back to railroad control at the boundary of the geologic repository operations area for transport back to the Union Pacific Railroad.

A National Transportation Operations Center would oversee the shipment of casks from sites throughout the United States. The Nevada Railroad Control Center, co-located with the National Transportation Operations Center, would coordinate train movements, rail operations, and emergency response operations along the proposed railroad in Nevada. In the final Rail Alignment EIS, DOE evaluated these facilities at either the Rail Equipment Maintenance Yard or at the Staging Yard (two locations for the

Staging Yard were analyzed along the Caliente alternative segment, and one location for the Staging Yard was analyzed along the Eccles alternative segment).

Under the Caliente Implementing Alternative, rail line maintenance and inspection activities would be conducted out of Maintenance-of-Way Facilities. DOE evaluated Maintenance-of-Way Facilities at different locations. Either a single Maintenance-of-Way Facility would be constructed along Goldfield alternative segment 4 just north of the town of Goldfield, Nevada, or a Maintenance-of-Way Headquarters Facility would be constructed near Tonopah, Nevada, and a Maintenance-of-Way Trackside Facility would be constructed along common segment 3.

DOE also analyzed a Shared-Use Option, under which the Department would allow common carriage shipments on the rail line. The Shared-Use Option would require construction of commercial sidings to provide access for potential commercial shippers other than the Department, and facilities for operation of commercial rail service. Funding for construction of these sidings and facilities for commercial rail service could be provided by either the private sector or Government sources. The Department's proposed design for the rail line (for example, grade and curvature) would accommodate shared use.

DOE estimated that approximately eight common carriage shipments could run per week on the rail line. Trains carrying spent nuclear fuel and high-level radioactive waste would have priority.

DOE could decide to abandon the proposed railroad after shipments to the repository were complete. Abandonment could involve the removal of the rail roadbed, ballast, track, ties, signaling, and other related infrastructure. DOE would reclaim the lands disturbed by the abandonment process. If DOE were to decide to abandon the railroad, it would relinquish its right-of-way and the Bureau of Land Management would continue to manage the public land. Abandonment of the railroad would be conducted in accordance with applicable requirements and in consultation with local governments, the Surface Transportation Board, and the Bureau of Land Management. It is premature at this time for DOE to decide the future disposition of the railroad after the end of the shipping campaign to the Yucca Mountain repository. Any such future decision would be subject to further NEPA review, as appropriate.

Mina Implementing Alternative

A rail line in the Mina rail corridor would extend from near Wabuska, Nevada, in a southeasterly direction to Yucca Mountain. The total length of the rail line could range from about 452 to 502 kilometers (281 to 312 miles), including the existing Department of Defense rail line (see Figure S-4 of the Summary to the final Rail Alignment EIS. The portion of the Mina rail alignment that would require construction of a new rail line could range in length from about 410 to 459 kilometers (255 to 285 miles), depending on the combination of common and alternative segments.

There are four common segments along the Mina alignment. Common segment 1 starts west of Hawthorne continuing to Blair Junction, Nevada; common segment 2,

which would start south of Lida Junction, Nevada; and common segment 5 and common segment 6, which are the same as common segments 5 and 6 along the Caliente rail alignment. DOE evaluated alternative segments at four locations along the Mina alignment starting near Schurz, Nevada (four alternative segments referred to as Schurz 1, 4, 5, and 6), and moving southeast toward the area of Montezuma southeast of Blair Junction (Montezuma segments 1, 2 and 3), north of Scottys Junction (Bonnie Claire segments 2 and 3), and near Oasis Valley (Oasis Valley segments 1 and 3). Bonnie Claire segments 2 and 3, and Oasis Valley segments 1 and 3 are the same as those along the Caliente alignment.

Construction and operation of a railroad along the Mina rail alignment would be implemented as described under the Caliente Implementing Alternative. However, the infrastructure necessary to support construction and operation of the railroad would differ in some respects. Under the Mina Implementing Alternative, water would be obtained from a maximum of 74 well sites to supply the estimated 5,950 acre-feet of water necessary for construction. DOE would obtain ballast by constructing up to two quarries from five potential locations along the rail alignment, and there would be up to 10 construction camps, with up to six operating at one time. The Department would construct up to 69 bridges, 60 large culverts, and four grade-separated crossings of highways along the Mina rail alignment.

Under the Mina Implementing Alternative, trains would arrive on the Union Pacific Railroad mainline near Hazen and proceed to the Staging Yard at Hawthorne via the Union Pacific Railroad Hazen Branchline, the Department of Defense Branchline

North, one of the Schurz alternative segments, and the Department of Defense Branchline South. Unlike the Caliente Implementing Alternative, there is sufficient space to locate the functions of the Interchange Yard and Staging Yard in a single facility (the Staging Yard) at Hawthorne, Nevada.

The National Transportation Operations Center and the Nevada Railroad Control Center would be co-located and perform the same functions as described under the Caliente Implementing Alternative. In the final Rail Alignment EIS, DOE evaluated both of these facilities at two locations - at the Rail Equipment Maintenance Yard located less than one mile from the southern boundary of the geologic repository operations area on the Yucca Mountain site, and at the Staging Yard in Hawthorne, Nevada.

Rail line maintenance and inspection activities would be conducted out of Maintenance-of-Way Facilities, which would consist of a Maintenance-of-Way Facility and two Satellite Maintenance-of-Way Facilities. DOE evaluated the Maintenance-of-Way facilities at different locations along the Mina rail alignment near Silver Peak, Nevada, along Montezuma alternative segment 1, and near Klondike, Nevada, along Montezuma alternative segments 2 and 3.

Under the Mina Implementing Alternative, DOE analyzed a Shared-Use Option, under which the Department would allow common carriage shipments on the rail line. Shipments would occur as described above under the Caliente Implementing Alternative, except there would be an average of 18 common carriage shipments per week.

