

December 2008

**Project
Decision
Schedule (PDS)**



**U.S. Department of Energy
Office of Civilian Radioactive
Waste Management**

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ACRONYMS

ACHP	Advisory Council on Historic Preservation
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CoC	Certificate of compliance
CWA	Clean Water Act
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FRA	Federal Railroad Administration
HLW	High-level radioactive waste
LSN	Licensing Support Network
Nevada Rail Corridor SEIS	<i>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 (2008)</i>
NRC	U.S. Nuclear Regulatory Commission
NV	Nevada
NWPA	Nuclear Waste Policy Act of 1982, as amended
OCRWM	Office of Civilian Radioactive Waste Management
PDS	Project Decision Schedule
Rail Alignment EIS	<i>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 (2008)</i>
Repository SEIS	<i>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 (2008)</i>
ROD	Record of Decision
ROW	Right-of-way
SNF	Spent nuclear fuel
STB	Surface Transportation Board
TAD	Transportation, aging and disposal
U.S.	United States
USACE	U.S. Army Corps of Engineers
Yucca Mountain FEIS	<i>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 (2002)</i>

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1. OCRWM Project Decision Schedule

This Project Decision Schedule (PDS) is a legislative mandate of the Nuclear Waste Policy Act of 1982, as amended (NWPA). Section 114(e)(1) of the NWPA requires the Secretary of Energy to “prepare and update, as appropriate, in cooperation with all affected Federal agencies, a project decision schedule that portrays the optimum way to attain the operation of the repository.” The NWPA further provides that this “schedule shall include a description of objectives and a sequence of deadlines for all Federal agencies required to take action, including an identification of activities in which a delay in the start, or completion, of such activities will cause a delay in beginning repository operation.”

This PDS identifies the specific actions that affected Federal agencies must take in order to achieve the schedule presented in this PDS. The schedules are grouped by project in Section 2 and by Federal agency in Section 3. The Federal agency activities and schedules in the PDS are based on the Yucca Mountain Project schedule approved by the Director of the Office of Civilian Radioactive Waste Management (OCRWM) in June 2008. The June 2008 schedule and the underlying cash flow projections reflect the U.S. Department of Energy’s (DOE) expectation of flat funding until the U.S. Nuclear Regulatory Commission (NRC) issues a construction authorization for the repository. The schedule may be further updated and is subject to change as appropriate.

DOE submitted a license application for authorization to construct the repository to the NRC on June 3, 2008, and on September 8, 2008, the NRC docketed the application. The licensing proceeding is expected to last three to four years. This PDS anticipates that the repository will be operational by 2020. This schedule is predicated upon the enactment of legislation, similar to previous legislation submitted to Congress that addresses funding reform and permanent land withdrawal. This schedule also assumes appropriations by the Congress consistent with optimum Project execution, the issuance of an NRC construction authorization consistent with the three-year period specified in the NWPA for the licensing proceeding with an opportunity for a fourth year if needed, and the subsequent timely issuance by the NRC of a receive and possess license amendment. This schedule is also dependent on a complete and timely submission by DOE of all necessary applications to the relevant agencies, the timely issuance of all other necessary authorizations and permits, and the absence of litigation related delays.

Sustained funding well above current and historic levels will be required if the repository is to be operational by 2020. Funding at current levels in future years will not be adequate to support design and the necessary concurrent capital purchases for repository construction, transportation infrastructure, and transportation and disposal casks. The development of a credible schedule for the Program is highly dependent upon a steady and reliable funding stream.



Pursuant to the NWPA, the DOE is developing a permanent geological repository at Yucca Mountain in Nye County, Nevada for the disposal of spent nuclear fuel and high-level radioactive waste as approved by the Congress and the President in 2002.