Environmentally Preferable Implementing Alternative

Proposed Action and No Action Alternative

In determining the environmentally preferable alternative, DOE considered potential environmental impacts that could occur under the Proposed Action from selecting a rail alignment within either the Caliente or Mina rail corridor and constructing and operating a railroad within the selected alignment, and the potential environmental impacts that would occur under the No Action Alternative from not selecting a rail alignment within either rail corridor. The potential environmental impacts of selecting a rail alignment within either the Caliente or Mina rail corridor and constructing and operating a railroad along such alignment would be greater than the potential environmental impacts of the No Action Alternative under which no such selection and therefore no construction or operation would occur within either of these rail corridors. For this reason, at least in the short term, the No Action Alternative is environmentally preferable to the Proposed Action. However, given DOE's responsibilities under the NWPA and the Yucca Mountain Development Act (Pub. L. 107-200), and consistent with DOE's tiered decisionmaking, it is necessary for DOE to proceed with the selection of an alignment and the construction and operation of a railroad within that alignment for shipments of spent nuclear fuel, high-level radioactive waste, and other materials to the Yucca Mountain site.

Caliente and Mina Implementing Alternatives

DOE considered potential environmental impacts that could occur from the construction and operation of a railroad along the Caliente and Mina rail alignments. As

a general matter, based on the analyses of the final Rail Alignment EIS, DOE concluded that construction and operation of a railroad along either the Caliente or Mina rail alignments would result in broadly similar, but generally small, potential impacts to natural, human health, social, economic, and cultural resources. More specifically, the analyses in the final Rail Alignment EIS showed there would be no significant differences (between the Caliente and Mina alignments) in potential impacts to aesthetic resources, air quality (including potential impacts on global climate change), groundwater resources, noise and vibration, socioeconomics, occupational and public health and safety (including potential risks from accidents and acts of sabotage or terrorism), utilities, energy and materials use, and the generation of hazardous materials and waste (additional detail may be found in Table S-8 of the Summary to the final Rail Alignment EIS. The following paragraphs summarize the differences between the Caliente and Mina alignments in potential impacts to land use, wetlands and other biological resources.

Construction of the railroad along the Caliente rail alignment would disturb about 14,000 to 15,000 acres, and could result in a loss of about 300 to 440 acres of prime farmland. In contrast, construction along the Mina rail alignment would disturb less land (9,900 to 12,000 acres) and result in less loss of prime farmland (less than 4 acres).

Construction of the railroad along the Caliente rail alignment also would cross more private land (120 to 310 acres), active grazing allotments (23 to 25), and result in a loss of more animal unit months (999 to 1,034) than would occur along the Mina rail alignment, which would cross 53 to 199 acres of private land, 6 to 9 active grazing allotments, and a possible loss of 179 to 199 animal unit months. The Caliente rail

alignment, however, does not cross a Native American tribe's reservation, unlike the Mina rail alignment, which would cross the Walker River Paiute Tribe Reservation. As described above under **Background**, the Tribe has renewed a past objection to the transportation of nuclear waste through its reservation.

Depending on the segment considered, construction of the railroad along the Caliente rail alignment also would result in more short-term (about 3 to 69 acres) and long-term (about 3 to 45 acres) loss of wetlands and riparian habitat than would occur along the Mina rail alignment (about 3 to 9 acres in the short-term, and less than 0.4 acres in the long-term). In contrast, a railroad along the Mina alignment could impact adversely a larger number of sensitive plant and animal communities than would occur along the Caliente alignment.

On balance, even though construction and operation of a railroad along either the Caliente or Mina rail alignments would result in broadly similar, and generally small, potential impacts, DOE concludes that the Mina Implementing Alternative would be environmentally preferable to the Caliente Implementing Alternative.

Caliente Rail Alignment Alternative Segments

In determining which alternative segments along the Caliente rail alignment would be environmentally preferable, DOE considered potential impacts to all resources, but focused on environmental impacts to those resources that allowed DOE to

discriminate among alternative segments. Additional detail may be found in Table S-9 of the Summary to the final Rail Alignment EIS.

DOE evaluated two alternative segments that would interface with the Union Pacific Railroad mainline near Caliente, Nevada – the Caliente and Eccles alternative segments. In determining which alternative segment would be environmentally preferable, DOE considered the potential environmental impacts to the physical setting, land use and ownership, aesthetics, surface-water resources, biological resources and noise. Construction of the railroad along the Eccles alternative segment would result in less land disturbance (480 acres compared to 770 acres) and loss of prime farmland (about 23 acres compared to 40 acres), and would cross fewer private land parcels (5 parcels involving about 74 acres compared to at least 30 parcels involving more than 270 acres). In contrast, the Eccles alternative segment would cross more active grazing allotments (3 compared to 1) and result in a greater loss of animal units months (17 compared to 1). Potential impacts to aesthetic resources along the Eccles alternative segment would be less, as would impacts from noise when compared to the Caliente alternative segment. Construction of the rail line along the Eccles alternative segment would require that about 11 acres of a nearby creek (Clover Creek) be filled, which would impact downstream riparian areas and wetlands, including an area identified by the Bureau of Land Management as an Area of Critical Environmental Concern for the protection of threatened and endangered species. In contrast, construction of the rail line along the Caliente alternative segment would result in the loss of about nine acres of wetlands, and about another 28 acres of riparian area. On balance, since the Caliente alternative segment would result in less impact to aquatic resources and avoid an Area of

Critical Environmental Concern, DOE considers it to be environmentally preferable to the Eccles alternative segment.

DOE evaluated four alternative segments in Garden Valley (1, 2, 3, and 8). In determining whether a segment would be environmentally preferable, DOE focused on the physical setting, land use and ownership, and cultural resources. Garden Valley alternative segment 1 would result in the smallest amount of surface disturbance (about 830 acres) followed by segment 2 (880 acres), segment 3 (890 acres) and segment 8 (910 acres). Garden Valley segment 3 would not impact any prime farmlands, whereas segment 1 would result in the loss of about 70 acres of prime farmland, followed by segment 8 (89 acres) and segment 2 (97 acres). Each alternative segment would cross five active grazing allotments, which would result in an estimated loss of animal unit months of 121 (segment 1), 125 (segment 3), 126 (segment 8) and 132 (segment 2). Only Garden Valley segment 2 could result in direct or indirect impacts to known archaeological sites that are eligible for listing on the National Register of Historic Places. DOE considers Garden Valley alternative segments 1 and 3 to be preferable to segments 2 and 8, primarily because these segments would result in the lowest amount of disturbed land and loss of prime farmland. However, as between Garden Valley alternative segments 1 and 3, neither is clearly environmentally preferable.

The Department considered potential impacts to all resources when determining whether South Reveille alternative segment 2 or 3 would be environmentally preferable. Based on the analyses of the final Rail Alignment EIS, however, there are no significant differences in potential environmental impacts between South Reveille alternative

segments 2 and 3, and thus DOE concludes that neither segment is environmentally preferable.

In evaluating whether an alternative segment near Goldfield, Nevada (alternative segments 1, 3, and 4) would be environmentally preferable, DOE focused on the physical setting, land use and ownership, cultural resources, surface-water resources, and aesthetic resources. Construction of the railroad along Goldfield alternative segment 4 would result in the disturbance of about 1,600 acres of land, followed by segment 1 (2,400 acres), and segment 3 (2,500 acres). All three segments would cross private lands; segment 3 would affect about 46 acres, followed by segment 4 (120 acres) and segment 1 (150 acres). Goldfield alternative segment 3 would cross 205 unpatented mining claims, followed by segment 4 (374 claims) and segment 1 (375 claims). The three alternative segments also would impact, directly and indirectly, cultural resources. Goldfield alternative segment 3 could impact one possible Western Shoshone camp and segment 1 could impact more than one such camp, whereas segment 4 could impact several archaeological sites that are eligible for listing on the National Register of Historic Places. Lastly, Goldfield alternative segment 3 would have short-term (during construction) impacts to water quality at Willow Springs, and the proposed quarry near segment 4 would have short-term, moderate to strong visual contrast to nearby viewers. On balance, the Department considers Goldfield alternative segment 3 to be environmentally preferable, because it tends to impact (relative to segments 1 and 4) the smallest amount of private land, cross the fewest unpatented mining claims, and impact the fewest known significant cultural resources.

The Department considered potential impacts to all resources when determining whether Bonnie Claire alternative segments 2 or 3 would be environmentally preferable. Based on the analyses of the final Rail Alignment EIS, however, there are no significant differences in potential environmental impacts between Bonnie Claire alternative segments 2 and 3, and thus DOE concludes that neither segment is environmentally preferable.

DOE evaluated two alternative segments in Oasis Valley (1 and 3). In determining whether a segment would be environmentally preferable, DOE focused on the physical setting, land use and ownership and biological resources. Oasis Valley alternative segment 1 would disturb less land relative to segment 3 (250 acres compared to 330 acres), but would cross one private land parcel affecting less than one acre of this parcel (segment 3 does not cross private land). Both segments would cross an active grazing allotment, but segment 1 would result in a lower loss of animal unit months than would segment 3 (8 compared to 12). Oasis Valley alternative segment 3 would disturb less than five acres of wetland/riparian habitat, but this would be a short-term impact. On balance, DOE considers neither alternative segment to be clearly preferable because the potential impacts are small in general, limited to a few resources, and the differences between impacts to those resources are small.

Facilities Associated with the Caliente Rail Alignment

DOE evaluated two staging yards along the Caliente alternative segment – the Upland Staging Yard and the Indian Cove Staging Yard. In determining which staging

yard was environmentally preferable, DOE considered potential impacts to all resources, but focused on land use and ownership and wetlands as they offer a means to discriminate between the yards. Construction of the Upland Staging Yard would cross about 110 acres of private land and would not require wetlands to be filled. In contrast, construction of the Indian Cove Staging Yard would cross about 180 acres of private land and would require about 47 acres of wetlands to be filled. DOE considers the Upland Staging Yard to be environmentally preferable.

DOE evaluated three locations along the Caliente rail alignment for the National Transportation Operations Center and Nevada Railroad Control Center: (1) at the Rail Equipment Maintenance Yard, which is located less than one mile from the southern boundary of the geologic repository operations area; and (2) at two locations along the Caliente alternative segment – co-located with the Upland Staging Yard or with the Indian Cove Staging Yard. In determining which location for these facilities was environmentally preferable, DOE considered potential impacts to all resources, but focused on land use and ownership and wetlands as they offer a means to discriminate between the locations. Locating the National Transportation Operations Center and Nevada Railroad Control Center at the Rail Equipment Maintenance Yard would not affect private land or wetlands. In contrast, locating these facilities at the Upland Staging Yard would require the use of private land, and locating these facilities at the Indian Cove Staging Yard would require private land and wetlands to be filled. For these reasons, DOE considers locating the National Transportation Operations Center and Nevada Railroad Control Center at the Rail Equipment Maintenance Yard to be environmentally preferable to locating these facilities at the Upland or Indian Cove Staging Yards.

Shared Use

In determining whether the Proposed Action with the Shared-Use Option or without the Shared-Use Option was environmentally preferable, the Department considered potential impacts to all resources. As DOE concluded in the final Rail Alignment EIS, potential impacts under the Shared-Use Option would be, in general, slightly greater than impacts under the Proposed Action without shared use. For example, under the Shared-Use Option, the construction of additional sidings would increase (relative to the Proposed Action without shared use) surface disturbance by about 0.1 percent, and during railroad operations there would be increases in air emissions from locomotives, interactions with wildlife (such as collisions and nest abandonment), traffic delays at highway-rail grade crossings, and rail-related accidents. Therefore, DOE considers the Proposed Action without the Shared-Use Option to be environmentally preferable to the Proposed Action with the Shared-Use Option.