2. OCRWM Program Schedule

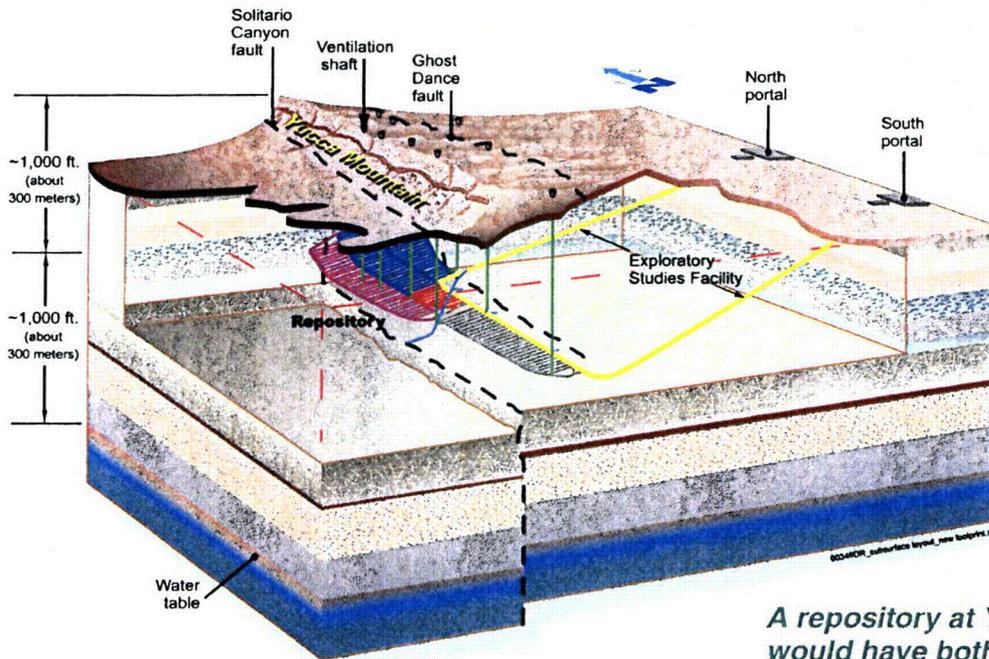
The key milestones for the three projects that comprise DOE's OCRWM Program — the Yucca Mountain Repository Project, the National Transportation Project, and the Nevada Transportation Project — are shown in the Program Summary Schedule chart. This section briefly describes these projects and presents the DOE and other Federal agency milestones for each project.

Yucca Mountain Repository Project

The Yucca Mountain Project involves developing, constructing, operating, closing, and monitoring a geologic repository at Yucca Mountain in Nye County, Nevada for the disposal of spent nuclear fuel (SNF) and high-level radioactive waste (HLW). Repository development includes developing the repository design and supporting the repository licensing process with the NRC. The repository construction will begin only after receipt of a license for construction authorization from NRC and disposal of SNF and HLW in the repository will commence only if NRC grants a license amendment to receive and possess such material.

Program Schedule: Next Steps



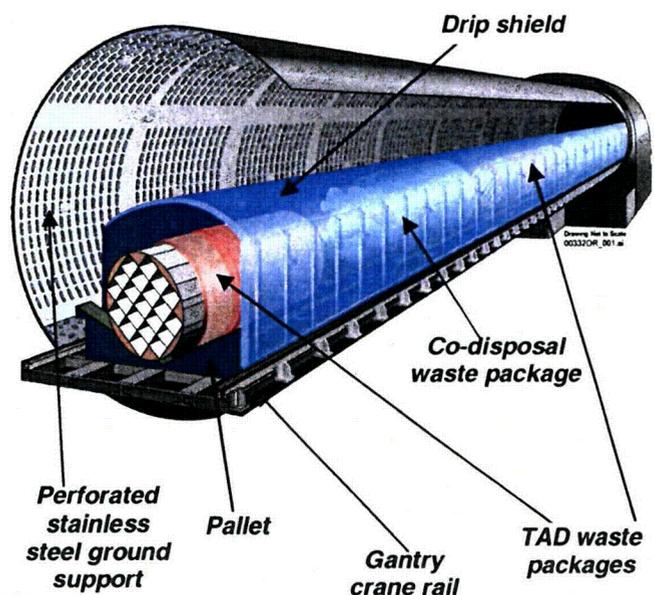


A repository at Yucca Mountain would have both natural and engineered barriers to prevent radioactive materials from escaping into the environment.