Comments on the Final Nevada Rail Corridor SEIS and the Final Rail Alignment EIS

DOE distributed more than 4,400 copies of the final Nevada Rail Corridor SEIS, final Rail Alignment EIS, and the final Repository SEIS; the documents also were posted on DOE's website (<http://www.ocrwm.doe.gov>). On July 11, 2008, the Environmental Protection Agency announced in the Federal Register the availability of the documents. DOE has received written comments on these documents from the Environmental

Protection Agency, N-4 State Grazing Board, N-6 State Grazing Board, White Pine County Nuclear Waste Project Office, and the Board of County Commissioners of Lincoln County. The Department has reviewed these comments and concluded that none of the comments present significant new circumstances or information relevant to environmental concerns bearing on the Proposed Action or its impacts. The following summarizes and addresses those comments received on the final Nevada Rail Corridor SEIS and the final Rail Alignment EIS.

Some commenters stated they were unable to identify responses, in the final Nevada Rail Corridor SEIS and final Rail Alignment EIS, to some of their comments. For those comments for which commenters stated that responses were missing, the Department reviewed the comments and associated index(ices) to determine whether responses had been included in the final Nevada Rail Corridor SEIS and/or the final Rail Alignment EIS. Based on this review, DOE concluded that appropriate responses had been prepared for all these comments and that these responses were included in these final NEPA documents.

Commenters also asserted that some DOE responses to comments were inadequate and demonstrated a lack of understanding of aspects of the affected environment, or that the analyses and methods used to estimate potential environmental impacts were inadequate. As examples, commenters indicated that there is ample literature and accepted methods to address the impacts of stigma and risk perception, that DOE's groundwater use rates were understated and should have been defined more accurately to estimate impacts, that remote sensing techniques and/or field surveys should

have been used to map locally important vegetation and soil types and range improvements, and that the regions of influence used to estimate potential impacts to certain resources were too limited in geographic extent.

DOE has reviewed these comments and determined that the environmental analyses in these NEPA documents are adequate. In preparing the final Nevada Rail Corridor SEIS and the final Rail Alignment EIS, DOE first determined the scope of the analyses to be considered (range of actions, alternatives, impacts). In doing so, DOE evaluated comments received through the public scoping process, identified the range of reasonable alternatives that would meet the purpose and need for DOE's underlying action, and identified the analytical approaches and methods needed to determine potential environmental impacts for each resource area and issue. For some issues, such as stigma and risk perception, DOE considered various analytical approaches and methods for determining potential impacts, but concluded there were no reliable methods for quantifying such impacts with any degree of certainty. For those resource areas and issues for which there were reliable methods, DOE focused its analyses on significant environmental issues and evaluated impacts in proportion to their potential significance, in accordance with the Council on Environmental Quality regulations (40 CFR § 1502.1 and 1502.2(b)). DOE used the best available information, including information developed from field surveys and aerial mapping, and commonly-used analytical approaches to estimate reasonably foreseeable environmental impacts. As appropriate, DOE also used conservative but reasonable assumptions to address incomplete or unavailable information or uncertainties in these analyses. The information, analytical

approaches and assumptions used in the analysis were developed in consultation with DOE's cooperating agencies.

The Department received comments stating that DOE did not include the appropriate level of detail regarding the design, construction and operation of the railroad, and consequently the impacts analyses were inadequate. As examples, commenters suggested that DOE determine the specific locations of subballast quarries and communication towers along the rail alignments, redesign the rail line so that the service road and rail roadbed were at the same elevation (a single, wider raised platform for the track and road), space the concrete ties at more narrow intervals, and construct sidings every 10 miles to decrease train delays under the Shared-Use Option. DOE based the analyses on a conceptual design of the railroad, consistent with the Council on Environmental Quality regulations (40 CFR § 1500.5, 1501.2, 1502.5, and 1508.23) that call for environmental impact analyses to be undertaken early in the process of developing a proposed Federal project. As DOE acknowledged in the final Rail Alignment EIS, the conceptual design will advance through preliminary to final design, during which time many of the details requested by the commenters will become available. Further, DOE will make additional refinements before construction. As these details become available, the Department, consistent with its regulations, will determine if there is a need for additional NEPA review.

Commenters, in general, favored DOE's proposed process for the development, implementation and monitoring of best management practices and mitigation measures as discussed in the final Rail Alignment EIS. Commenters, however, also stated that this

proposed process and the associated practices and measures are preliminary, but should be committed to in DOE's Record of Decision; some commenters requested to participate in the process. Further, commenters took exception to some practices and measures presented in the final Rail Alignment EIS, suggested modifications to others (such as the use of adapted plant species in reclaiming disturbed lands), and offered additional practices and measures for consideration (such as the use of temporary irrigation to promote plant growth).

The Environmental Protection Agency focused on wetlands issues and concluded that the Caliente alternative segment (relative to the Eccles segment) represented the least environmentally damaging practicable alternative. The Agency supported the conclusions regarding the floodplain and wetlands assessment contained in the final Rail Alignment EIS, with the understanding that DOE will implement one of three compensatory mitigation measures specific to the loss of wetlands that will be impacted by the Caliente rail alignment.

In response to comments regarding mitigation, the Department recognizes that the best management practices and mitigation measures described in the final Rail Alignment EIS are preliminary and, as such, will be further developed and detailed through the regulatory compliance process, development of the final design and associated specifications, and through consultations with directly affected parties. As stated below (see **Use of All Practicable Means to Avoid or Minimize Harm**), DOE is committing to a mitigation process, proposing to constitute one or more Mitigation Advisory Boards and consult with directly affected parties. DOE will prepare a Mitigation Action Plan in

accordance with its NEPA regulations (10 CFR § 1021.331). Further, DOE is committing to a wetlands compensatory mitigation plan, including implementing the recommendations of the Environmental Protection Agency, the details of which will be described in the Mitigation Action Plan. Lastly, the Department will reconsider the suggested modifications to the best management practices and mitigation measures, as well as other related recommendations of the commenters, in preparing the Mitigation Action Plan.

Decision

Under the NWPA and the Yucca Mountain Development Act, the Department is responsible for the transportation of spent nuclear fuel and high-level radioactive waste to the Yucca Mountain site. In April 2004, the Department selected the mostly rail scenario analyzed in the Yucca Mountain Final EIS for transporting spent nuclear fuel and high-level radioactive waste nationally and within Nevada. DOE also selected the Caliente rail corridor in which to examine possible alignments for construction of a rail line in Nevada.

As the next step in fulfilling its responsibilities and consistent with its tiered decisionmaking, the Department is issuing this Record of Decision to construct and operate a railroad along a rail alignment within the Caliente corridor. The Department has selected the following common and alternative segments as the rail alignment – Caliente alternative segment, common segment 1, Garden Valley alternative segment 3, common segment 2, South Reveille alternative segment 3, common segment 3, Goldfield

alternative segment 4, common segment 4, Bonnie Claire alternative segment 3, common segment 5, Oasis Valley alternative segment 1, and common segment 6, which are the preferred segments identified in the final Rail Alignment EIS.

In addition, the Department has decided to construct the Interchange Yard at the location where the Caliente alternative segment connects with the Union Pacific Railroad mainline, the Upland Staging Yard along the Caliente alternative segment, and the Maintenance-of-Way Facility along Goldfield alternative segment 4. The Department also has decided to construct and operate the Nevada Railroad Control Center and National Transportation Operations Center, co-located with the Upland Staging Yard, along the Caliente alternative segment.

In proceeding with construction of the railroad, the Department will develop up to four quarries from six potential locations, and up to 12 construction camps at the locations analyzed in the final Rail Alignment EIS. The initiation of construction of the railroad on public land, including the quarries and construction camps, is dependent upon receipt of a right-of-way grant, free use permits, and possibly temporary use permits, from the Bureau of Land Management. Construction and operation of the railroad will be subject to the availability of appropriated funds.

Finally, DOE has decided to select the Shared-Use Option, and allow common carriage shipments on the rail line. Prior to constructing and operating a common carriage railroad, the Surface Transportation Board must grant a Certificate of Public

Convenience and Necessity to DOE. The Department applied to the Board for a Certificate of Public Convenience and Necessity on March 17, 2008.

As necessary, DOE will apply for any additional regulatory approvals to construct the railroad, ship radioactive materials and other materials to the repository, and allow common carriage shipments (general freight).

Basis for Decision

Alignment within Rail Corridor

Based on a consideration of the environmental analyses included in the final Rail Alignment EIS, the objection of the Walker River Paiute Tribe to the transportation of nuclear waste across its reservation, and preferences expressed in public comments, the Department has decided that it will construct and operate a railroad along the rail alignment described above within the Caliente rail corridor. In reaching its decision to construct and operate a railroad along a rail alignment within the Caliente corridor, DOE considered potential environmental impacts to all resources, including the impacts from land disturbance during construction, land use changes and conflicts from operation of the railroad, and impacts to wetlands. As a general matter, DOE concluded in the final Rail Alignment EIS that construction and operation of a railroad along either the Caliente or Mina rail alignments would result in broadly similar, but generally small, potential impacts to natural, human health, social, economic, and cultural resources. More specifically, DOE found there would be no significant differences between the Caliente and Mina alignments in potential impacts to aesthetic resources, air quality (including potential impacts on global climate change), groundwater resources, noise and vibration,

socioeconomics, occupational and public health and safety (including potential risks from accidents and acts of sabotage or terrorism), utilities, energy and materials use, and the generation of hazardous materials and waste.

DOE recognized that constructing and operating a railroad along an alignment within the Mina corridor would tend to result in less land disturbance, and cross fewer private land parcels and grazing allotments than within the Caliente corridor. The Department, however, also recognized that an alignment within the Mina corridor would need to cross the Walker River Paiute Tribe Reservation. If DOE were to select such an alignment, DOE would need to obtain a right-of-way from the Bureau of Indian Affairs. The Bureau's regulations (25 CFR § 169.3(a))¹¹ require written consent of the Tribe before granting the right-of-way. Because the Tribe has renewed its past objection to the transportation of nuclear waste through its reservation (as described above under **Background**), obtaining a right-of-way is not possible at this time. DOE's inability to obtain a right-of-way through the reservation in the absence of the Tribe's consent would necessarily impact the Department's ability to construct and operate the railroad in the Mina corridor.

DOE also considered potential unavoidable adverse impacts in reaching its decision. Construction of a railroad in either corridor would result in the permanent loss of wetlands. Within the Caliente corridor, about 8.7 acres of wetlands would be lost, whereas the corresponding loss within the Mina corridor would be about 0.01 acres. As described below under **Use of All Practicable Means to Avoid or Minimize Harm**,

¹¹ The regulation states, "No right-of-way shall be granted over and across any tribal land, nor shall any permission to survey be issued with respect to any such lands, without the prior written consent of the tribe."

DOE will develop measures to compensate for the loss of wetlands as part of its compliance with Section 404 of the Clean Water Act in coordination with the Army Corps of Engineers, Environmental Protection Agency, and applicable land-management agencies such as the Bureau of Land Management.

In making its decision to construct and operate a railroad along a rail alignment within the Caliente corridor, DOE considered irreversible and irretrievable commitments of resources and potential cumulative impacts. There would be an irreversible and irretrievable commitment of resources, such as electric power, fossil fuels and construction materials, associated with the construction of a railroad in either the Caliente or Mina corridors, although this commitment of resources would not significantly diminish these resources, either nationwide or in Nevada.