In 2006, OCRWM adopted a new approach to repository design, development, and operation. Central to this approach is the use of a canister concept for commercial SNF that minimizes handling of individual assemblies, limits the need for complex surface facilities, and simplifies repository design, licensing, construction, and operation. A transportation, aging and disposal (TAD) canister would be used to transport, age, and dispose of SNF without the canister ever being reopened, thereby reducing the number of handling operations involved in packaging commercial SNF for disposal. The canister concept also offers the advantage of using practices familiar to the nuclear industry and the NRC.

Some of the engineered barrier components are shown in the graphic of the emplacement drift below, including waste packages covered by the drip shield.

The repository license application was submitted to the NRC on June 3, 2008 and the NRC completed its docketing review on September 8, 2008. The license application submittal included the design and safety analyses for planned facilities as well as National Environmental Policy Act documentation. The NWPA provides that NRC shall decide within three to four years whether to issue a construction authorization for the repository. If the NRC ultimately grants DOE construction authorization, thereafter DOE will submit to the NRC an application for a license amendment to receive and possess SNF and HLW for disposal in the repository. DOE cannot begin repository operations until receipt of the license amendment to receive and possess those materials.



Yucca Mountain Repository Project Schedule

2008	U.S. Nuclear Regulatory Commission (NRC) issues repository regulations conforming to the U.S. Environmental Protection Agency (EPA) revised 40 Code of Federal Regulations 197 standards
05/2009	U.S. Department of Energy (DOE) issues a draft supplement to the Yucca Mountain Repository Final and Supplemental Environmental Impact Statements (EIS)
09/2009	Advisory Council on Historic Preservation (ACHP) and DOE sign repository programmatic agreement for current operations and construction
09/2009	DOE begins jurisdictional determination discussions with the U.S. Department of Defense (DoD) U.S. Army Corps of Engineers (USACE) regarding Section 404 permit requirements under the Clean Water Act
03/2010	NRC issues safety evaluation report for repository license application*
12/2010	DOE or contractors submit applications to the U.S. Department of the Interior (DOI) Bureau of Land Management (BLM) for utility rights-of-way (ROWs)
03/2011	DOE submits ROW application to DOI BLM for access road (18 months prior to need)
03/2011	DOI and DOE complete work for repository land withdrawal**
06/2011	DOE completes environmental review report evaluating need to update repository EIS for the NRC decision on a construction authorization and submittal of license application to receive and possess
08/2011	DoD USACE issues Clean Water Act Section 404 permits for repository construction, if determined to be necessary
12/2011	NRC renders a decision on a repository construction authorization**
07/2012	DOI BLM renders a decision regarding free-use permits for repository construction
09/2012	DOI BLM renders a decision on ROW application for access road
10/2012	DOE begins construction for repository
12/2012	DOI BLM renders a decision on utility ROW applications
01/2015	DOE begins negotiations with ACHP on repository operations programmatic agreement
09/2015	ACHP and DOE sign repository operations programmatic agreement

* Assumes NRC issues a positive decision on construction authorization in the 3-year period provided for under the NWSA and does not notify Congress that one additional year is required.

** Assumes enactment of legislation that addresses permanent land withdrawal.

Yucca Mountain Repository Project Schedule (continued)	
03/2016	DOE submits Licensing Support Network certification update letter for license amendment to receive and possess
03/2016	DOE submits application for license amendment authorizing DOE to receive and possess*
09/2017	NRC issues safety evaluation report for license amendment*
09/2018	DOE completes environmental review report evaluating need to update repository EIS for NRC issuance of a license amendment to receive and possess
09/2018	DOE initiates Nevada rail access service to repository
03/2019	NRC renders a decision on a repository license amendment to receive and possess*
10/2019	DOE completes construction
12/2019	DOE completes start-up and pre-operational testing at repository
03/2020	DOE begins repository operations

* Assumes a positive decision on a repository construction authorization.

National Transportation Project

OCRWM is planning the infrastructure required for a transportation system that will safely, securely and efficiently transport SNF and HLW to the Yucca Mountain repository. OCRWM will meet or exceed U.S. Department of Transportation (DOT) and NRC transportation rules and any rules that may be established in the future.