DOE also recognized there could be some moderate to large impacts from the construction and operation of a railroad along a rail alignment in either corridor when considered in tandem with other past, present and reasonably foreseeable future activities (cumulative impacts). In general, the potential for moderate to large cumulative impacts would be limited to certain resources, such as groundwater use and air quality; further limited in geographic extent to certain areas within segments, such as air quality impacts from a particular quarry; and would be short-term i.e., limited to the construction period. There also could be longer term, moderate to large cumulative impacts, such as a loss of specific types of habitat, although DOE will develop mitigation measures to minimize its contribution to these potential cumulative impacts, as discussed below under **Use of All Practicable Means to Avoid or Minimize Harm.**

In making its decision, the Department also considered the direct costs of constructing and operating a railroad, and the consequences from potential delays in the availability of the railroad. DOE has estimated that the total cost to construct the railroad along the Mina rail alignment would be approximately 20 percent less than to construct the railroad along the Caliente rail alignment (\$2.03 billion compared to \$2.57 billion in 2008 dollars). However, objections by the Walker River Paiute Tribe will prevent DOE from constructing the railroad in the Mina corridor, which in turn will preclude DOE from disposing of large amounts of spent nuclear fuel and high-level radioactive waste in a timely manner.

The Department has concluded that construction and operation of a railroad along the Caliente rail alignment would result in generally small potential impacts to natural, human health, social, economic, and cultural resources. Moreover, as described below under **Use of All Practicable Means to Avoid or Minimize Harm**, the use of best management practices and mitigation measures will reduce and minimize those potential impacts or compensate for those impacts. Lastly, when considering other relevant aspects, there are no land use conflicts along the rail alignment within the Caliente corridor that should prevent DOE from acquiring the necessary land and rights-of-way to construct the railroad.

Caliente Rail Alignment

The Department's decision to select certain alternative segments comprising the Caliente rail alignment was based on the analyses of the final Rail Alignment EIS and consideration of comments received. In selecting the Caliente alternative segment and its associated Interchange and Staging Yard, DOE considered that constructing a railroad on the Eccles alternative segment would be more complex due to its larger drainages and steeper terrain, and would present greater challenges to operating the railroad due to the steeper slope of its Interchange Yard tracks and main track leaving the interchange. In addition, constructing the Caliente alternative segment would avoid the need to realign parts of Clover Creek, which would be required to construct the Eccles-North Interchange Yard, and would avoid indirect impacts to riparian areas along Clover Creek downstream of that Interchange Yard (the riparian areas have been proposed by the Bureau of Land Management as an Area of Critical Environmental Concern).

The selection of the Upland Staging Yard (along the Caliente alternative segment) is preferable to the Indian Cove Staging Yard because the Upland Staging Yard would not impact wetlands. In contrast, construction of the Indian Cove Staging Yard would require filling up to 47 acres of wetlands.

In selecting Garden Valley alternative segment 3, DOE considered potential impacts to all resources and engineering factors, but engineering factors did not offer a means to discriminate clearly among Garden Valley segments 1, 2, 3, and 8. As described above under **Environmentally Preferable Implementing Alternative**, DOE determined segments 1 and 3 to be environmentally preferable to segments 2 and 8, but as between segment 1 and 3, neither was clearly preferable. Nevertheless, DOE has

decided to construct the railroad along Garden Valley 3 because it is farthest from City, an earthworks sculpture located on private land, and this would reduce (relative to other segments) any potential noise or aesthetic impacts to those visiting the sculpture.

DOE selected South Reveille alternative segment 3, rather than segment 2, along which to construct the railroad. Construction of the railroad along South Reveille alternative segment 3 would be preferable to construction along South Reveille segment 2, because it would avoid a complex road and wash crossing. Also, a railroad along South Reveille alternative segment 3 would minimize potential impacts to noise, air quality and aesthetic resources because it is located farther from the boundary of the South Reveille Wilderness Study Area than is South Reveille segment 2.

In selecting Goldfield alternative segment 4 (and its associated Maintenance-of-Way Facility), DOE considered potential impacts to all resources and engineering factors and determined that it would be preferable to construct and operate the railroad along this segment rather than along Goldfield alternative segments 1 or 3. As described above under **Environmentally Preferable Implementing Alternative**, DOE determined that Goldfield alternative segment 3 was environmentally preferable. However, Goldfield alternative segment 3 also presents more complex engineering and railroad operation challenges than the selected segment (Goldfield 4) because of its topography (many more curves and grades to negotiate). In addition, the design and construction of Goldfield alternative segment 1 is more uncertain than that of Goldfield segment 4, because it would cross a mining district likely to contain as-yet-unidentified abandoned mine drifts and shafts. DOE also considered that Goldfield alternative segment 4 is preferred by the

Esmeralda County government. For these reasons, DOE selected Goldfield alternative segment 4 along which to construct the railroad.

DOE selected Bonnie Claire alternative segment 3, rather than segment 2, because it would be farthest from the boundary of the Nevada Test and Training Range, and would be less difficult to construct as it requires fewer drainage structures in less complex terrain. DOE also selected Oasis Valley alternative segment 1, rather than segment 3, because it too would be less difficult to construct. The potential environmental impacts to the Bonnie Claire and Oasis Valley alternative segments did not offer a means to discriminate clearly between the segments.

Facilities Associated with the Caliente Rail Alignment

DOE also has decided to construct and operate the Nevada Railroad Control Center and the National Transportation Operations Center, co-located with the Upland Staging Yard, along the Caliente alternative segment, rather than one mile from the southern boundary of the geologic repository operations area at the Rail Equipment Maintenance Yard. In making this selection, DOE recognizes that locating these facilities at the Upland Staging Yard would require the use of private land, but believes that locating these facilities nearer Caliente, Nevada, is responsive to public comments received on the draft Rail Alignment EIS.

Shared Use

Lastly, the Department has decided to select the Shared-Use Option for the railroad. DOE finds that the potential impacts from the Shared-Use Option generally would result in a small incremental increase relative to those of the Proposed Action without the Shared-Use Option. Further, DOE believes that this decision is responsive to public comments received on the draft Rail Alignment EIS, which generally supported the Shared-Use Option and identified economic benefits that could accrue to those communities through which the railroad would pass.