The National Transportation Project focuses on the components of the transportation system required to move SNF and HLW from existing storage sites to the Yucca Mountain repository. The National Transportation Project includes all equipment and service acquisitions necessary to transport by rail, truck, or in some cases, barge to reach a rail head for shipment.

In February 2002, the Department issued 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* (Yucca Mountain FEIS) and in 2004 issued the Record of Decision selecting the mostly rail scenario for transport nationally and in the State of Nevada. Pursuant to the mostly rail option, DOE currently estimates the number of rail casks shipped to the repository would range from 190-317 per year, on trains carrying 3-5 casks. Annual truck shipments could range from 53 to 89 per year, with one cask per truck.

The NWPA Section 180(c) provides for technical assistance and funds to States for training of public safety officials of appropriate units of local governments and Indian Tribes through whose jurisdictions the OCRWM plans to transport SNF or HLW. Training of public safety officials will cover procedures required both for safe routine transportation of these materials and for dealing with emergency response situations.



Truck and rail shipments to the repository will originate from sites in 39 states.

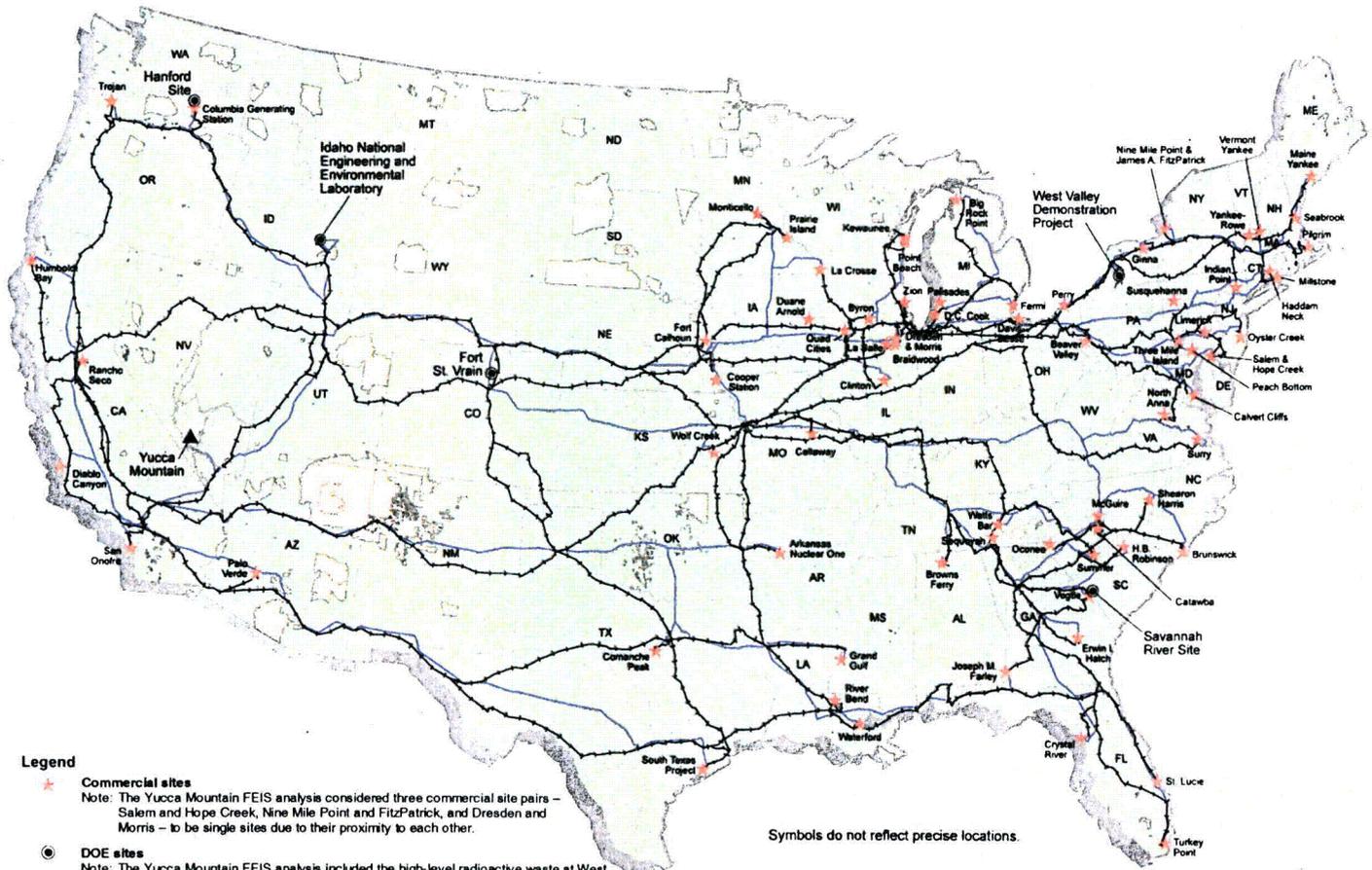


The NWPA provides for technical assistance and funds to States and Tribes for training public safety officials.

National Transportation Project Schedule	
09/2009	Vendors submit transportation, aging and disposal (TAD) canister-based system safety analysis reports to the U.S. Nuclear Regulatory Commission (NRC)
01/2012	NRC renders a decision on the certificates of compliance (CoCs) for TAD canister-based systems**
03/2014	DOE awards contract for DOE spent nuclear fuel (SNF) and high-level radioactive waste (HLW) transportation casks design and certification*
03/2014	DOE awards contract for truck cask design and certification*
03/2014	DOE awards small or medium rail cask design contracts
04/2015	DOE publishes final Nuclear Waste Policy Act Section 180(c) Policy
09/2015	NRC renders a decision on the CoCs for truck cask design**
09/2015	NRC renders a decision on the CoCs for DOE SNF/HLW transportation cask design**
09/2015	NRC renders a decision on the CoCs for small or medium rail cask design**
03/2020	DOE begins national transportation system operations

* Assumes DOE issues requests for proposals up to 12 months in advance.

** Assumes applications are completed and submitted to NRC in a timely manner.



Representative shipping routes were evaluated in the Yucca Mountain FEIS issued in February 2002. Identification of a final suite of routes and detailed planning is anticipated to begin approximately three to five years before shipments take place. Shipments will be coordinated with States and Tribes.

On October 10, 2008, DOE issued a ROD notifying the public of its decision 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).

Nevada Transportation Project Schedule	
2008	U.S. Department of the Interior (DOI) Bureau of Land Management (BLM) renders a decision on right-of-way applications for rail construction and operation
2009	Surface Transportation Board issues decision on whether to grant the U.S. Department of Energy (DOE) a certificate of public convenience and necessity required to construct and operate the Nevada rail line for common carriage
01/2013	DOE submits application to DOI BLM for free-use permits for rail ballast quarry development and operation
08/2013	DOE completes Nevada rail alignment corridor land acquisition
10/2013	DOI BLM renders a decision on free-use permits for rail ballast quarry development and operation
11/2013	DOE starts Nevada rail construction
07/2018	DOE completes Nevada rail construction
08/2018	DOE completes Nevada rail testing and commissioning
9/2018	DOE initiates Nevada rail access service to repository

3. Federal Agencies Schedules

This section briefly describes the role of each Federal agency other than DOE that is required to take specific actions under their authorities in order to achieve the schedule presented in this PDS, and groups the agency-specific milestones by agency.

U.S. Nuclear Regulatory Commission

The NRC has the statutory responsibility to ensure that a repository licensed and constructed at Yucca Mountain will meet the health and safety standards promulgated by the U.S. Environmental Protection Agency (EPA) under the Energy Policy Act of 1992. That Act also requires NRC to modify its technical requirements and criteria for a repository as necessary to be consistent with the EPA standards. NRC issued its requirements for Yucca Mountain in 10 Code of Federal Regulations (CFR) Part 63 in 2001, following EPA's issuance of 40 CFR Part 197. The 2004 court decision that vacated portions of EPA's rule also vacated that portion of NRC's rule in 10 CFR Part 63 that addressed the EPA standards. Following EPA's issuance of proposed revisions to its Yucca Mountain standards in 2005, the NRC issued proposed revisions to 10 CFR Part 63 to be consistent with the EPA proposal. In October 2008, EPA issued the final Yucca Mountain standards and NRC will revise its regulations to be consistent with the final standards.