Floodplain Statement of Findings

In accordance with 10 CFR Part 1022, “Compliance with Floodplain and Wetland Environmental Review Requirements,” DOE prepared a floodplain and wetland assessment for the Caliente rail alignment (see Appendix F of the final Rail Alignment EIS). Many of the floodplains that would be encountered unavoidably by the railroad are associated with internally draining basins with few, if any, inhabitants or facilities, and where the floodwaters end in playa areas. The floodplains are primarily those areas of normally dry washes that are temporarily and infrequently inundated from runoff during 100-year or 500-year floods.

Construction of the Caliente rail alignment will affect floodplains, either through direct alteration of the stream channel cross section that will affect the flow pattern of the stream, or through indirect changes in the amount of impervious surfaces and additional water volume added to the floodplain. In most areas, construction in a floodplain will not increase the risk of future flood damage or increase the impact of floods on human health

and safety, because there are very few human activities or facilities in the areas adjacent to the rail alignment, except for example, in the City of Caliente. Potential impacts from construction will be minimized because DOE will reduce the area of disturbance where the rail alignment will cross floodplains, and because construction activities will be based on design standards that limit the degree to which floodwaters will be allowed to rise. DOE will incorporate hydraulic modeling into the engineering design process to ensure that crossings are designed to limit adverse impacts to nearby populations and resources.

In areas where drainage structures cross a 100-year floodplain designated by the Federal Emergency Management Agency, the railroad will be designed in compliance with the Agency's floodplain protection standards and applicable county regulations. In other areas, hydraulic design will be based upon Class 1 freight railroad standard design criteria, which require that the 50-year flood not come into contact with the top of a culvert or the lowest point of a bridge. For the 100-year flood, these criteria require that the floodwaters not rise above the subgrade elevation of a structure. The Department will construct bridges where flows will be larger and where the rail surface elevation would not be high enough to accommodate a sufficiently sized culvert. Culverts, bridge abutments, and piers will be constructed to include riprap around the exposed ends to protect the fill material. In places, channel improvements might be necessary for a short distance upstream and downstream of the rail line to intercept and redirect flows through drainage structures. DOE also will design the rail line to accommodate 100-year floods, based on Class 1 freight railroad standard design criteria, as described above.

Constructing structures to cross washes or other flood-prone areas may reduce the area through which floodwaters naturally flow, which could cause water levels to rise at the upstream side of crossings. Sedimentation would be likely to occur on the upstream side of crossings in those areas where the flow of water is restricted to the point where ponding occurs. DOE will manage sedimentation of this type under a regular maintenance program.

While some changes will be unavoidable, DOE will take steps to ensure that the alterations to natural drainage, sedimentation, and erosion processes will not increase future flooding potential, increase the impact of floods on human health and safety, or cause identifiable harm to the function and values of floodplains. The Department will implement best management practices, including erosion control measures such as the use of silt fences and flow-control devices, to reduce flow velocities and minimize erosion, and other mitigation measures, as needed (see **Use of All Practicable Means to Avoid or Minimize Harm** below).

Section 404(r) of the Clean Water Act

DOE has complied with Section 404(r) of the Clean Water Act. Pursuant to the requirements of that section, DOE included in Appendix F of the final Rail Alignment EIS an analysis of wetlands impacts under the guidance of Section 404(b)(1) of the Act and has submitted the final Rail Alignment EIS, including the requisite analysis under the guidelines, to members of Congress. As required by the guidelines, which are described in 40 CFR Part 230, Appendix F included a demonstration of the need to fill wetlands, an

analysis and comparison among alternatives of the potential impacts to aquatic resources demonstrating that the practicable alternative with the least impact to aquatic resources has been selected, and a description of methods for mitigating unavoidable impacts (see **Use of All Practicable Means to Avoid or Minimize Harm** below). On the basis of the conclusions in Appendix F, the proposed discharge of fill materials into wetlands and other waters of the United States complies with the guidelines of 40 CFR Part 230, and DOE has met the associated requirements of Section 404(r) by including in the final Rail Alignment EIS an analysis of wetlands impacts in accordance with the guidelines developed under Section 404(b)(1).

Section 7 of the Endangered Species Act

DOE has complied with Section 7 of the Endangered Species Act. Pursuant to the regulations that implement the Act (50 CFR Part 402), in March 2008, DOE submitted a biological assessment regarding the potential impacts to the threatened Mojave desert tortoise, the endangered southwestern willow flycatcher, and the threatened Ute ladies' tresses from the construction and operation of a railroad in the Caliente corridor, and initiated consultation with the Fish and Wildlife Service. The Bureau of Land Management and the Surface Transportation Board were supporting agencies on this consultation.

On September 19, 2008, the Fish and Wildlife Service issued its biological opinion and found that construction and operation of the railroad is not likely to jeopardize the continued existence of the threatened Mojave population of the desert

tortoise or the Ute ladies'-tresses. In addition, the Fish and Wildlife Service concluded that the railroad will not result in adverse effects to the critical habitat designated for the Mojave desert tortoise, and further analysis of potential critical habitat impacts is not necessary (critical habitat for the Ute ladies'-tresses in Nevada has not been designated). The Fish and Wildlife Service also included an incidental take¹² statement and identified reasonable and prudent measures (mitigation measures) that must be implemented by DOE to minimize take of Mojave desert tortoise, and conservation and minimization measures that must be implemented if the Fish and Wildlife Service determines that the loss of Ute ladies'-tresses by construction activities would be significant. The Department is committing to these measures, the details of which will be included in the Mitigation Action Plan (see below under **Use of All Practicable Means to Avoid or Minimize Harm**).

The Fish and Wildlife Service concurred with DOE's determination that construction and operation of a railroad in the Caliente corridor may affect, but is not likely to adversely affect, the southwestern willow flycatcher. The Service's concurrence concluded the informal consultation for that species pursuant to regulations implementing the Endangered Species Act.

Use of All Practicable Means to Avoid or Minimize Harm

Pursuant to the NWPA, spent nuclear fuel and high-level radioactive waste will be transported in casks certified by the Nuclear Regulatory Commission (NRC). The

¹² Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in such conduct without a special exemption.