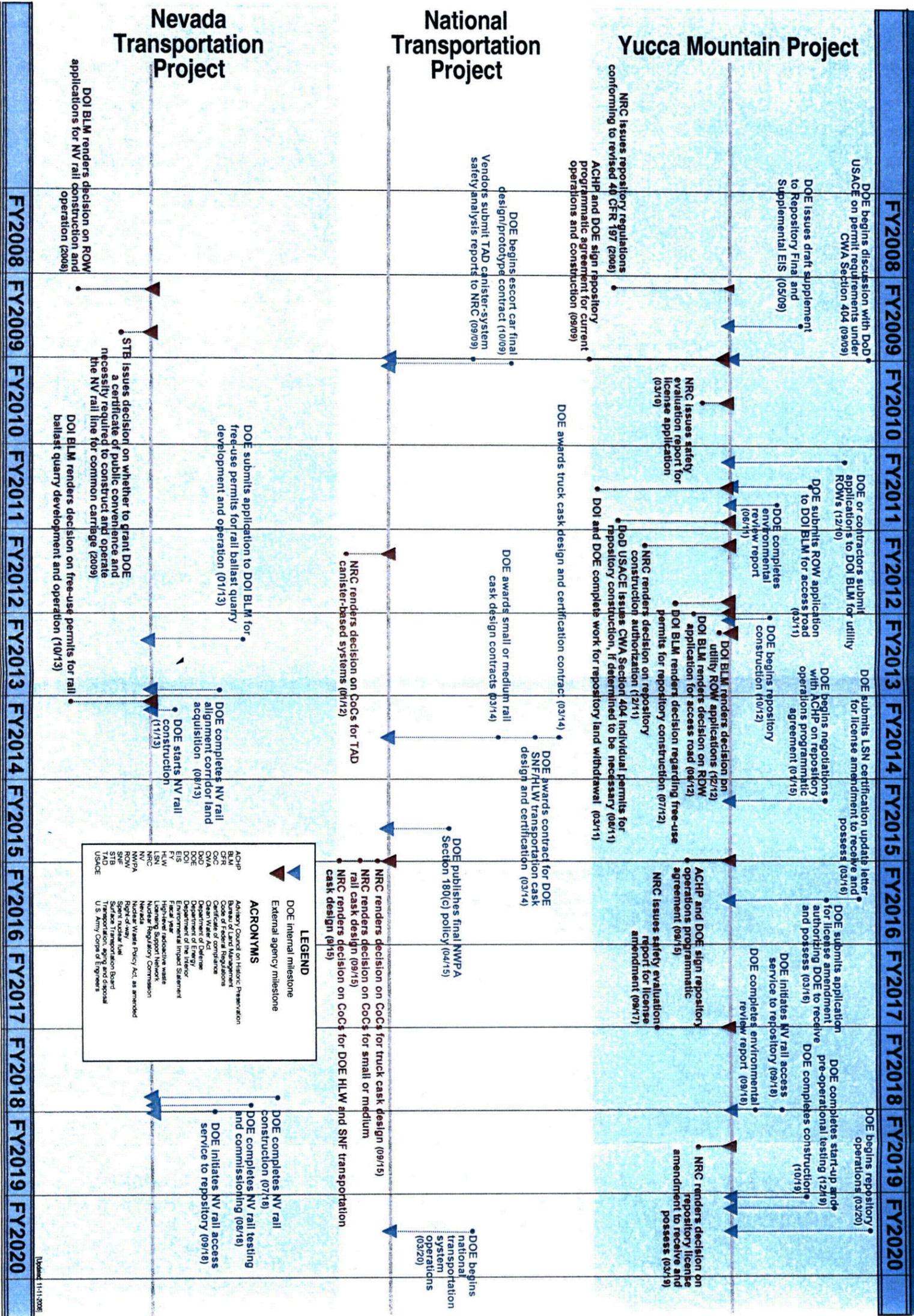
Under the NRC's implementing regulations, NRC must perform a docketing review after DOE submits its license application. DOE submitted its license application to NRC June 3, 2008, and the NRC staff completed its docketing review on September 8, 2008. In the licensing proceeding, the NRC staff will initiate a technical review and will prepare a safety evaluation report. The NRC will also conduct a hearing within a three (3) year period mandated by statute (with an opportunity for a fourth year if needed). The NRC will then determine whether DOE may proceed with construction of the repository