NRC regulates and certifies the design, manufacture, testing and use of these casks. Additionally, the NWPA requires that DOE comply with NRC regulations regarding advance notification of State and local governments prior to transportation of spent nuclear fuel or high-level radioactive waste.

In its Record of Decision of April 8, 2004 (69 FR 18557), DOE committed to implementing measures to avoid or minimize harm related to the shipment of spent nuclear fuel and high-level radioactive waste, identified specific measures, and committed to following current and future Department of Transportation and NRC transportation rules. DOE also committed to consult with states, Native American tribes, local governments, utilities, the transportation industry, and other interested parties in a cooperative manner to refine the transportation system as it is developed. DOE, in this Record of Decision, is reaffirming its commitment to those implementing measures, which are incorporated by reference herein.

In the final Rail Alignment EIS (Chapter 7), DOE identifies preliminary best management practices and mitigation measures that represent the initial step in an iterative process to develop and eventually implement these practices and measures. The preliminary best management practices and mitigation measures will be further developed and detailed through (1) the regulatory compliance process, such as that associated with DOE's right-of-way application to the Bureau of Land Management and DOE's application for a Certificate of Public Convenience and Necessity to the Surface Transportation Board; (2) development of the final design and associated specifications, such as the selection of specific seed mixes and application techniques for reclaiming

disturbed land; and (3) consultation with directly affected parties, such as grazing permittees and local communities through which the Caliente rail alignment will pass.

The Department will undertake this mitigation process in consultation with federal, state, and local regulatory authorities having jurisdiction over the construction and operation of the railroad, and in consultation with directly affected parties. To that end, DOE proposes to constitute one or more Mitigation Advisory Boards to assist DOE, the Bureau of Land Management, and the Surface Transportation Board in developing, implementing, and monitoring best management practices and mitigation measures during the construction and operation of the railroad.

Further, DOE will conduct an ethnographic evaluation of the rail alignment area to develop a cultural resources management program. DOE proposes that the Consolidated Group of Tribes and Organizations¹³ assist in the ethnographic evaluation, and in the development and implementation of best management practices and mitigation measures.

In Appendix F of the final Rail Alignment EIS, DOE identifies preliminary measures to mitigate the potential adverse impacts of actions in a floodplain or wetlands, including but not limited to, minimum grading requirements, runoff controls, design and construction constraints, and protection of ecologically sensitive areas. To the extent practicable, DOE will avoid disturbing floodplains and wetlands, and, if avoidance is not

¹³ DOE maintains a Native American Interaction Program. As part of this Program, 17 tribes and organizations have formed the Consolidated Group of Tribes and Organizations, which consists of appointed tribal representatives responsible for presentation of their respective tribal concerns and perspectives to DOE.

possible, will minimize impacts to the extent practicable. In general, DOE will minimize impacts to floodplains and wetlands through the implementation of engineering design standards and best management practices. DOE has designed the rail alignment to avoid potential direct and indirect impacts to water resources wherever practicable. Due to the nature of rail line design and the construction activities that would be required to implement the design, the rail line cannot avoid crossing floodplains or wetlands. The engineering design process will ensure, however, that the engineered structures used to pass water runoff from one side of the rail line to the other will do so in a way that will minimize impacts to floodplains and wetlands. Such impacts will be limited mostly to the construction phase, which will be subject to Clean Water Act regulations. In most cases, DOE will minimize potential adverse impacts through the implementation of best management practices in concert with the permits and plans regulatory agencies will require.

DOE will implement a wetlands compensatory mitigation plan that will meet the requirements of the Environmental Protection Agency for mitigating losses of aquatic resources (Subpart J, 40 CFR Part 230). As specified in the Agency's comment letter of August 11, 2008, this plan will include one of the following options to compensate for the loss of wetlands: (1) restore or create three acres of wetlands of equivalent function within the watershed for every acre of wetlands filled to construct the railroad; (2) restore or create one acre of wetlands of equivalent function within the watershed, and remove non-native plants in five acres within the watershed for every acre of wetlands filled; or (3) restore or create one acre of wetlands of equivalent function in the watershed, and enhance five acres of riparian wetland habitat in upper Meadow Valley, including

Rainbow Canyon, for every acre of wetlands filled. The compensatory mitigation plan will be developed and implemented in accordance with requirements of the Environmental Protection Agency (40 CFR § 230.91 through 230.97), and in coordination with the Army Corps of Engineers and the Bureau of Land Management.

The Department will implement the conservation and minimization measures listed in the biological opinion to protect Ute ladies'-tresses, and the reasonable and prudent measures identified by the Fish and Wildlife Service to protect the Mojave population of the desert tortoise. Implementation of these measures will be coordinated with the Bureau of Land Management and Surface Transportation Board, as appropriate.

Based on all of the above, DOE will prepare a Mitigation Action Plan in accordance with its NEPA regulations (10 CFR § 1021.331). The Mitigation Action Plan will include an introduction describing the basis, function, and organization of the plan; a summary of the potential impacts to be mitigated; a description of preliminary best management practices and specific mitigation measures from Chapter 7 of the final Rail Alignment EIS; a description of all mitigation commitments in this Record of Decision, including wetlands compensatory measures and measures to protect the Mojave desert tortoise and Ute ladies'-tresses; a description of the Mitigation Action Plan monitoring and reporting system that DOE will implement to ensure that elements of the plan are met and are effective; and a schedule for actions and identification of the responsible parties. DOE will develop the Mitigation Action Plan in consultation with the proposed Mitigation Advisory Board(s) and directly affected parties.

The Mitigation Action Plan will be completed and made publicly available before DOE takes any action under this decision that is the subject of a mitigation commitment. DOE may revise the Plan as more specific and detailed information becomes available, or in consultation with the proposed Mitigation Advisory Board(s) and directly affected parties. At this stage in the process, the Department has adopted all practicable means to avoid or minimize environmental harm.

Issued in Washington, D.C., on October 6, 2008

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Waste Management.

[FR Doc. 2008-24168 Filed 10/09/2008 at 8:45 am; Publication Date: 10/10/2008]