and subsequently determine whether DOE can receive and possess SNF and HLW for disposal in the repository. As provided in the NWPA Section 114(f)(4), when deciding whether to grant a construction authorization, the NRC shall also decide whether to adopt DOE's environmental impact statement prepared for the proposed repository, with any supplements.

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Program Summary Schedule: FY 2008 - FY 2020

Milestones are dependent upon appropriations, timely issuance of all necessary authorizations and permits, absence of litigation-related delays, and enactment of legislation that addresses funding reform and permanent land withdrawal.



LEGEND

- DOE Internal milestone
- External agency milestone

ACRONYMS

- BLM
- BLM Advisory Council on Historic Preservation
- BLM Bureau of Land Management
- CFR Code of Federal Regulations
- CWA Clean Water Act
- DOE Department of Energy
- DOE Environmental Impact Statement
- EIS
- Federal Register
- High-level radioactive waste
- Interim Support Network
- NRC Nuclear Regulatory Commission
- NV Nevada
- NWPA Nuclear Waste Policy Act, as amended
- ROW Right-of-way
- STB Surface Transportation Board
- TAD Transportation, Aging and Disposal
- USACE U.S. Army Corps of Engineers

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If the NRC determines that the repository will meet regulatory requirements, the NRC is expected to grant the DOE a construction authorization. DOE would then proceed with construction of surface and underground facilities needed for the initial phase of operations. During construction of facilities sufficient for the start of operations, DOE will submit to NRC an amendment to its license application to receive and possess SNF and HLW. Once the facilities supporting initial operating capability are completed and assuming NRC issues authorization to receive and possess, DOE will begin operation of the repository. The NRC has provided on-site inspection since receipt of the license application and will provide on-site inspection during the licensing proceeding and throughout the construction and operations period.

Under NWPA Section 137, DOE is required to obtain and use NRC certified casks. Under its statutory authority, the NRC has established performance standards for shipping casks that carry materials with high levels of radioactivity. NRC will establish security regulations for the repository SNF and HLW handling and emplacement operations.

U.S. Nuclear Regulatory Commission Schedule	
2008	Issue repository regulations conforming to revised 40 Code of Federal Regulations 197 standards <i>Program Connection: Yucca Mountain Project</i>
03/2010	Issue safety evaluation report for repository license application <i>Program Connection: Yucca Mountain Project</i>
12/2011	Render a decision on a repository construction authorization* <i>Program Connection: Yucca Mountain Project</i>
1/2012	Render a decision on the certificates of compliance (CoCs) for transportation, aging and disposal canister systems** <i>Program Connection: National Transportation Project</i>
09/2015	Render a decision on the CoCs for truck cask design** <i>Program Connection: National Transportation Project</i>
09/2015	Render a decision on the CoCs for DOE high-level radioactive waste and spent nuclear fuel transportation cask design** <i>Program Connection: National Transportation Project</i>
09/2015	Render a decision on the CoCs for small or medium rail cask design** <i>Program Connection: National Transportation Project</i>
09/2017	Issue safety evaluation report for license amendment <i>Program Connection: Yucca Mountain Project</i>
03/2019	Render a decision on the repository license amendment to receive and possess* <i>Program Connection: Yucca Mountain Project</i>

* Assumes NRC issues a positive decision on construction authorization in the 3-year period provided for under the NWPA and does not notify Congress that one additional year is required.

** Assumes applications are completed and submitted to NRC in a timely manner.

U.S. Department of Transportation

The Federal Railroad Administration (FRA) promulgates and enforces rail safety regulations, administers railroad assistance programs, and conducts research and development in support of improved railroad safety and national rail transportation policy. The FRA is one of ten agencies within the DOT concerned with intermodal transportation. The Surface Transportation Board (STB) is an economic regulatory agency that Congress created to resolve railroad rate and service disputes and for reviewing proposed railroad mergers. The STB is decisionally independent, although it is administratively affiliated with the DOT and serves as both an adjudicatory and a regulatory body which has jurisdiction over construction of new rail lines to be used for common carriage.

In March 2008, DOE submitted an application to the STB for a certificate of public convenience and necessity required to construct and operate the Nevada rail line for common carriage. Depending on how the Nevada rail line is constructed and operated, the STB and the FRA may have regulatory roles concerning those activities.

DOT also has regulations on highway routing, emergency preparedness, and personnel qualifications. OCRWM will meet or exceed these regulations.

Surface Transportation Board Schedule	
2009	Issue decision on whether to grant a certificate of public convenience and necessity required to construct and operate the Nevada rail line for common carriage <i>Program Connection: Nevada Transportation Project</i>

U.S. Department of the Interior

The U.S. Department of the Interior (DOI) ensures compliance with DOI's regulations in the areas of historic preservation, endangered species, fish and wildlife, and land access. The DOI's Bureau of Land Management (BLM) administers more than 300 million acres of public lands, located mainly in the western United States. The BLM also manages such Federal resources as timber, minerals, oil and gas, geothermal energy, wild and scenic rivers, and wilderness and open-space lands. Rail construction will require receipt by DOE of rights-of-way access across BLM land. In the future, DOE will also need to obtain from BLM free-use permits for sand, gravel, and fill materials that would be used for Nevada rail construction.

U.S. Department of the Interior Schedule	
03/2011	Complete work for repository land withdrawal* <i>Program Connection: Yucca Mountain Project</i>
Bureau of Land Management Schedule	
2008	Render a decision on right-of-way (ROW) applications for rail construction and operation <i>Program Connection: Nevada Transportation Project</i>
07/2012	Render a decision regarding free-use permits for repository construction <i>Program Connection: Yucca Mountain Project</i>
09/2012	Render a decision on ROW application for access road <i>Program Connection: Yucca Mountain Project</i>
12/2012	Render a decision on utility ROW applications <i>Program Connection: Yucca Mountain Project</i>
10/2013	Render a decision on free-use permits for rail ballast quarry development and operation <i>Program Connection: Nevada Transportation Project</i>

* Assumes enactment of legislation that addresses permanent land withdrawal.

U.S. Department of Defense

Through the U.S. Army Corps of Engineers (USACE), the U.S. Department of Defense (DoD) has the responsibility for preserving wetlands and issuing permits under Section 404 of the Clean Water Act related to the discharge of dredge and fill materials within the continental United States. Site upgrades at Yucca Mountain may be accomplished under an existing nationwide Section 404 permit. If the discharge of dredge or fill material exceeds the limitations of this nationwide Section 404 permit for repository, DOE may need to obtain individual Section 404 permits from the DoD USACE if determined to be necessary.

U.S. Army Corps of Engineers Schedule	
08/2011	Issue Clean Water Act Section 404 individual permits for repository construction, if determined to be necessary <i>Program Connection: Yucca Mountain Project</i>

Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation (ACHP) is a Federal organization created to address historic preservation issues. Section 106 of the National Historic Preservation Act requires all Federal agencies to take into account the effects of their actions on historic properties and cultural resources, and provide ACHP with a reasonable opportunity to comment on those actions.

As required by Section 106, DOE will be responsible for developing and implementing a programmatic agreement for current operations and construction and a separate programmatic agreement for repository disposal operations. The agreements will identify a prescribed process for surveys, evaluations of

eligibility for the National Register of Historic Places, mitigation, consultations, and other requirements. The DOE will consult with interested persons, Tribes, and affected ethnic groups during development of the programmatic agreement.

Advisory Council on Historic Preservation Schedule	
09/2009	Sign repository programmatic agreement for current operations and construction <i>Program Connection: Yucca Mountain Project</i>
09/2015	Sign repository operations programmatic agreement <i>Program Connection: Yucca Mountain Project</i>

NOTE: The original PDS was published in 1986 and updated in 1991. This schedule updates those prior versions.